



EUROPEAN CENTRAL BANK

EUROSYSTEM

THE PAYMENT SYSTEM

# THE PAYMENT SYSTEM

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**PAYMENTS,  
SECURITIES AND  
DERIVATIVES,  
AND THE ROLE  
OF THE  
EUROSYSTEM**

**EDITOR  
TOM KOKKOLA**

EUROPEAN CENTRAL BANK

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## ABBREVIATIONS

### COUNTRIES

BE	Belgium	HU	Hungary
BG	Bulgaria	MT	Malta
CZ	Czech Republic	NL	Netherlands
DK	Denmark	AT	Austria
DE	Germany	PL	Poland
EE	Estonia	PT	Portugal
IE	Ireland	RO	Romania
GR	Greece	SI	Slovenia
ES	Spain	SK	Slovakia
FR	France	FI	Finland
IT	Italy	SE	Sweden
CY	Cyprus	UK	United Kingdom
LV	Latvia	CA	Canada
LT	Lithuania	JP	Japan
LU	Luxembourg	CH	Switzerland
		US	United States

### OTHERS

ACH	automated clearing house
ATM	automated teller machine
BIC	Bank Identifier Code
BIS	Bank for International Settlements
CCB	correspondent central bank
CCBM	correspondent central banking model
CCBM2	Collateral Central Bank Management
CCP	central counterparty
CDS	credit default swap
CESAME	Clearing and Settlement Advisory Monitoring Expert Group
CESR	Committee of European Securities Regulators
CET	Central European Time
CLS	Continuous Linked Settlement; foreign exchange PvP system
COGEPs	Contact Group on Euro Payments Strategy
COGESI	Contact Group on Euro Securities Infrastructures
CPSS	Committee on Payment and Settlement Systems
CSD	central securities depository
CSM	clearing and settlement mechanism
DNS	designated-time net settlement
DvP	delivery versus payment
EACH	European Association of Central Counterparty Clearing Houses
EACHA	European Automated Clearing House Association
EBA	Euro Banking Association
EBF	European Banking Federation
ECB	European Central Bank
ECBS	European Committee for Banking Standards
ECN	electronic communication network
ECSDA	European Central Securities Depositories Association

EEA	European Economic Area
EGMI	Expert Group on Market Infrastructures
ELMI	electronic money institution
EMI	European Monetary Institute
EMIR	Regulation on European market infrastructure
EMV	standard for integrated circuit cards established by Europay, MasterCard and Visa
EPC	European Payments Council
ESCB	European System of Central Banks
ETF	exchange-traded fund
EU	European Union
EURO1	euro system of the EBA CLEARING Company
FESE	Federation of European Securities Exchanges
FIFO	first in, first out
FISCO	Fiscal Compliance Expert Group
FOP	free of payment
FSB	Financial Stability Board
FX	foreign exchange
HCB	home central bank
HKMA	Hong Kong Monetary Authority
IBAN	International Bank Account Number
ICM	Information and Control Module of TARGET2
ICMA	International Capital Market Association
ICSD	international central securities depository
IFTS	interbank funds transfer system
IOSCO	International Organization of Securities Commissions
IP	internet protocol
IPA	issuing and paying agent
IPO	initial public offering
ISDA	International Swaps and Derivatives Association
ISIN	International Securities Identification Number
ISO	International Organization for Standardization
LVPS	large-value payment system
MIF	multilateral interchange fee
MiFID	Directive 2004/39/EC on markets in financial instruments
MOG	Monitoring Group of the Code of Conduct on Clearing and Settlement
MTF	multilateral trading facility
NCB	national central bank
OTC	over the counter
PE-ACH	pan-European automated clearing house
PIN	personal identification number
POS	point of sale
PRIMA	Place of the Relevant Intermediary Approach
PSD	Directive 2007/64/EC on payment services in the internal market
PSSC	Payment and Settlement Systems Committee
PvP	payment versus payment
repo	repurchase agreement
RTGS	real-time gross settlement
SCF	SEPA card framework

SCSS	securities clearing and settlement system
SCT	SEPA credit transfer
SDD	SEPA direct debit
SEPA	Single Euro Payments Area
SFD	Directive 98/26/EC on settlement finality
SIPS	systemically important payment system
SSP	Single Shared Platform of TARGET2
SSS	securities settlement system
STEP1	low-value payment solution operating on the EURO1 platform
STEP2	retail clearing system of the EBA CLEARING Company
STP	straight-through processing
SWIFT	Society for Worldwide Interbank Financial Telecommunication
T2	TARGET2; second generation of the TARGET system
T2S	TARGET2-Securities
TARGET	Trans-European Automated Real-time Gross settlement Express Transfer system
TR	trade repository
Treaty	Treaty on the Functioning of the European Union
XML	Extensible Markup Language

## FOREWORD

The payment system – which includes financial market infrastructure for payments, securities and derivatives – is a core component of the financial system, alongside markets and institutions. If modern economies are to function smoothly, economic agents have to be able to conduct transactions safely and efficiently. Payment, clearing and settlement arrangements are of fundamental importance for the functioning of the financial system and the conduct of transactions between economic agents in the wider economy. Private individuals, merchants and firms need to have effective and convenient means of making and receiving payments. Moreover, funds, securities and other financial instruments are traded in markets, providing a source of funding and allowing households, firms and other economic actors to invest surplus funds or savings in order to earn a return on their holdings. Active markets facilitate price discovery, the efficient allocation of capital and the sharing of risk between economic actors.

Public trust in payment instruments and systems is vital if they are to effectively support transactions. In financial markets, market liquidity is critically dependent on confidence in the safety and reliability of clearing and settlement arrangements for funds and financial instruments. If they are not managed properly, the legal, financial and operational risks inherent in payment, clearing and settlement activities have the potential to cause major disruption in the financial system and the wider economy.

Banks and other financial institutions are the primary providers of payment and financial services to end users, as well as being major participants in financial markets and important owners and users of systems for the processing, clearing and settlement of funds and financial instruments. The central bank, as the issuer of the currency, the monetary authority and the “bank of banks”, has a key role to play in the payment system and possesses unique responsibilities. It is therefore no coincidence that one of the basic tasks of the ESCB and the ECB is to promote the smooth operation of payment systems. A safe and efficient payment system is of fundamental importance for economic and financial activities and is essential for the conduct of monetary policy and the maintenance of financial stability.

This book has been written with the aim of providing comprehensive insight into the main concepts involved in the handling of payments, securities and derivatives, analysing the nature and activities of the relevant financial market infrastructure. Emphasis is placed on the principles governing the functioning of the relevant systems and processes and the presentation of the underlying economic, business, legal, institutional, organisational and policy issues. It also explains the operational, oversight and catalyst roles of the Eurosystem – the central banking system for the euro – and the policies established by the Governing Council of the ECB in this field.

I am sure that this book will be of great use to all readers with an interest in the functioning of the payment system and the role played by the Eurosystem in this domain.

Frankfurt am Main, September 2010

A handwritten signature in blue ink, consisting of a stylized initial 'J' followed by the name 'Trichet' written in a cursive script.

Jean-Claude Trichet  
President of the ECB

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Tom Kokkola  
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# INTRODUCTION

This book is all about how transactions involving money and financial instruments (i.e. securities and derivatives) are handled in the economy. The principal objective of payment, clearing and settlement arrangements is to facilitate transactions between economic agents and to support the efficient allocation of resources in the economy. Market infrastructure for payments and financial instruments represents one of the three core components of the financial system, together with markets and institutions.

The complexity and – in particular – importance of market infrastructure for the handling of payments and financial instruments has increased greatly in recent decades, owing not only to the tremendous increases observed in the volume and value of financial transactions, but also to the wealth of financial innovation and the advances seen in information and communication technologies. Bilateral barter trade is now largely a thing of the past, and instead economic agents buy and sell goods and services (including financial instruments) in markets, making use of the transfer services made available by market infrastructure.

Payment, clearing and settlement systems may differ from country to country in terms of their type and structure, both for historical reasons and on account of differences between countries' legal, regulatory and institutional environments. Furthermore, rather than being static, payment, clearing and settlement systems and arrangements are dynamic constructions which have evolved over time and will continue to do so in the future. A key priority for central banks is to contribute to the development of modern, robust and efficient market infrastructure which serves the needs of their economies and facilitates the development of safe and efficient financial markets.

All transactions are exposed to a variety of risks, and this is particularly true for financial transactions. Thus, in order to facilitate enhanced risk management, many countries have introduced real-time gross settlement systems for the handling of critical payments. Progress has been made in the implementation of safer and more efficient systems and procedures for the clearing and settlement of securities. Modern securities settlement systems offer delivery-versus-payment mechanisms and allow the effective management of collateral, while foreign exchange transactions are increasingly being settled on a payment-versus-payment basis. In parallel, stronger international trade links, the increased integration of international financial markets (including global derivatives markets) and large migrant flows have all contributed to increased demand for arrangements allowing the cross-border handling of wholesale and retail transactions, raising new issues from a policy and risk perspective.

A central bank has a direct interest in the prudent design and management of market infrastructure operating in its currency. The smooth functioning of market infrastructure for payments and financial instruments is a crucial element of a sound currency and is essential to the conduct of monetary policy. Such market infrastructure also has a significant bearing on the functioning of financial markets. Safe, reliable and efficient market infrastructure for payments,

securities and derivatives is crucial to the maintenance of stability in the banking sector and the financial system in general. In this context, considerable attention is paid not only to the smooth operation of payment, clearing and settlement systems, but also to the mitigation of any associated risks. Moreover, given the importance of efficient and effective retail payment services for the functioning of an economy and for social welfare, their uniform availability within the country is a key priority for a central bank.

Banks and other financial institutions are core actors in the market infrastructure. Banks are the principal providers of payment accounts, instruments and financial services to end users. In a relatively recent development, non-bank entities are now also entering the market, providing services at various stages in the initiation and processing of transactions. Financial institutions compete with one another to provide services. However, at the same time, for economic and business reasons, they also need to cooperate on market infrastructure issues. In this respect, they may jointly own and operate systems and arrangements and be participants in and users of common systems. Market organisations of different kinds play an important role in cooperation arrangements by furthering the interests of their members. Constructive interaction between private and public sector stakeholders is essential.

This book is designed to provide the reader with comprehensive insight into the main concepts involved in the handling of payments, securities and derivatives and the organisation and functioning of the market infrastructure concerned. Emphasis is placed on the general principles governing the functioning of the relevant systems and processes and the presentation of the underlying economic, business, legal, institutional, organisational and policy issues. The book is aimed at decision-makers, practitioners, lawyers and academics wishing to acquire a deeper understanding of market infrastructure issues. It should also prove useful for students with an interest in monetary and financial issues.

While the chapters are organised with a view to offering progressively deeper insight into key market infrastructure issues as the reader proceeds through the book, those chapters are also intended, to some extent, to be self-explanatory and stand alone, thereby allowing readers to focus on the sections that are of the greatest interest.

The book is in three parts. Part I provides an insight into the market infrastructure of modern economies with a view to examining key concepts which have general validity and are thus applicable around the world. Such information is fundamental to a broad understanding of the overall functioning of market infrastructure and the complexities involved in the various development efforts.

Thus, Chapter 1 describes the key features of the market infrastructure for payments. It looks at issues such as the different types of payment, the most common non-cash payment instruments and how payments are processed and settled, before looking at different types of payment system and their respective key features. One section is devoted to card payments, since the handling of such payments has some distinctive features. It then turns to cross-border payments, offshore systems and different links between payment systems. That last section

also touches on the important subject of payment-versus-payment settlement of foreign exchange transactions. Chapter 2 explains the most relevant concepts in the field of securities. It examines the life cycle of a securities transaction, beginning with a definition of securities and a look at some key institutional arrangements, before going on to consider clearing and settlement. An attempt is made to explain the different ways of exchanging securities for cash, looking at the choice of settlement asset, different settlement models and other settlement-related issues. It also covers custody and link arrangements, including the cross-border handling of securities. Chapter 3 is devoted to derivatives. It provides information on types of derivative, market structures and the life cycle of a derivatives transaction. It also looks at challenges in the handling of over-the-counter transactions, including measures to facilitate transparency and the management of counterparty risk exposures in bilateral and central counterparty clearing. In addition to understanding the concepts presented in the first three chapters, it is of fundamental importance that practitioners and policy-makers also comprehend the risks inherent in such activities and know how to mitigate them. Thus, Chapter 4 looks at the most important risks and the various ways of limiting them.

Market infrastructure issues are by their very nature multidisciplinary, involving, among other things, economic, business and legal aspects. The economic concepts most relevant to market infrastructure are explained in Chapter 5, while Chapter 6 concentrates on key legal concepts applicable in market infrastructure services. The central bank plays a key role in such matters, and so Chapter 7 looks at the rationale for the involvement of the central bank and explains its operational, oversight and catalyst functions.

Building on Part I, Part II concentrates on more specific issues concerning the market infrastructure for the euro. In this regard, Chapter 8 describes the payment infrastructure for the euro, covering payment instruments, retail payment systems, large-value payment systems and correspondent banking. Arrangements for the trading, clearing and settlement of euro-denominated securities and derivatives are described in Chapter 9. Chapter 10 provides an overview of the most important EU legislation relating to payment, clearing and settlement services in Europe.

Part III of the book explains the role and policies of the Eurosystem as regards the handling of euro-denominated payments, securities and derivatives. It looks at the way the Eurosystem, the central banking system for the euro, addresses such issues in its joint capacity as operator, overseer and facilitator. The Eurosystem is the owner and operator of both TARGET2, the RTGS system for the euro, and the CCBM, which allows the cross-border delivery of collateral for Eurosystem credit operations. The Eurosystem is also working on the TARGET2-Securities project, with the aim of introducing a service allowing securities to be settled on a delivery-versus-payment basis in central bank money. The Eurosystem's operational function is described in Chapter 11. The Eurosystem's oversight function is explained in Chapter 12, including details of its scope and the various approaches and methodologies applied, while Chapter 13 covers the Eurosystem's catalyst function, particularly in relation to the establishment of

an integrated retail payment market in euro and the integration of post-trading services for securities.

Finally, the institutional environment surrounding the Eurosystem's activities in the field of payments, clearing and settlement is explained in Chapter 14. This chapter considers the legal basis for the Eurosystem's involvement in payment, clearing and settlement-related activities, shows how the payment system function is organised within the ECB and the Eurosystem and describes the transparent and cooperative approach adopted by the Eurosystem with a view to pursuing its public policy objectives while acting within a modern market economy environment.

## **PART I**

### **KEY CONCEPTS IN MARKET INFRASTRUCTURE**



# CHAPTER I

## KEY CONCEPTS – PAYMENTS

### I GENERAL ASPECTS

#### I.1 PAYMENTS AND THE PAYMENT SYSTEM

In every economy, a large number of transactions take place each day on the initiative of a wide range of economic actors. All transactions, whether they involve the acquisition of goods, financial assets or services (and provided they do not involve bartering), have two settlement components: (i) the delivery of the good or service; and (ii) the transfer of funds – i.e. payment using cash (banknotes and coins) or deposits held with banks (funds in accounts held with banks). A payment is therefore a transfer of funds which discharges an obligation on the part of a payer vis-à-vis a payee. A *payer* is the party to a payment transaction which issues the payment order or agrees to the transfer of funds to the payee. A *payee* – or *beneficiary* – is the final recipient of funds.

Well-designed payment infrastructure contributes to the proper functioning of markets and helps to eliminate frictions in trade. If the cost of a transaction exceeded the benefits expected from the trade, services, assets and products might not even be exchanged. The availability of reliable and safe payment mechanisms for the transfer of funds is therefore a sine qua non for the majority of economic interactions (i.e. “no payment, no trade”).

In its more restricted sense, the term “payment system” is sometimes used as a synonym for “interbank funds transfer system” or “IFTS”. However, at a general level, the term “payment system” refers to the complete set of instruments, intermediaries, rules, procedures, processes and interbank funds transfer systems which facilitate the circulation of money in a country or currency area. In this sense, a payment system comprises three main elements or processes:

1. *payment instruments*, which are a means of authorising and submitting a payment (i.e. the means by which the payer gives its bank authorisation for funds to be transferred or the means by which the payee gives its bank instructions for funds to be collected from the payer);
2. *processing* (including clearing), which involves the payment instruction being exchanged between the banks (and accounts) concerned;
3. a means of *settlement* for the relevant banks (i.e. the payer’s bank has to compensate the payee’s bank, either bilaterally or through accounts that the two banks hold with a third-party settlement agent).

It also relies on *institutions* that provide payment accounts, instruments and services to customers (including consumers, businesses and public administrations) and on organisations that operate payment, clearing and settlement services (such as *interbank funds transfer systems*). There are also market arrangements in place, such as standards, conventions and contracts for the production, pricing and use of the various payment instruments and services, as well as arrangements for consultation and cooperation within the industry and with other stakeholders. Finally, a payment system needs to be underpinned by a sound legal basis. This includes laws, standards, rules and procedures laid down by legislators, courts, regulators, system operators and central bank overseers.

## 1.2 LIFE CYCLE OF A PAYMENT

A stylised life cycle for a non-cash payment (e.g. a credit transfer) could be as follows.

1. *Choice of payment instrument and submission of the payment instruction:* Depending on the payment instrument chosen (see Section 1.4), the payer or payee submits a payment instruction to its bank. Payments are increasingly being initiated electronically, using standardised formats (including, for example, the bank account number of the recipient and the Bank Identifier Code (BIC) of the recipient's bank). This makes it possible for the banks to process payments without manual intervention using straight-through processing (STP).
2. *Bank's internal processing:* The sending bank verifies and authenticates the payment instrument in order to establish its legal and technical validity, checks the availability of funds (or overdraft facilities), makes the necessary entries in the bank's accounting system (e.g. debiting the payer's account in the case of a credit transfer) and prepares the payment instruction for clearing and settlement (reformatting it where necessary).
3. *Interbank processing of the payment:* This comprises the transmission, reconciliation, sorting and, in some cases, confirmation of payment transfer orders prior to settlement, potentially including netting and the establishment of final positions for settlement. The interbank processing of payments may take place through correspondent banking (in a bilateral or trilateral exchange of messages) or through multilateral arrangements – i.e. payment systems.
4. *Interbank settlement of the payment:* The settlement asset is transferred from the sending bank to the receiving bank, and the interbank transfer becomes

Chart 1 Stylised life cycle of a non-cash payment



Source: ECB.

irrevocable and unconditional (i.e. final). The settlement asset may be transferred on a bilateral basis or multilaterally using a settlement agent.

5. *Bank's internal processing*: The receiving bank credits the account of the recipient.
6. *Information and communication*: The receipt of payment is communicated to the beneficiary via account statements following the crediting of its account. (If the payment is made in response to an invoice, the recipient (e.g. a firm) will perform a reconciliation following the receipt of funds in order to match incoming payments with invoices sent.)

### 1.3 TYPES OF PAYMENT

Payments can be classified on the basis of the different *types of payer/payee* involved.

1. *Wholesale payments* are payments between financial institutions. They tend to have a high value. In addition, they are usually time-critical (i.e. they need to be cleared and settled on a particular day – sometimes even within a particular time period on that day). Their share in the total number of payments is relatively small, but owing to their high value, their orderly settlement is essential for the proper and stable functioning of financial markets.
2. Payments between non-financial institutions (e.g. private households, non-financial corporations or government agencies) are normally classified as *retail payments*. There are normally large numbers of retail payments, but these have substantially lower average values than wholesale payments and are not usually cleared and settled in the same manner. That being said, in some countries retail payments are settled in systems designed for both retail and wholesale payments.

In addition to the two categories above, reference is sometimes also made to *commercial payments*. These are payments generated by corporations. Depending on the size and type of corporation, as well as the type of underlying commercial transaction, these can sometimes have fairly large values. Large international corporations tend, in particular, to generate some payments which resemble wholesale payments more than retail payments.

Payments can also be grouped on the basis of the *number of payers and payees* involved in a particular transaction.

1. In a *one-to-one transaction*, one payer transfers funds to one payee. Most customer-to-customer, customer-to-business and business-to-business payments are transactions of this type.
2. In *one-to-many transactions*, one payer transfers funds to several payees with a single submission. These are typically transfers from businesses or governments to private households – for instance salary and social security

payments. One-to-many transactions are also called “bulk payments” and are usually cleared and settled in batches.

3. In *many-to-one transactions*, several payers transfer funds to a single payee, usually on the initiative of the payee. These are typically transfers from private households to businesses or governments – for instance utility or tax payments.

Finally, in the context of international trade, a distinction is also made between “clean” and “documentary” payments.

In *clean payments*, all transportation documents and other paperwork relevant to the trade are exchanged directly between the trading partners. Thus, from a banking perspective, normal general-purpose payment instruments can be used to transfer funds between the two.

In *documentary payments*, the (international) trading partners entrust the handling of trade-relevant documents to banks (with the exporter instructing its bank to release documents to the importer, and the importer instructing its bank to make a payment to the exporter) as a way of ensuring that the exporter receives payment for the goods sold and the importer receives and pays for the goods ordered. This is done through the use of documentary instruments such as letters of credit, documentary collection or bank guarantees.

## 1.4 PAYMENT INSTRUMENTS

A *payment instrument* is a tool or a set of procedures enabling the transfer of funds from the payer to the payee. There are a variety of different payment instruments, each with its own characteristics depending on the type of relationship and transaction between the payer and the payee. The most common distinction is between cash and non-cash payment instruments.

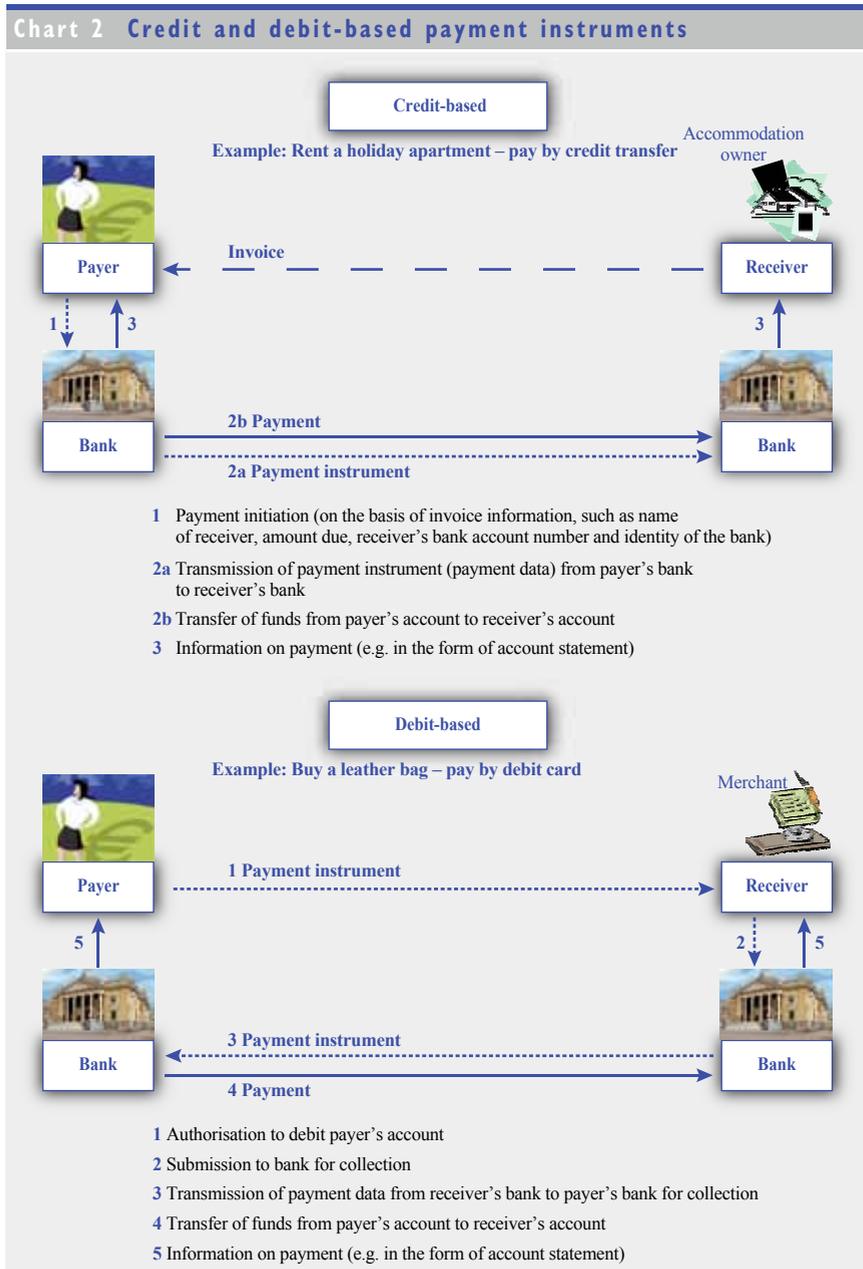
*Cash payments* (i.e. payments made using banknotes and coins) are usually associated with face-to-face transactions of low value between individuals or between an individual and a merchant. If the parties do not exchange information on their identity, a cash payment is said to be “anonymous”. A cash payment is an immediate and final transfer of value, and the recipient can immediately use the cash received for further payments. In most countries, legislation or regulation requires that banknotes and coins be accepted as payment for all types of transaction, potentially subject to limits per denomination. This confirms the status of the banknotes and coins as legal tender. Further identification measures are not normally required for cash transactions, with the exception of large-value transactions in the context of increased efforts to tackle money laundering and the financing of terrorism.

*Non-cash payments*, by contrast, involve the transfer of funds between accounts. A non-cash payment instrument is therefore the means by which a payer gives its bank authorisation for funds to be transferred or by which a payee gives its bank instructions for funds to be collected from a payer. The accounts of the two parties may be held with a single bank or with different banks.

Non-cash payment instruments can be further classified on the basis of the following.

– *Physical form* (paper-based or electronic instruments)

Payment instructions have traditionally been in paper form, but today they are increasingly taking the form of electronic instructions.



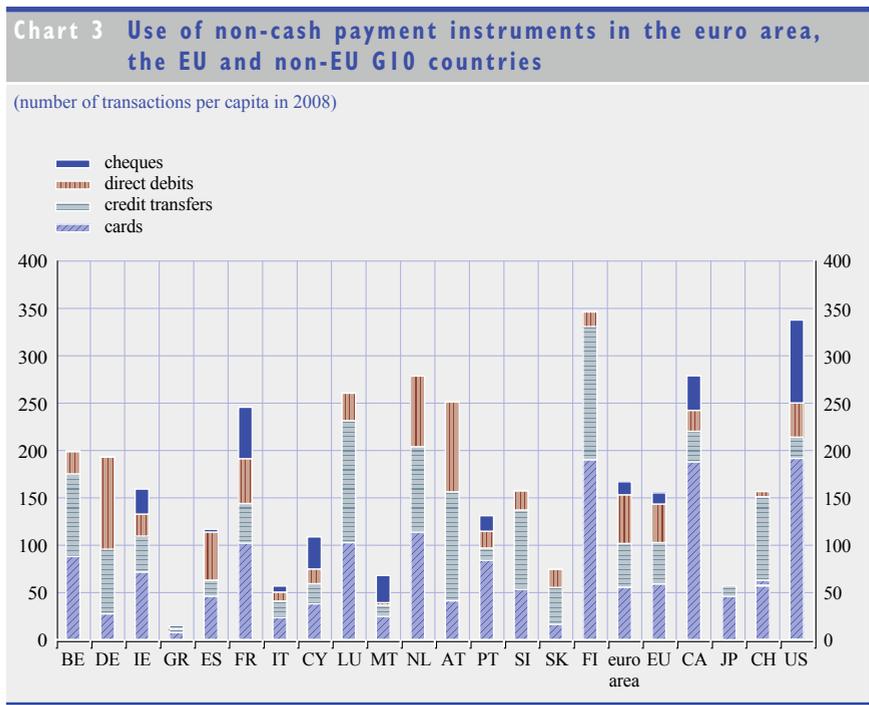
Source: ECB.

- *The party submitting the payment instrument for processing* (credit or debit-based instruments)

Credit-based (“credit push”) instruments are submitted for processing by the payer, while debit-based (“debit pull”) instruments are submitted for processing by the payee. The main credit-based instruments are credit transfers (also called “direct credits” or “wire transfers”). The main debit-based payment instruments are direct debits, card payments and cheques. As can be seen from Chart 2, in a credit-based transfer the instruction and funds move in the same direction, whereas in a debit-based transfer they move in opposite directions.

*Electronic money* (or “e-money”) is a monetary value represented as a claim on the issuer which is stored on an electronic device and accepted as a means of payment by undertakings other than the issuer (by contrast with single-purpose prepaid instruments, where the issuer and acceptor are one and the same). E-money can be either hardware-based (i.e. stored on a device, typically a card) or software-based (i.e. stored on a computer server). E-money can be regarded as a means of settlement rather than a payment instrument, since the creation or reimbursement of e-money is effected using one of the core payment instruments – cash, payment cards, direct debits or credit transfers.

The most commonly used cashless payment instruments are payment cards, credit transfers, direct debits and cheques. Chart 3 illustrates the per capita use of these instruments in various countries. These payment instruments are described in more detail in Box 1.



Sources: ECB and BIS.

Note: Data for Japan are from 2007.

## A. General-purpose instruments

### Credit transfers

Credit transfers, also called “direct credits”, are instructions sent by a payer to its bank requesting that a defined amount of funds be transferred to the account of a payee. A transaction order instructing the payer’s bank to carry out a recurrent payment is referred to as a “standing order”. Credit transfers may be submitted to the payer’s bank in either paper or electronic form, but as a rule further processing occurs in electronic form.

### Direct debits

Direct debits are payment instruments authorising the debiting of the payer’s bank account. These are initiated by the payee on the basis of authorisation given by the payer. The authorisation by which the payer consents to have its account debited in a direct debit transaction is called a “mandate”. National rules vary as to whether the mandate has to be given to the payee or to the payer’s bank. The payee or the payer’s bank may have an obligation to notify the payer before debiting the account. If there are insufficient funds on the payer’s account when the direct debit instruction arrives, the payer’s bank is not usually obliged to honour the payment and instead returns the direct debit to the payee unpaid. Direct debits are generally submitted and processed in electronic form.

### Payment cards

Cards are access devices that can be used by their holders to pay for goods and services – either at the point of sale (POS) or remotely (in “card-not-present” transactions) – or to withdraw money at automated teller machines (ATMs). Usually, the payment function and the cash function are combined on a single card. Cards are used to authorise a debit from the cardholder’s account or to draw on a line of credit granted to the cardholder by the card issuer. Cards are issued via a card scheme, and the transactions effected using those cards are cleared and settled via that scheme. For more information on card schemes, see Section 4.2.

The most common general-purpose payment cards are debit cards, credit cards and delayed debit cards.

*Debit cards* are linked to a bank account and allow cardholders to charge purchases or ATM withdrawals directly and individually to this account. Consequently, when a cardholder uses a debit card, the amount is typically debited from the account either immediately or within a few days and there is no postponement of payment.

*Credit cards* provide cardholders with a credit facility and the possibility of delaying payment. The size and duration of the credit facility are the subject of an agreement between the cardholder and the card issuer. Generally, when the credit facility is used, the outstanding amount can be either (i) settled in full by the end of a specified period, or (ii) settled in part, with the remaining balance extended as credit and subject to interest payments.

*Delayed debit cards* (sometimes called “deferred debit cards” or “charge cards”) allow the cardholder to postpone payment, but the outstanding amount has to be settled in full at the end of a specified period.

With both credit and delayed debit cards, it is the card issuer that postpones payment and provides credit. Consequently, a merchant or an ATM owner will be paid in full even if the cardholder uses a credit facility.

There are also other cards, such as single and multi-purpose prepaid cards and retailer or store cards. These are issued by non-banking institutions – or by banking institutions on behalf of merchants – for use in specified merchant outlets (see the glossary for details).

### Cheques

A cheque is a written order from one party (the drawer) to another (the drawee; normally a credit institution) requiring the drawee to pay a specified sum on demand to the drawer or a third party specified by the drawer.

Cheques are popular from the payer's point of view because there is often a delay between the drawing of the cheque and the debiting of the payer's bank account. However, as with all debit-based instruments, there is the potential problem of the drawer's creditworthiness, since at the time of acceptance the payee has no means of verifying that the payer has sufficient funds in its bank account to cover the cheque.

Cheques are very popular in a number of countries, such as Canada, France, the United Kingdom and the United States (see Chart 3), since they can be used for payment in a variety of circumstances. However, as a paper-based instrument, cheques are the most costly non-cash payment instrument to process and settle. As a result, payment service providers are seeking ways of reducing costs through the dematerialisation of the clearing and settlement process (via the truncation of cheques, where only an electronic image of the cheque is processed), as well as by promoting the use of other instruments, particularly card payments.

## B. Special-purpose instruments

A *money order* is a payment product based on the credit transfer instrument and is used to transfer money remotely. It is often used where the payer and/or payee does not have a current account with a financial institution. It can be used for both domestic and foreign currency payments. In some systems, a money order is a paper-based instrument, while in others it is transmitted and processed as an electronic credit transfer. The money can be paid in and/or out as cash, but the money order is cleared and settled electronically. If the drawee is a postal institution, it is called a "postal order".

*Travellers' cheques* are prepaid paper-based products issued in specific denominations for general-purpose use in business and personal travel. They do not specify any particular payee, are non-transferable once signed and can be converted into cash only by their specified owner. They are generally accepted by banks, with many large retailers and hotels (and some restaurants) doing likewise.

A *bank draft* (also called a "cashier's cheque" or a "teller's cheque") is a cheque drawn by a bank on itself. Bank drafts may be written by a bank for its own purposes or may be purchased by a customer and sent to a payee in order to discharge an obligation.

These differ from personal cheques in that the payee does not have to worry about the creditworthiness of the payer and can instead rely on the payment being made by the payer's bank.

*Letters of credit* and *bills of exchange* are sometimes also referred to as payment instruments, although they are usually credit instruments which can, in some circumstances, be used for payments. A letter of credit is a promise by a bank or other issuer to make a payment to a third party on behalf of a customer in accordance with specified conditions. It is frequently used in international trade to make funds available in a foreign location. A bill of exchange is a written order from one party (the drawer) to another (the drawee) to pay a specified sum to the drawer (or a third party specified by the drawer) on demand or on a specified date. These are widely used to finance trade and, when discounted with a financial institution, to obtain credit.

## 1.5 TRENDS IN THE USE OF PAYMENT INSTRUMENTS

Over the past two decades the most significant long-term trend in the use of payment products has been the relative shift away from cash in favour of non-cash payment methods – particularly payment cards – for consumer payments, combined with increases in electronic and automated processing of payments more generally. The use of internet banking and internet shopping has also increased considerably, allowing payers to make payments regardless of location or time.

Innovations in retail payment products and delivery channels are not revolutionary changes. Instead, they merely represent new initiation and confirmation channels for existing payment instruments. For example, credit and debit cards were initially designed for face-to-face use on the (physical) premises of merchants, but are increasingly being used for remote transactions, such as telephone or internet purchases. However, since cards were designed with face-to-face transactions and verification in mind, the trend towards remote (i.e. “card-not-present”) transactions has increased fraud, with the result that card schemes have had to devise new ways of increasing security and implement remote authorisation and authentication measures.

Taking advantage of technological developments, a number of new payment initiation methods have emerged, using the internet, mobile networks and other information and communication technologies. These offer efficient means of electronically initiating and confirming payments that meet consumers' needs. Examples of such initiation services are “electronic bill presentment” (“e-invoicing”) and payments initiated and verified via mobile phones (“m-payments”). As regards payment confirmation, well-known services include electronic reconciliation (“e-reconciliation”), which matches bills and payments, and online account statements received via mobile phones or internet banking applications.

There have been many attempts to create payment products based on e-money, both through multi-purpose prepaid cards and on the basis of accounts. Only

a few attempts have been successful. This may be a result of low acceptance levels for e-money products on the part of merchants (owing to the high cost of installing and maintaining terminals in relation to potential savings), combined with the high acceptance levels for debit cards, which cover roughly the same types of payment transaction. The fact that the products are prepaid might also have contributed to their low acceptance levels.

In recent attempts, e-money schemes such as PayPal have used software-based technology, with funds stored on prepaid accounts for multi-purpose use.

## 1.6 COMMUNICATION NETWORKS

In the processing of payment (and other financial) transactions, the information allowing the transaction to be effected needs to be submitted and then exchanged between the various parties involved in the payment chain – e.g. sent from customers to their banks (possibly via intermediaries), processed within banks, and exchanged between banks participating in clearing and settlement systems. Such information used to be exchanged by means of paper slips and magnetic tapes, which required manual handling. Today, however, information is generally exchanged electronically, allowing the automation of many parts of the clearing and settlement process for payments. Fully automated end-to-end processing of transactions is often referred to as “straight-through processing”.

The use of payment networks helps to ensure that financial institutions are linked with their customers – as well as other participants in a payment system – in a cost-efficient manner. Such networks are used for initiating and carrying out financial transactions, transferring funds, and exchanging important financial information between a predefined group of users within an agreed time period. In most cases, access to such communication networks is contingent on minimum eligibility criteria. This ensures that participants and service providers meet predefined standards, which helps to limit financial risks and ensure a high level of security in the transmission of confidential financial data.

Transactions may be initiated via interconnected payment initiation devices positioned in various disparate geographical locations. Payment instructions are then transmitted to their recipients via communication networks in accordance with predefined protocols. Information sent via a communication network may be transmitted in real time (i.e. online) or at periodic intervals. It may be sent transaction by transaction or in batches (i.e. transaction packages) combining a number of transactions in a single “file”.

Examples of payment services that make use of communication networks can be seen below.

- *ATM services*: ATM networks link the ATMs of a bank or group of banks, allowing the cardholders of the bank(s) in question to use the ATMs of the network regardless of their location.

- *Card payment services*: POS networks link point-of-sale terminals and allow the use of payment cards for the purchase of goods and services in various locations.
- *Interbank clearing and settlement services*: These make use of communication networks to ensure that participating financial institutions can exchange financial messages quickly and securely.

Rather than using direct connections between two entities (i.e. point-to-point connections), today’s payment transaction processing relies on the use of communication networks for the exchange of data between multiple participants or devices. By enabling communication between multiple participants, communication networks have a number of advantages over point-to-point connections, in particular the reduction of costs for individual participants and increased reach. For more information on communication networks, see Box 2 below.

## Box 2 Selected issues concerning communication networks

### Proprietary and public communication networks

Communication networks can be classified as either “proprietary” or “public”. In *proprietary* communication networks, participants transact with each other via a central entity. The central entity sets access rules and fees and specifies the technical arrangements, including the selection of the type and provider of the communication network linking participants with other participating banks and other systems. All direct participants are known both to the central entity and to the other direct participants in the network. Entities with no direct access to the network can make use of the network’s services via a direct participant, which handles the relevant entity’s transactions on its behalf, resulting in tiered architecture.

In a *public* communication network, no centralised entity exists, since connectivity and network resources are shared by many different administrative units. Instead, there are direct links and bilateral transaction flows between individual participants in “peer-to-peer architecture”. Indirect participation via a direct participant is also possible.

The use of internet protocol (IP) technology by the providers of communication networks for payment systems has blurred the distinction between these two types of network. IP technology allows for the establishment of a single IP connection, replacing the multiple physical links between participants in a public system. It also allows participants to exchange messages bilaterally via a private communication network based on internet technology. Similarly, participants in a proprietary payment system are connected to the central entity via an IP link. Migration to IP technology has, for example, been observed for the communication networks of a number of major card payment companies with a regional and worldwide presence, as well as SWIFT.

SWIFT, the Society for Worldwide Interbank Financial Telecommunication, is a cooperative undertaking based in Belgium. Controlled by its members, which include banks (including central banks) and other financial institutions, it is one of the main providers of secure messaging services and interface software for payment systems.

SWIFT has three main tasks: (i) to supply secure messaging services and interface software; (ii) to contribute to the increased automation of financial transaction processes; and (iii) to provide a forum allowing financial institutions to address issues of common concern (e.g. standardisation) in the area of financial communication services.

#### **Developments in communication networks and their impact on payment systems**

Helped by explosive growth in new communication services (such as the internet, global alliances uniting communication carriers, and the rapid growth and widespread use of mobile communications and satellite technology), the range of services offered by communication networks has evolved rapidly over the past few years. Traditional communication network solutions are now being replaced with services offering managed or unmanaged encryption-based IP services.

These services now offer greater networking capability, scalability, operational simplicity and flexibility at lower cost. These rapid technological advances have, in turn, enabled the development of widely accessible payment system networks in addition to – or as an extension of – existing networks. In particular, the introduction of IP technology has enabled providers of communication networks for payment systems, such as SWIFT, to extend access to new market segments through additional data transfer and processing capabilities. In the case of SWIFT, new arrangements have been introduced allowing corporate entities direct access to its messaging services for the transmission of messages between corporations and financial institutions via its network.

In addition to these technological advances, the introduction of standards has played a major role in reshaping the payment network landscape. The development of appropriate standards as regards security and technology has allowed payment system networks to achieve compatibility with one another, making it easier to establish links between them and significantly increasing accessibility through the formation of interbank networks.

#### **Ensuring the security of communication networks**

The most critical issue for payment systems' communication networks is the security of the information transferred within them. In order to achieve a high level of security, a payment system must ensure the following for all data exchanged via its communication network.

- *Authenticity of the data:* Authentication allows a payment system to ensure that the senders and recipients of messages are really who they claim to be.
- *Integrity of the data:* Integrity in communication networks means that the recipients of messages can be sure that the information transmitted has not been manipulated in an unlawful manner.
- *Confidentiality of the data:* Confidentiality is achieved by allowing only network participants to view the information exchanged via the network.

– *Non-repudiation of the data*: Non-repudiation is a mechanism providing evidence of both the identity of the sender of a message and the integrity of that message, such that the sender is unable to deny the submission of the message or the integrity of its content.

Payment systems must also ensure that only legitimate users have access to the data transmitted via the network.

## 2 PROCESSING (INCLUDING CLEARING) OF PAYMENTS

Once a customer has submitted a payment instruction to his/her bank, it needs to be executed. If the payer and the payee hold accounts with the same institution, the payment can be handled within the books of the bank concerned – i.e. without the involvement of any other parties. These are called “in-house payments”. If the two parties hold accounts with different institutions, the money will need to be transferred from one to the other through interbank arrangements. In these interbank payments, the payment information has to be communicated between (and booked in the accounts of) the two institutions, and this results in interbank claims and liabilities between the two institutions which have to be settled. Settlement issues are considered in more detail in Section 3.

In general, there are two main types of arrangement for the handling of payments between different institutions:

- i) correspondent banking arrangements – either (a) bilateral arrangements, or (b) arrangements involving a service-providing third party;
- ii) payment systems (i.e. interbank funds transfer systems) – multilateral arrangements based on a common set of procedures and rules whereby financial institutions present and exchange data relating to the transfer of funds to other financial institutions.

Payment systems are the dominant arrangement for the processing and settlement of interbank payments. It is also possible to combine different arrangements. For example, a correspondent may submit payment instructions to a payment system on behalf of a customer bank.<sup>1</sup>

<sup>1</sup> This chapter explains how payments between payers and payees are handled. It should be noted that any payment arrangement should, besides having procedures for the normal handling of payments, also have procedures in place for handling situations where something goes wrong. These are called “R-transactions” and involve the processing of information messages and/or payments. Examples are *cancellations* (by the creditor bank prior to settlement; message), *revocations* (by the creditor prior to settlement; message), *rejections* (by the debtor bank prior to settlement; message), *refusals* (by the debtor prior to settlement; message), *reversals* (by the creditor bank after settlement; message and payment), *returns* (by the creditor bank based on a request by the debtor bank after settlement; payment) and *refunds* (by the creditor bank based on a request by the debtor after settlement; payment). For more information, see for example the SEPA credit transfer and core direct debit scheme rulebooks published by the European Payments Council (EPC).

Payment activities are subject to various risks, which need to be carefully managed. Risks and risk mitigation measures are discussed in more detail in Chapter 4.

## 2.1 IN-HOUSE HANDLING OF PAYMENTS

When the accounts to be debited and credited are held with the same financial institution, the settlement of the payment can in principle be performed in-house within that financial institution. Such transactions are also called “on-us” transactions.

There may, however, be differences between banks as regards the question of how payments between two of their account holders are handled. This depends, for example, on the account structure in the bank concerned. Where a bank holds all accounts centrally (e.g. at the level of the head office), all internal payments, including branch payments, are processed within the bank. Where banks decentralise the holding of their accounts to regional or local branch level, a bank needs an efficient internal network in order for a payment between two accounts to be handled internally. Some banks may even use interbank arrangements – i.e. access a payment system – in order to process payments between its branches. Such payments (i) are no longer “in-house”, and (ii) will contribute to increases in payment volumes in the relevant payment system and will be subject to the rules of that system.

It should also be noted that some payments may be processed as “book-entry transactions”. In the field of payments, this term refers to a credit or debit entry made by a credit institution on the account of a customer in accordance with a general instruction (i.e. a “mandate”) issued by the customer – e.g. in the case of a payment for the amortisation of a loan.

Over the years, bank mergers and the expansion of bank networks have increased the possibilities and scope for in-house settlement (including the settlement of cross-border payments), owing to the increased international reach of such banks.

## 2.2 CORRESPONDENT BANKING ARRANGEMENTS

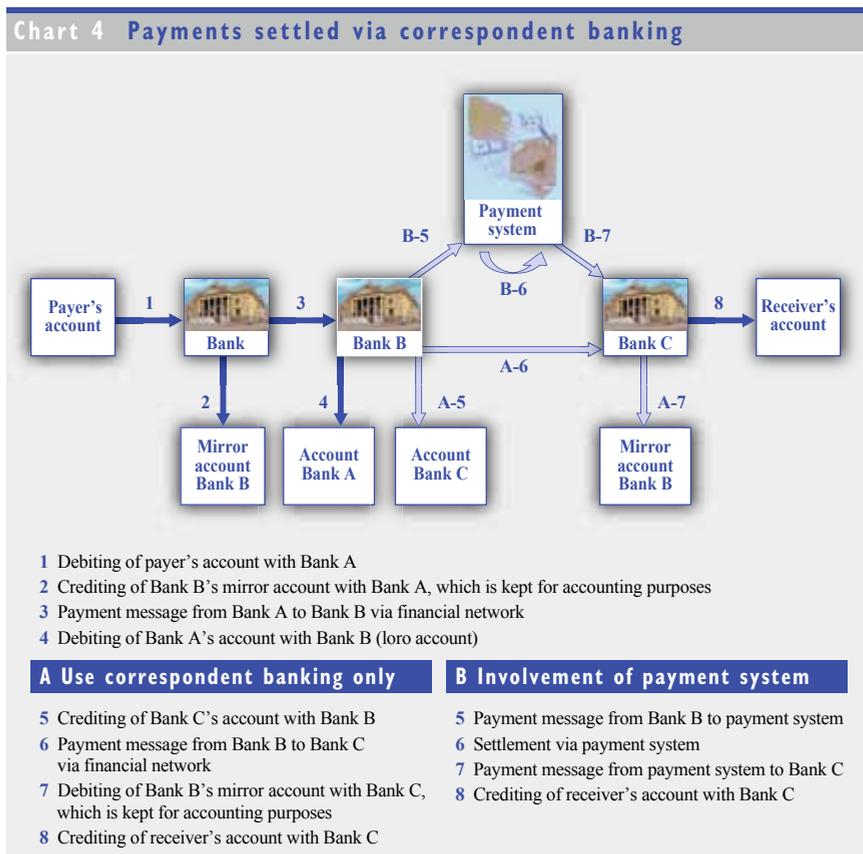
In bilateral correspondent banking arrangements, the two financial institutions handle the sorting and processing of payments themselves, without involving an intermediary.

Typically, though, the term “correspondent banking arrangements” refers to arrangements where the two financial institutions employ a third party – a separate financial institution known as a “correspondent” or “service-providing” bank. One or both institutions forward payment instructions to the service-providing bank for sorting and processing. The service-providing bank holds in its books an account for each bank for which it provides correspondent banking services. The service-providing bank regards this as a “vostro” or “loro” account; the customer bank considers it a “nostro” account. Banks generally provide services to a number of financial institutions, and these relationships are governed by contracts negotiated bilaterally. Correspondent banking relationships are also a well-established means of making cross-border payments (see Section 5.1).

Chart 4 shows the settlement of a payment from Bank A to Bank B via a correspondent bank. Since Banks A and B do not hold accounts with each other, they use a third party, Bank C (the service-providing bank), which holds accounts for both Bank A and Bank B. In principle, there could be further banks involved on the sending and receiving sides (as intermediaries in a correspondent banking chain).

The rules governing Bank A's account with Bank C are based on a bilateral agreement. Normally, Bank A will need to have funds available in its account with Bank C for the latter to execute payments for the former. In some cases, the service-providing bank may also extend intraday and/or longer-term credit to its customer bank – again subject to a bilateral agreement. As a rule, correspondent payments are handled on a gross basis.

Historically, correspondent banking arrangements were the most common form of settlement for non-cash interbank payments, both at national level and cross-border. With the establishment of payment systems for the settlement of domestic payments and, more recently, the setting-up of payment-versus-payment (PvP) systems for the simultaneous settlement of foreign exchange (FX) transactions (see Section 5.2), the importance of correspondent banking



Source: ECB (adapted from *Payment Systems in Denmark*, Danmarks Nationalbank, Copenhagen, 2005).

has diminished in certain areas. However, it remains very important as a way for institutions to access payment systems as indirect participants (i.e. with a direct participant – the correspondent – acting on their behalf) or in the settlement of transactions which cannot be executed using payment systems (such as transactions related to the financing of international trade).

### 2.3 PAYMENT SYSTEMS (INTERBANK FUNDS TRANSFER SYSTEMS)

The use of payment systems is the most common way of settling payment transactions involving accounts held in different financial institutions.

A payment system is a formal arrangement based on legislation or private contractual arrangements – with multiple membership, common rules and standardised procedures – for the transmission, clearing, netting and/or settlement of monetary obligations arising between its members. An interbank funds transfer system is a payment system in which all (or almost all) participants are credit institutions (and thereby subject to banking supervision). Consequently, this is an arrangement through which funds transfers are made between banks for their own account and on behalf of their customers. (For more details regarding participation, see Box 3 below.)

#### Box 3 Access to payment systems

The conditions governing participation in and membership of a payment system are known as “access criteria” and serve to define the potential members of a system. Access criteria may include minimum requirements for a potential participant, such as quantitative criteria (concerning, for example, a participant’s capital base, credit rating or payment volumes), qualitative requirements (relating, for instance, to the entity’s legal status), and technical, operational and geographical criteria. The basic objective of such access criteria is to ensure that individual members do not introduce an unacceptable financial, operational or legal risk into the system. There are two basic means of accessing a payment system: direct participation as a full member; or indirect participation via a direct participant.

*Direct participants* can perform all activities allowed in the system without using an intermediary – including, in particular, the direct inputting of orders and the performance of settlement operations. Direct participants have to fulfil all of the system’s access criteria. Typically, the identity of a direct participant is known to all parties. A *remote participant* is a special type of direct participant – one which has no physical presence in the country in which the system is located.

An *indirect participant* uses a direct participant as an intermediary in order to perform some of the activities allowed in the system (particularly settlement), doing so through the establishment of a bilateral agreement with the relevant direct participant. Indirect participants do not normally hold an account with the settlement institution, instead having to act via their direct participant. Their rights and responsibilities vary from system to system, and so they may or may not have to fulfil certain access criteria, and they may or may not be directly addressable in the system (i.e. without the need to specify the relevant direct participant on a payment order for the indirect participant).

If a system has both direct participants and a considerable number of indirect participants, its participation structure is described as “tiered”. Usually, eligible financial institutions are allowed to choose their preferred method of access. They will aim to minimise both the costs and the risks associated with participation, as well as taking account of other factors such as existing correspondent banking relationships (see also Chart 4). Indirect participation has traditionally been well suited to smaller domestic banks, as well as financial institutions accessing payment systems located outside their country of incorporation.

As multilateral arrangements, payment systems make the processing of payment instructions more efficient by coordinating the exchange of payment instructions and providing communication networks and processing services.

A payment’s route through a payment system starts with the *submission* of the payment order by the initiating bank. The submission of payment orders to payment systems and the processing of orders within those systems are typically automated. Where there is more than one payment system available for the interbank processing of payments, the initiating bank will need to choose which system to use for the payment concerned. Once submitted, the payment order will be subject to a range of *validation* procedures before being *accepted for processing* by the system. These validation procedures typically include verification that key data elements are present in the payment message and security measures to ensure both the identification of the originator and the integrity and non-repudiation of the payment order. If a payment message fails the validation procedures, it is not accepted by the system and is returned to the sending participant. After acceptance, depending on the rules and procedures of the payment system concerned, the further processing of that order may include matching, sorting, collection, aggregation, the exchange of relevant payment information between the financial institutions of the payer and payee, and the calculation of participants’ mutual positions, possibly on a bilateral or multilateral net basis, with a view to facilitating the settlement of those participants’ obligations in the books of a settlement institution.

One way of organising the clearing process is in the form of a *clearing house* (when automated, also referred to as an “automated clearing house” or “ACH”). A clearing house is an organisation that operates central clearing facilities, potentially also offering bilateral or multilateral netting arrangements. An alternative to the ACH model is the use of multilateral arrangements revolving around a “clearing association” – a coordinating body that organises and facilitates clearing for institutions, but does not operate central processing facilities.

Section 4 provides more information on issues related to the organisation and functioning of payment systems. However, before we look at the different types of payment system, it is important to consider a few issues related to settlement.

## Box 4 Netting

In economic terms, netting is the agreed offsetting of mutual obligations in order to establish single net settlement positions. Instead of handling a large number of payment instructions and settling them on a gross basis, two parties – or a group of parties – can achieve the same financial result by using netting arrangements and settling one single net position per party. Netting arrangements are used both for payments and for obligations (e.g. securities, derivatives and foreign exchange contracts). Multilateral netting is typically provided by a central entity, usually a clearing house or a central counterparty.

Incentives to enter into netting arrangements stem from the desire to reduce exposure to counterparty risk (including any capital charges associated with credit exposures) and the desire to reduce settlement-related costs, such as the cost of settlement instructions, the cost of holding balances and the cost of obtaining credit in order to effect settlement. However, efficiency considerations need to be balanced against risk considerations, including the fact that multilateral netting may shift and concentrate risks. First and foremost, netting arrangements need to be legally valid and enforceable (see Section 3 of Chapter 6). The various forms of netting are outlined below.

*Position netting* (also referred to as “payment netting” and “advisory netting”) is an offsetting arrangement where two or more parties agree to pay or receive a single net amount instead of settling individual transactions on a gross basis. Unless it is based on a formal agreement with a sound legal basis, the parties remain legally obliged to settle the gross amounts of their transactions. In the case of contracts for financial instruments, the parties may enter into a formal agreement on *binding payment netting*, whereby the parties agree to pay or receive funds on a net basis, but remain legally obliged to settle the gross amounts of the underlying contracts (e.g. gross delivery of securities in the case of a securities contract).

*Netting by novation* (also referred to as “obligation netting”) is an arrangement whereby obligations derived from individual transfer orders are netted and replaced by new obligations. Each time a transaction is submitted, novation takes place. The parties to the new obligations may be the same as the parties to the old ones. However, with some clearing house arrangements (such as central counterparty arrangements), there may also be some substitution of parties (referred to as “novation and substitution”; see Section 3.2 of Chapter 2).

A special form of netting, *close-out netting*, relates to the treatment of future obligations and follows certain contractually agreed events (such as the opening of insolvency procedures). In close-out netting, all existing obligations are accelerated (i.e. the present values of all amounts due in the future are calculated) and become due immediately.

A more detailed examination of issues related to netting arrangements can be found in the “Report on netting schemes” published by the Bank for International Settlements (BIS) in February 1989. In relation to the allocation of credit and liquidity risk in the various netting arrangements (assuming the legal enforceability of netting agreements), the report notes the following.

- (i) Bilateral position netting reduces liquidity risks to counterparties (and potentially other parties, such as correspondent banks) relative to an absence of netting. However, it leaves counterparty credit risks unchanged, or may lead to increases in such risks if net exposures are treated as if they were true exposures.
- (ii) Bilateral netting by novation reduces liquidity and credit risks to counterparties (and potentially the wider financial system, all other things being equal) relative to bilateral position netting or a complete absence of netting.
- (iii) Multilateral position netting may, under certain circumstances, reduce liquidity risks relative to bilateral netting or an absence of netting. If significant defaults occur, liquidity risks may increase. Credit risks are the same as in the absence of netting – or potentially larger. Credit risks are greater than in the case of bilateral netting by novation.
- (iv) Multilateral netting by novation and substitution has the potential to reduce liquidity risks more than any other institutional form, but this depends critically on the financial condition of any central counterparty involved in the netting. If the liquidity of the central counterparty is insufficient, the liquidity risks of this institutional form may be greater than in the case of bilateral netting by novation. The credit risks of this institutional form are generally less than in the other forms considered, again depending on the identity and condition of any central counterparty.

### 3 SETTLEMENT

In the field of payments, settlement is an act which discharges obligations between two or more parties. The settlement asset (see Section 3.1) is transferred between the parties concerned, with or without the use of a settlement agent (see Section 3.2). Settlement methods vary, with a choice between gross and net settlement, and between real-time and designated-time settlement (see Section 3.3).

For a payment instruction in a payment system, settlement occurs when funds are transferred from the payer's bank to the payee's bank. Settlement discharges the obligation of the payer's bank vis-à-vis the payee's bank in respect of the transfer.

As regards *settlement finality*, a payment is considered final when it becomes irrevocable and unconditional. The rules of each individual payment system define the precise moment at which finality occurs. Finality may occur the moment payment instructions are entered into the system and technically validated, the moment the payment instruction is processed and the resulting balance is settled, or at any point between those two extremes. In real-time gross settlement (RTGS) systems, the time lag between the submission of a payment and the point of finality is kept short. This reduces uncertainty as regards the possibility of the sending bank failing between the initiation and completion (i.e. settlement) of a payment.

In net settlement systems, and in RTGS systems with offsetting algorithms, it is essential for the legal system covering the system and its participants to recognise netting or offsetting as a valid form of settlement for payments.

### 3.1 SETTLEMENT ASSETS

Settlement assets are the assets, or claims on assets, that are accepted by a beneficiary in order to discharge a payment obligation. In the context of payment systems, a distinction is made between two types of settlement asset. First, central banks issue liabilities which function as money – i.e. *central bank money*. Central bank money is issued in the form of both banknotes and deposit liabilities. Second, commercial banks provide private money – i.e. *commercial bank money* – in the form of deposit liabilities that can be used for transaction purposes.

If a person buys a good for €100 and pays the seller €100 in cash, the transaction is settled immediately. The obligation to pay €100 is discharged immediately using central bank money. If the buyer chooses to pay by means of a transfer of funds, the obligation towards the seller is discharged when funds of €100 (in commercial bank money) are credited to the seller's account. However, when the funds transfer is made, more than one bank could be involved in the handling of the payment, creating an interbank obligation that needs to be settled. This interbank obligation will need to be settled separately, either in commercial bank money or in central bank money.

In payment systems, the settlement of payments using central bank money means that payments are settled via central bank accounts, where the recipient bank has a claim on the central bank and the paying bank either holds deposits with the central bank or has the option of obtaining credit from the central bank (generally against collateral). The majority of payment systems, particularly those processing large-value payments, settle in central bank money.

Using central bank money substantially reduces the credit and liquidity risks in payment and settlement systems. There is no credit risk on central banks, and central banks are able to create liquidity (i.e. increase the volume of central bank money) by lending money to participants for the settlement of payments. International standards for systemically important payment systems (SIPs) and securities settlement systems (SSSs) recommend that systemically important payment and securities settlement systems settle via central bank accounts (i.e. using central bank money, or equally secure funds which carry little or no credit or liquidity risk).

#### Box 5 Central bank and commercial bank money

Generally, economic agents are free to agree on the means of payment to be used to settle a transaction. However, the acceptance of any form of money will depend on the recipient's confidence that a third party will accept that money. Hence, the value of money lies in trust. Consequently, it is vitally important that trust and confidence in the currency be maintained, thereby facilitating the circulation of that currency. Central banks are tasked with achieving this vitally important objective.

Confidence in central bank money depends on the ability of the central bank to maintain the value of the stock of the currency as a whole – i.e. to maintain price stability. In turn, confidence in commercial bank money depends on the ability of commercial banks to convert their sight liabilities into the money of another commercial bank and/or central bank money where this is demanded by their clients. In a modern, well-functioning economy with a sound financial system, the general public does not draw a distinction between central bank money and commercial bank money, as commercial bank money can easily be converted into central bank money such as banknotes and coins at par. In other words, exchange rates exist between different currencies, while there is a one-to-one “conversion rate” between the two components of a given currency. An essential feature of a national payment system is the fact that it involves the circulation of two types of money which are of uniform value.

Preserving the uniform value of the currency is a key task entrusted to the central bank. It is important that a currency have a uniform value, as otherwise a currency cannot perform its “unit of account” function in an effective manner. If banks’ liabilities had different values, different prices would have to be set for every good or service for each of the bank monies used – i.e. depending on whether a consumer paid with the liabilities of one bank or another. If the uniform value of the currency was not guaranteed, there would, in effect, be multiple currencies within what is meant to be a single currency area, thereby creating a major obstacle to trade in what is meant to be a single market. Although economic activity can, in principle, take place without the coexistence of central bank and commercial bank money, they are alternatives in many respects.

Having multiple issuers of money preserves the advantages of competition in the provision of innovative and efficient payment services – and, indeed, in the provision of financial services in general. The regulated and licensed nature of these issuers (i.e. banks) aims to signal their solvency and liquidity, thereby preserving confidence in the currency. And the use of central bank money in payment systems puts the value of commercial banks’ liabilities to the test every day by checking their convertibility into the defined unit of value.

The two extreme alternative arrangements of mono-banking (where the central bank acts as the sole issuer of money) and free banking (where commercial banks provide all the money required by the economy) have not proven to be sufficiently stable or efficient. Thus, central bank and commercial bank money typically coexist in a modern economy, and this coexistence should be preserved. A healthy amount of competition between banks, combined with the use of central bank money, is essential if the financial system as a whole is to be maximally efficient and effective.

Central bank money has five qualities that recommend it to economic agents. These are set out below.

- *Safety*: Central bank money is generally completely safe, as there is no credit risk on the central bank.

- *Service continuity*: The use of a default-free settlement institution can limit the risk of service being interrupted.
- *Liquidity*: The ability to create liquidity in domestic currency may be important for the smooth operation of the system.
- *Neutrality*: Central banks are generally neutral and do not discriminate between market participants.
- *Efficiency*: The use of a single settlement institution to settle different types of transaction may, for example, enable participants to economise on liquidity use.

Each bank can choose whether it wishes to be an indirect participant, holding its funds and making payments through another commercial bank, or a direct participant, holding its funds and making payments through the central bank. There is a convention whereby central banks avoid competing with commercial banks in most of the payment services provided to the non-bank public, for example by seeking to apply fair pricing policies.

In the context of the continued globalisation of financial markets, financial institutions active in securities, foreign exchange, derivatives and other financial markets are increasingly making and receiving payments in multiple currencies. Thus, having the central bank act as the settlement institution may not always be practical, as the provision of central bank money is typically restricted to the central bank's area of jurisdiction. Although central banks can address some of the implications of globalisation through mutual cooperation, the use of central bank money in payment systems needs to be balanced against the decision of a given commercial bank to use the payment services of another commercial bank rather than those of the central bank. As a result, some banks are direct participants in payment systems and settle in central bank money, while others prefer to use the services of those direct participants in order to effect their payments. The practice of correspondent banking is highly developed and broadly accepted for cross-border payments. Thus, while central bank money plays an important role in the economy, which may also imply the provision of large quantities of central bank money, the use of central bank money needs to be balanced against the objectives of:

- promoting competition in the banking industry in order to encourage innovation;
- limiting the risk borne by the central bank;
- avoiding moral hazard as far as possible.

Although central banks encourage or require the use of central bank money in systemically important payment systems, in practice banks are typically the primary holders of settlement accounts. Commercial banks are central banks' core customers, but there are a few exceptions where central banks have other account holders. In addition to non-commercial entities (such as government, foreign central banks and international financial institutions), central banks also offer accounts to licensed and supervised commercial financial institutions outside the banking sector, such as securities firms and

clearing houses. These institutions are also directly involved in payment and securities settlement systems. At a global level, policies differ as to which institutions are allowed to hold settlement accounts with the central bank. Such variations typically reflect differences in the range of settlement services offered by the central bank, different trade-offs between safety and efficiency, and different judgements on permitting broader or narrower access to central bank accounts.

Source: *The role of central bank money in payment systems*, CPSS, BIS, Basel, August 2003.

## 3.2 SETTLEMENT INSTITUTIONS

The settlement institution (or “settlement agent”) is the institution across the books of which transfers between participants take place in order to achieve settlement as part of a settlement arrangement. The settlement institution will be either a central bank (providing settlement in central bank money) or a commercial bank (providing settlement in commercial bank money).

Only for cash payments (i.e. payments using banknotes and coins) is there no need for the involvement of a settlement agent. Thus, for all non-cash payments either a commercial bank or the central bank will act as a settlement institution.

Interbank settlement in correspondent banking can take place either directly between the two banks involved, with one bank holding an account with the other, or via a third-party settlement agent (a service-providing bank) holding accounts for the two banks concerned.

Multilateral interbank settlement in payment systems relies on a settlement agent. This could be the payment system’s operator or another designated institution. For large-value payment systems, the settlement agent is the central bank, irrespective of the ownership structure of the system. In the case of retail payment systems, risk considerations and payment systems oversight requirements determine the choice of settlement agent (which, again, is normally the central bank).

## 3.3 SETTLEMENT METHODS

Settlement can be gross or net, and conducted in real time or at designated times.

- *Gross vs net settlement*: In gross settlement, each payment instruction is passed on and settled individually across the accounts of the paying and receiving banks, resulting in a debit and credit entry for each and every payment instruction settled. In net settlement, payment instructions are netted in accordance with the rules and procedures of the system, and the number of resulting bilateral or multilateral net claims is smaller than the number of original payment instructions.
- *Real-time vs designated-time settlement*: Real-time settlement occurs on a continuous basis during the operational day. Designated-time settlement occurs at pre-specified points in time, ranging from a single settlement cycle at the end of the day to frequent settlement cycles during the day (see also Box 6).

## 4 SELECTED KEY ISSUES IN PAYMENT SYSTEMS

### 4.1 TYPES OF PAYMENT SYSTEM

A payment system is usually classified as a “large-value” or “retail” payment system depending on the main type of transaction processed in the system. *Large-value* payment systems (LVPSs), also called “wholesale payment systems”, are systems which are designed primarily to process urgent or large-value payments. These payments are exchanged between financial institutions in relation to financial market activities and are generally for large amounts and require urgent or timely settlement. Thus, a system handling such payments needs to meet high safety and efficiency standards. Some LVPSs also process a large number of low-value or retail payments, but the systems are designed primarily on the basis of the safety requirements for the processing and settlement of wholesale payments. Most LVPSs settle in central bank money. *Retail* payment systems are designed to handle a large volume of relatively low-value payments, such as credit transfers, direct debits and card payments. Retail payment systems may settle in either central bank or commercial bank money.

Depending on their settlement methods, payment systems are divided into four design types, as shown in Table 1, with the most common forms being real-time gross settlement and designated-time net settlement (DNS).

- Real-time gross settlement systems effect the final settlement of individual payments on a continuous basis during the processing day and are the predominant form of LVPS.
- Designated-time net settlement systems settle the net positions of participants at one or more discrete pre-specified settlement times during the processing day. This is the main form of retail payment system, often with several settlement cycles during the day. Net settlement LVPSs usually settle once at the end of the day.
- Designated-time gross settlement systems exist in some countries. In these systems, the final settlement of transfers occurs at the end of the processing day with no netting of credit and debit positions – i.e. on a transaction-by-transaction basis or on the basis of the aggregate credit and debit positions of each bank.
- Hybrid systems combine the features of gross and net settlement – e.g. frequent offsetting of transactions and frequent final settlement during the day.

Settlement method	Gross	Net
Designated-time (deferred)	Designated-time gross settlement	Designated-time net settlement
Real-time (continuous)	Real-time gross settlement	Hybrid systems

It is worth stressing that the distinction drawn between the different systems, such as RTGS and DNS systems, concerns the form of settlement, not the form of transmission or processing. Like RTGS systems, many net settlement systems transmit and process payment messages (including delivering them to receiving

<b>Table 2 Main payment systems in the euro area and the G10</b>					
<i>(data for 2008)</i>					
<b>Country/area</b>	<b>System</b>	<b>Type</b>	<b>Number of transactions (millions)</b>	<b>Value of transactions (EUR billions)<sup>1)</sup></b>	<b>Average value per transaction (EUR thousands)<sup>1)</sup></b>
<i>A. Large-value payment systems</i>					
Euro area	TARGET2	RTGS <sup>2)</sup>	89.0	607,841	6,827
Euro area	EURO1	MN	64.2	73,040	1,138
Canada	LVTS	MN	5.7	29,260	5,133
Japan	BOJ-NET	RTGS	8.5	194,173	22,844
Japan	FXYCS	RTGS	7.5	34,049	4,540
United Kingdom	CHAPS	RTGS	34.6	89,900	2,598
United States	Fedwire	RTGS	131.4	513,309	3,906
United States	CHIPS	MN/BN/G	92.0	345,906	3,760
Global	CLS	RTGS	134.4 <sup>3)</sup>	690,073	5,134
<i>B. Retail payment systems</i>					
Euro area	STEP2 <sup>4)</sup>	BA	383.4	1,905	5.0
Euro area	CORE	MN	12,491.3	5,234	0.4
Euro area	Equens	MN/BA	4,039.8	2,003	0.5
Euro area	RPS	MN	2,465.4	2,345	1.0
United Kingdom	VOCA (formerly BACS)	N	2,578.7	4,916	1.9
United States	FedACH	BA	11,172.0	13,374	1.2
Canada	ACSS	MN	5,731.0	3,371	0.6
Japan	Zengin System	MN	1,368.2	17,660	12.9

Sources: ECB, BIS, Bank of Japan and Federal Reserve System.

Types: BA = batch settlement; BN = bilateral netting; G = gross settlement; MN = multilateral netting; N = netting; RTGS = real-time gross settlement; HY = hybrid system.

1) Red Book US dollar figures have been converted to euro using the 2008 average exchange rate of 1.4708.

2) Since May 2008 the second-generation TARGET2 (T2) system, operated on a single shared platform, has fully replaced the first-generation decentralised TARGET system. TARGET2 has some features that resemble those of a hybrid system.

3) Each side of the transaction is counted separately. Spot and forward transactions have two sides, while swaps have four.

4) Includes the STEP2 XCT, ICT and SCT services.

participants) in real time on a transaction-by-transaction basis. However, they settle, by definition, on a net basis at discrete intervals.

More information on the different types of system can be found in Box 6 below.

### Box 6 Different types of payment system

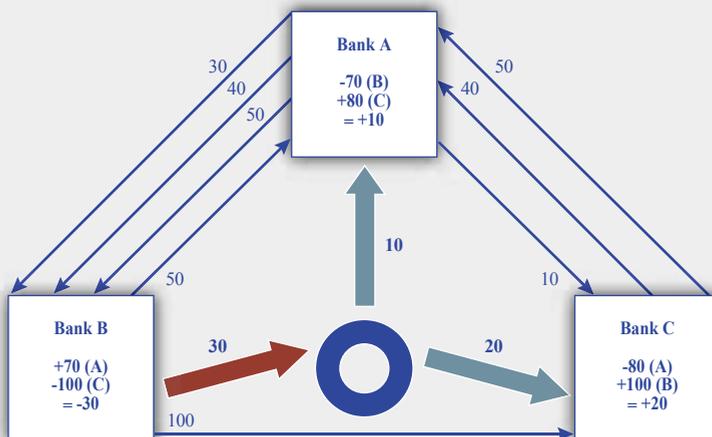
#### Designated-time net settlement systems

In a net settlement system, the settlement of system participants' obligations occurs on a net basis in accordance with the rules and procedures of the system. *Netting* is the agreed offsetting of mutual obligations by two or more parties and the calculation of net settlement positions. This can be performed on a bilateral or multilateral basis. Netting can take several forms, which have varying degrees of legal enforceability in the event that one of the parties defaults.

At fixed times during the settlement day (or, in some systems, whenever a transfer order enters the system), each participant's net position is calculated. This is calculated as the sum of the values of all of the transfers the participant has received, minus the sum of the values of all of the transfers the participant has sent. Thus, at settlement time each participant has a net settlement position, which can be a net credit position or a net debit position. The net settlement positions are settled by being booked to the participants' accounts with the settlement institution.

The netting service is typically provided by a clearing house or a clearing association, but may also be organised in other ways. Moreover, the submission of net obligations for settlement may be organised in various ways. Positions may be reported to all participants with a view to them sending settlement instructions to the settlement institution. Alternatively, the provider of netting services may be authorised by participants to send settlement instructions to the settlement institution on their behalf, or the settlement institution may be authorised to make the necessary entries in

#### Chart A Payments settled in a multilateral net settlement system



Source: ECB.

participants' accounts on the basis of the information on settlement obligations that it receives from the provider of netting services. Finally, there are various models for the actual conduct of settlement. If the clearing house maintains a settlement account with the settlement institution, all debit positions are typically first paid to this account (the "pay-in" stage) and all credit positions are then paid from the account (the "pay-out" stage). If the clearing house does not have an account with the settlement institution (a less common model), information on all net obligations may be communicated to the settlement institution, which will try to settle all obligations in a "logical block" whereby either all debit and credit entries are successfully booked, or nothing is booked (the latter being the case if one of the participants with a net debit position does not have sufficient funds (or overdraft facilities) available on its account).

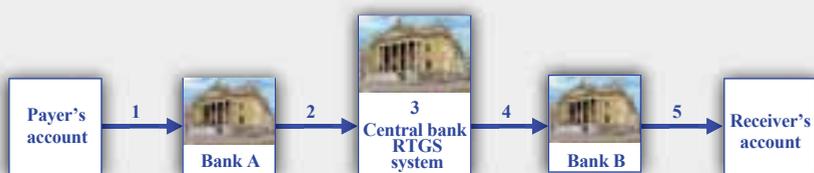
For LVPSs with net settlement, the settlement institution is, as a rule, the central bank. For retail net settlement systems, the settlement institution is often the central bank, but in exceptional cases it may also be a commercial bank. Chart A illustrates the netting effect achieved in a multilateral arrangement with three participants processing their mutual payments on behalf of customers via a net settlement system.

The netting of participants' obligations in net settlement systems considerably reduces their liquidity requirements by comparison with RTGS systems by reducing the number and overall value of settlement payments between financial institutions. However, the positions built up during the day are exposed to credit risk.

#### RTGS systems

In RTGS systems, each payment is settled individually as soon as the transfer order is submitted and accepted for settlement, provided that the payer has sufficient funds (or overdraft facilities) available on its account. RTGS systems typically process credit transfers, which are initiated by the payer. These are settled by (simultaneously) debiting the payer's account and crediting the beneficiary's account, after which a payment is considered to be final. Chart B illustrates the settlement of a payment from one participant to another in an RTGS system, with the central bank acting as the settlement institution.

**Chart B Payments settled via an RTGS system**



- 1 Debiting of payer's account with Bank A
- 2 Submission of payment instruction to the RTGS system
- 3 Settlement of payment – i.e. debiting of Bank A's account and crediting of Bank B's account with the central bank
- 4 Transmission of information on the payment to Bank B
- 5 Crediting of receiver's account with Bank B

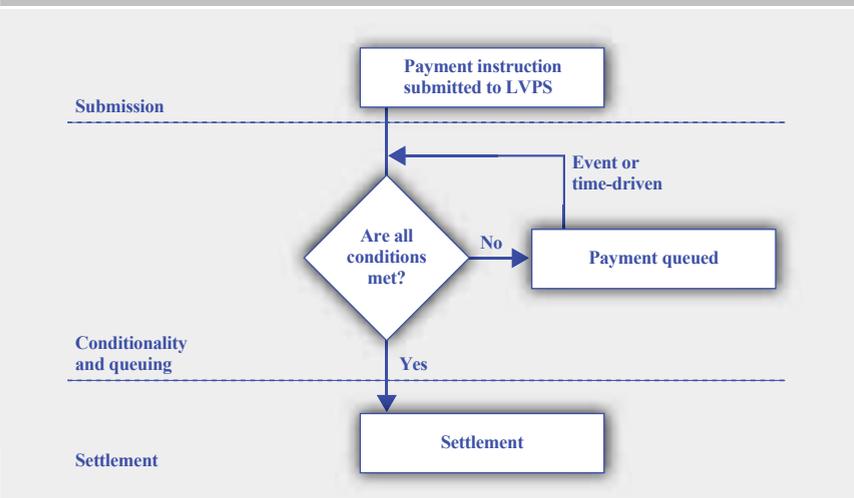
Source: ECB (adapted from *Payment Systems in Denmark*, Danmarks Nationalbank, Copenhagen, 2005).

RTGS systems have the advantage that payments become final immediately at the time of settlement (i.e. in the course of the day), so there is no intraday exposure to credit risk. The adoption of such safer systems has been strongly supported – and often initiated – by central banks. The number of RTGS systems increased dramatically in the 1990s, and today most modern economies have an RTGS system. In most RTGS systems, the settlement bank is the central bank, which typically also owns and operates the system.

The continuous individual settlement of payments in RTGS systems means that participants have large intraday liquidity needs, which are several times those observed in DNS systems. In order to make the settlement of payments more flexible, central banks normally offer participants intraday credit, which is typically fully collateralised. Some more sophisticated RTGS systems may also allow participants to establish limits as a way of controlling the outflow of settlement funds. Such limits may be set on a bilateral or multilateral basis. (By contrast, in some countries banks have set up internal payment schedulers so as to be able to better control their liquidity outflows – i.e. they do not submit their large payments to the central system before (i) they have enough liquidity available, (ii) they have received a payment from a particular participant, or (iii) other set criteria have been met.)

In the event that the payer’s funds are insufficient for immediate settlement, or other conditions governing settlement are not met, the transaction order is queued (or, less commonly, rejected and returned to the sending participant). The queue facility may also include features that support participants’ liquidity management, such as the option to (i) assign different priorities to different payments, (ii) view the contents of the queue, (iii) change the order of queued payments, or (iv) cancel queued payments. Normally (i.e. if no particular priorities have been assigned), the earlier a payment is submitted to the system, the higher up it will be in the queue.

**Chart C The settlement process with a central queue**



Source: *New developments in large-value payment systems*, CPSS, BIS, Basel, May 2005.

The ways in which payments are released from the queue (i.e. tested for settlement) differ from system to system depending on the queue release algorithms used. These can be classified as follows:

- Simple algorithms consider the queue of a single participant and release payments on a first-in, first-out (FIFO) basis. The payment at the head of the queue is released and settled when covering funds become available, and only then is the payment behind it in the queue considered for settlement. A strict FIFO approach may cause large transactions at the head of the queue to block the settlement of subsequent transactions.
- Intermediate algorithms also consider the queue of a single participant, but may deviate from the FIFO principle – e.g. by allowing a sending participant to reorder or revoke queued payments, to set different priority levels for payments, or to use a bypass mechanism.
- Complex algorithms consider the queues of several participants and search those queues for a set of payments between those participants that largely offset one another. Those payments are then settled by means of offsetting – i.e. either the individual payments are all effected simultaneously on a gross basis at the same legal and logical second, or net balances are settled. These algorithms can work on a multilateral or bilateral basis and can be run at discrete intervals (either at designated times or following a decision by the system operator) or be event-driven (being run, for instance, every time a participant’s account is credited with an incoming payment or every time a payment is added to the queue).

Intermediate and complex queue release algorithms increase the system’s capacity to settle payments, thereby reducing queues, speeding up the settlement process and reducing intraday liquidity needs. Recent technological progress has made it possible for bilateral and multilateral offsetting algorithms to be used as a standard settlement feature in RTGS systems and run continuously, thereby creating hybrid systems which close the gap between gross and net settlement and between real-time and designated-time settlement.

RTGS systems are typically used by financial institutions for the settlement of large-value and/or time-critical payments – e.g. money market transactions, foreign exchange transactions and the cash leg of securities transactions. These systems are also used for the settlement of settlement obligations stemming from ancillary systems such as retail net settlement systems. As a result, transaction values in RTGS systems are usually very high. Indeed, an annual turnover of more than 50 times a country’s gross domestic product is not unusual.

Participants in central bank-operated RTGS systems may, depending on the policies of the central bank concerned, have access to various central bank facilities. First, they need to be eligible to open a settlement account. Second, they may have access to intraday credit (typically granted against eligible collateral). They may also be eligible for access to overnight credit and deposit accounts, as well as regular (or emergency) refinancing operations conducted by the central bank.

### Hybrid systems

A number of more recent payment systems combine the liquidity-saving elements of net settlement systems with the intraday finality advantages of RTGS systems. These cannot be classified either as pure RTGS systems or as pure net settlement systems and are therefore often called “hybrid systems”.

The emergence of such hybrid systems can be attributed to factors such as the development of more sophisticated settlement optimisation tools. By contrast with pure net settlement systems, which typically execute a small number of daily settlement cycles, most hybrid systems seek, as far as possible, to effect continuous settlement. This is based on optimisation routines (e.g. offsetting) or a large number of daily settlement cycles. If the number of settlement cycles is infinitely large, this resembles an RTGS system. Participants often also have access to a number of sophisticated liquidity management tools in addition to queue management facilities, most notably the option to reserve liquidity for time-critical payments.

A hybrid system may have two settlement modes – a “traditional RTGS mode” for high-priority payments; and an “offsetting mode” for lower-priority payments – with separate pools of liquidity reserved for the two modes. In the offsetting mode, the system will search queues for groups of payments that largely offset one another and can therefore be settled together simultaneously, on a gross basis, using a limited amount of liquidity. In terms of the liquidity needed for settlement, this resembles the economic effect of netting, but in legal terms it is still gross settlement.

As a rule, there is normally more than one payment system in a country. While in terms of the processing of transactions, such payment networks and systems may work as stand-alone arrangements, it may, for various reasons, be necessary or desirable to have some form of interaction between systems.

- Ancillary systems may be linked with settlement systems (i.e. the systems used for the final settlement of ancillary systems’ (gross or net) settlement balances) at one or more designated times. An *ancillary system* is a system in which payments (or securities) are processed, while the ensuing monetary obligations are settled in another system (the settlement system), typically an RTGS system. This kind of link can be seen, for instance, where the net settlement balances of large-value DNS systems are settled in RTGS systems, or the settlement balances of retail payment systems are settled in LVPSs. Such links are typically within a single country or currency area.

- Settlement systems of the same type and currency may be linked across national borders within a currency area (e.g. using an interlinking system, which allows for the processing of transactions across systems within a network), or a settlement service may be provided by a common system operated on a common IT platform. The most prominent example of that second type of area-wide system operating in a single currency is TARGET2, which is operated on a single shared platform, providing real-time settlement in central bank money in euro (see Chapter 11).
- Settlement systems operating in different currencies may be linked with a view to enabling settlement across currencies (e.g. using a central settlement institution or settlement agent that operates a multi-currency system and multiple currency accounts; see Section 5.2).
- There may also be links allowing interoperability between national and/or international networks and schemes – e.g. for ATM or POS networks, card schemes and clearing houses. Interoperability arrangements allow the processing of transactions across networks or systems, but need to be supported by separate settlement arrangements.

The structures and procedures for such interaction between different systems vary greatly and are not elaborated on here.

## 4.2 CARD PAYMENT SYSTEMS

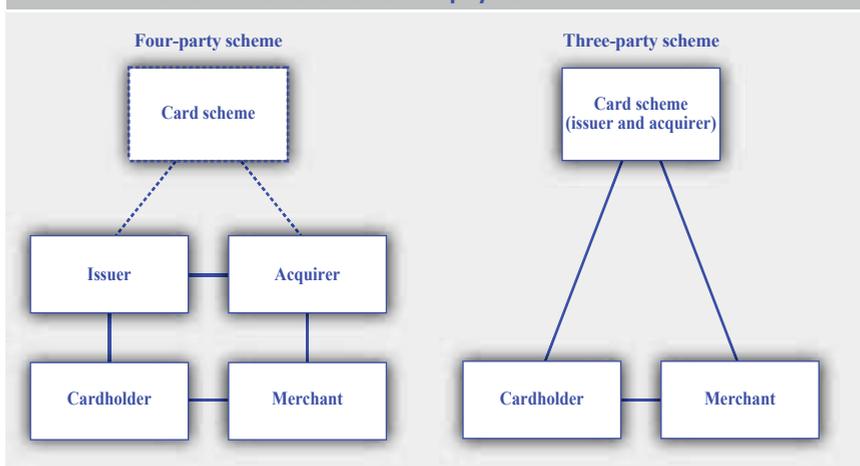
While card payments are an important part of a national payment system, some elements of their handling are specific to this payment instrument. This explains the inclusion of a separate section considering issues related to card payments.

A *card scheme* is a technical and commercial arrangement set up to serve one or more card brands which provides the organisational, legal and operational framework necessary for the functioning of the services marketed by the brand. Card transactions have to be carried out in a consistent manner in order for cards to be considered a reliable payment instrument. Consequently, all parties involved need to conform to a common set of rules. These rules are laid down by the card scheme. Among other things, a card scheme (i) determines the standards to be applied for POS terminals and ATMs, (ii) decides where liability lies in the event of fraud, and (iii) deals with issues related to the technical infrastructure. Card schemes are usually owned by credit institutions or banking associations.

The *card issuer* is the financial institution that makes payment cards available to cardholders. In addition, a card issuer manages a cardholder's card account and may extend credit to the cardholder. It also authorises transactions at POS terminals or ATMs and guarantees that the acquirer will receive payment for transactions that are in conformity with the rules of the relevant scheme.

The *acquirer* is the entity that manages the account for the merchant. Acting on behalf of the merchant, it forwards the information resulting from a transaction for further processing and ensures that money is received for the goods or services

## Chart 5 Business models for card payments



Source: ECB.

purchased. For POS transactions, the acquirer is the entity (usually a credit institution) to which the *acceptor* (usually a merchant) transmits the information necessary in order to process the card payment. For ATM transactions, it is the entity (usually a credit institution) which makes banknotes available to the cardholder (whether directly or via the use of third-party providers).

There are two main business models for card payments: *three and four-party schemes*, as illustrated in Chart 5. In three-party schemes, the scheme itself is responsible for the issuing of cards and the acquisition of transactions. A four-party scheme, by contrast, relies on separate actors, normally banks, for issuing and acquiring.

There are four steps in a card transaction: (i) initiation; (ii) authentication; (iii) authorisation; and (iv) clearing and settlement.

Card transactions can be initiated either at a terminal (such as an ATM or a POS terminal) or remotely in the form of card-not-present transactions – e.g. where purchases are carried out by e-mail, over the telephone or on the internet.

Once the transaction has been initiated, the card and cardholder need to be authenticated. Authentication of the card usually involves reading the magnetic strip or chip, or checking the CVC/CVV2 (a three-digit code printed without relief on the back of the card, data which is not included in the magnetic strip) for card-not-present transactions. The cardholder's identity is usually authenticated using a PIN code or a signature.

Once the card and the cardholder have been successfully authenticated, authorisation is usually requested. However, this stage may be skipped in some cases (e.g. for transactions below a certain value), at the risk of the card

## Box 7 Fraud prevention

ATMs and POS terminals are the main initiation points for card transactions, and are therefore critical for the prevention of fraud. This, in turn, requires the implementation of (typically costly) measures to combat fraud. An example of this is the ongoing migration to cards with microchips. The chip – along with its alternative, the magnetic strip – contains information that is used for the authentication of cards. The advantage of the chip is that it is significantly more difficult to counterfeit than a magnetic strip. The chip is an important technological solution for combating fraud and is gradually replacing magnetic strips on cards across Europe. EMV (an abbreviation of “Europay, MasterCard and Visa”) is increasingly the most common standard for these microchips. However, magnetic strips will continue to coexist with EMV chips for some time as a secondary solution where chip-reading technology is not available. There are also some regions of the world where the EMV standard has not yet been adopted.

acceptor. The terminal forwards the request for authorisation to the acquirer, to the acquirer’s processor or to the card scheme. If the acquirer and the issuer are one and the same, such transactions are referred to as “on-us” transactions and the acquiring bank carries out the authorisation itself. For transactions other than “on-us” transactions (i.e. where the issuer and the acquirer are not the same), authorisation may be obtained offline or online. In offline authorisations, the request is handled directly by the card acceptor’s terminal. In most cases, however, the authorisation is online and the request passes from the terminal to the acquirer. The acquirer may directly authorise or refuse the transaction, but will in most cases pass the transaction to a switching centre. The switching centre transfers the authorisation request and transaction information to the appropriate issuer or the authorisation platform (which may be the card scheme or a third-party service provider). The authorisation process usually includes checking the card details against a list of cards that have been reported as having been lost, stolen, used fraudulently or counterfeited. Checks on balances and card limits (i.e. daily and monthly limits) are usually also carried out.

Following authorisation, a transaction will be forwarded for clearing and settlement. The routing to clearing and settlement agents is not standard and varies from scheme to scheme. The authorised transaction information may be forwarded by the POS terminal or the ATM to the switching centre and then on to the issuer, or sent directly to the clearing agent or the acquirer. Where it is sent to the acquirer, the acquirer extracts the “on-us” transactions and sends the rest of the authorised transactions – usually at the end of the day, in batch mode – either to the issuer or directly to the clearing system. The transfer of money from the cardholder to the issuer and from the acquirer to the merchant is carried out in accordance with the contractual agreements between those parties. The transfer of money from the issuer to the acquirer takes place in accordance with the rules of the card scheme.

## Box 8 Two-sided markets and interchange fees

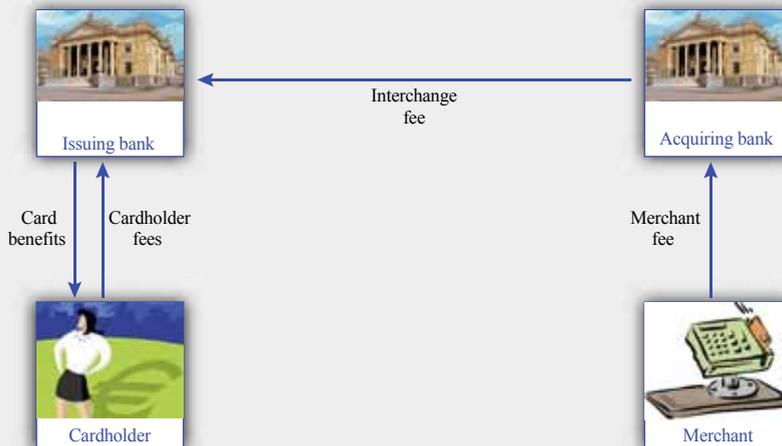
Card payment schemes sell their services to two groups of users. The first group consists of cardholders, who use their cards to buy goods and services. The second group are merchants, which offer their customers the possibility of paying by card. These two groups of users can be said to constitute two different parts – or “sides” – of the market for card schemes. Markets enabling interaction between two groups of end users are commonly referred to as “two-sided markets”. (For more information on two-sided markets, see Section 6 of Chapter 5.)

Card schemes set prices for cardholders and merchants with a view to maximising transactions and aggregate profits for card scheme members. When setting these prices, the scheme therefore takes into account the demand by merchants and the demand by cardholders. It also needs to consider what effect a price change on one side of the market will have on the other side of the market. For instance, an increase in cardholder prices will reduce demand on the part of cardholders and cause a decline in merchant demand.

The price structure will depend on how sensitive each side of the market is to changes in prices. The side with lower price elasticity of demand will accept higher prices than the side with higher price elasticity. For card payments, the elasticity of demand is lower for merchants than for cardholders. This implies that merchants’ demand for a given card scheme is affected less by changes in prices and card providers could afford to raise the prices they charge merchants in order to maximise profit. The prices for merchants could therefore be higher than the prices for cardholders.

Three-party schemes deal directly with both sides of the market and are therefore free to set prices for merchants and cardholders directly. In four-party schemes, however,

## The interchange fee structure



Source: ECB.

the two sides of the market are served by different entities, and there is a need for a mechanism allowing prices to be set on both sides of the market that will maximise profit for card scheme members. *Interchange fees* can perform that function. Through the use of such fees, card schemes can ensure that revenue obtained from merchants is shared between issuers and acquirers. Every time a card payment is made, an interchange fee is paid by the acquirer to the issuer (see the fee structure in the chart). The interchange fee normally covers processing costs, as well as costs incurred by the issuer in relation to the payment guarantee (including the cost of fraud) and any period of free funding provided to the cardholder. It can take the form of a percentage of the underlying transaction value, a fixed price per payment or a combination of the two. In order to recover its costs – and potentially make a profit – the acquirer, in turn, charges the merchant a fee (a “merchant service commission”). Interchange fees are usually the main component of the merchant service commission. Merchants also need to recover the costs paid to acquirers. To this end, they can increase the general level of prices, or (if they are able to do so) place a surcharge on card payments if card payments are more expensive to process than other payment instruments.

The same logic applies to the use of cards for withdrawing money at ATMs. In that case, the interchange fee usually goes in the opposite direction – i.e. from the issuer to the owner of the ATM, which will also be the acquirer.

### 4.3 OFFSHORE SYSTEMS

Payment, clearing and settlement systems processing (payment, securities or derivatives) transactions denominated in a currency other than that of the country (or currency area) in which they are established (i.e. legally incorporated) are generally called “offshore systems”.

In modern globalised markets, offshore systems have been established for specific purposes, such as:

- serving local needs by providing local entities with the opportunity to settle transactions denominated in a foreign currency within the local time zone, thereby allowing cost savings to be achieved in these local entities’ foreign currency-based activities;
- additional risk reduction, particularly the reduction of settlement risk, through the use of payment-versus-payment mechanisms (see Section 5.2) and/or delivery-versus-payment (DvP) mechanisms (see Chapter 2) where transactions involve more than one currency and/or the clearing and settlement of securities in a foreign currency;
- the maximisation of efficiency, as the combination of the large fixed costs of setting up market infrastructures and the considerable economies of scale in their operation provides global financial market participants with incentives to establish infrastructures serving markets operating in more than one currency.

Many of the existing offshore payment systems have been set up with a view to organising a local clearing and settlement arrangement for cheques denominated

in foreign currency on account of the frequent use of such cheques in the country concerned. However, some offshore systems around the world settle large-value and commercial payments on a real-time gross basis with immediate finality.

As the central bank of the country where the offshore system is located cannot create central bank money (i.e. grant credit) in a foreign currency (as central bank money can only be provided by the issuing central bank), offshore systems typically use a commercial bank as the settlement institution. This can entail risks, as discussed in Section 2.3 of Chapter 4. Some of the existing offshore systems have been classified as systemically important systems.

While the settlement institution for offshore systems is usually a commercial bank, with the result that settlement takes place in commercial bank money, liquidity (i.e. for the funding and defunding of settlement positions) has to be delivered in the country/area of issue of the relevant currency. Time zone differences, combined with the fact that offshore systems that are (or have the potential to be) of systemic importance require substantial liquidity for settlement (intraday liquidity in the case of RTGS or hybrid systems, and end-of-day liquidity in the case of net settlement systems), might in turn have serious implications for the central bank of issue in terms of monetary and financial stability. Daily fluctuations in the liquidity needed in the offshore system affect demand for money in the country of issue, and volatility and structural shifts in demand may have a negative impact on the issuing central bank's ability to forecast demand and control interest rates. Offshore systems also raise a number of issues related to policy, oversight and competition.

The central bank of issue has a responsibility to address risks to the monetary and financial stability of its currency. For the issuing central bank, offshore systems may pose great challenges (e.g. regarding the adequacy of crisis communication and the provision of liquidity), as relevant information might not be available in a timely manner. Moreover, offshore systems may face greater risk management challenges in crisis situations – in particular as regards liquidity risk – where they have no access to central bank facilities (such as payment services and credit) at the central bank of issue. Ultimately, offshore systems could undermine the issuing central bank's control over monetary and financial stability. Settlement in commercial bank money might also conflict with the issuing central bank's general policy of promoting settlement in central bank money, particularly as regards systemically important systems.

Central banks have a strong interest in the safety and efficiency of systems settling transactions denominated in the currency they issue. Offshore systems, particularly those of systemic importance, should therefore be subject to central bank oversight. The oversight of offshore systems should be based on the internationally agreed principles for cooperative oversight, as set out in the report by the Committee on Payment and Settlement Systems (CPSS) in May 2005 on "Central bank oversight of payment and settlement systems". Accordingly, the central bank of issue (or "home central bank") should be directly involved in the oversight of the design and operations of offshore systems. This strong involvement in oversight should also help to ensure a level playing field for offshore and domestic systems.

Offshore systems should not provide an opportunity for regulatory arbitrage. The central bank of issue would be concerned if the “offshore central bank” set oversight requirements that were less onerous than those set by the home central bank for domestic systems.

## **5 CROSS-BORDER AND CROSS-CURRENCY PAYMENTS**

### **5.1 ISSUES IN CROSS-BORDER PAYMENTS**

Cross-border payments can involve just one currency, or they can require currency conversions (in which case, they are “cross-currency payments”). Cross-border payments add complexity to the clearing and settlement process seen at domestic level, in that they typically involve more than one geographical area or jurisdiction and more than one currency. In addition, most banks do not participate directly in payment systems outside their country of legal incorporation and therefore need another financial institution to act as an intermediary in order to access the system and settle payments in the local currency. In addition, while for domestic payments there are formalised payment systems and other multilateral payment arrangements, this is rarely the case for cross-border payments:

- there are few formalised systems, with cross-border payment arrangements traditionally based on correspondent banking relationships;
- the bank originating the payment has to arrange for settlement in the local currency of the bank receiving the payment;
- in the destination country, the payment may have to pass through a payment system in the local currency before it reaches the ultimate beneficiary;
- funding is effected in a foreign currency.

With rapid increases in international trade and finance, the need for cross-border payments is also rising fast. There has recently been an increase, for example, in the role played by big international players. Where a payer’s bank has branches or subsidiaries in many countries, this may give it access to the payment system of the bank of a beneficiary in another country. Thus, there is increasing foreign participation in national payment systems and in national financial markets more generally. There are also linkages between the payment systems of various countries. These linkages can take a variety of forms and can be used, for example, for regularly occurring bulk payments such as pension payments.

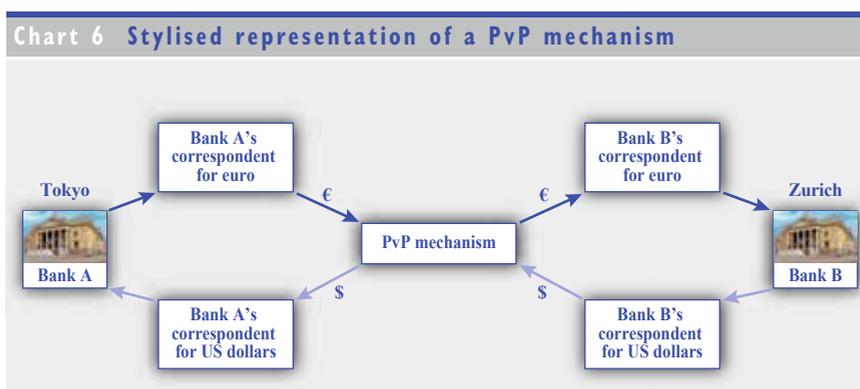
Payment systems are therefore increasingly interdependent. One of the main issues considered in international cooperation and discussions between central banks in the field of payment and securities settlement systems is the perceived need to bring all such systems – or at least those systems which have the potential to create a systemic threat in the event of their disturbance or failure – up to a common level of safety and robustness.

## 5.2 FOREIGN EXCHANGE TRANSACTIONS AND PAYMENT-VERSUS-PAYMENT ARRANGEMENTS

There are two key challenges in the settlement of foreign exchange transactions. First, for each foreign exchange trade, there will be two payment delivery legs, one in each currency. Traditionally, the two legs were processed independently in separate systems serving the respective currencies (e.g. using traditional settlement methods such as correspondent banking). Second, owing to time zone differences and differences in the operating times of the two payment systems involved, the settlement of the two legs is unlikely to be synchronised. To address this foreign exchange settlement risk, PvP mechanisms have been introduced, so as to link the two settlement legs and make them conditional on each other.

There are two main types of PvP arrangement. The first involves the counterparties settling their trades on the books of a specialist foreign exchange settlement institution (a trusted third party), which ensures that the currency purchased is paid out only if the currency sold is received – i.e. the trade is settled on the accounts of the two members concerned by simultaneously debiting the accounts by the amount of the currency being sold and crediting them by the amount of the currency being bought. This virtually removes the principal risk. The most prominent example of a PvP mechanism is the Continuous Linked Settlement (CLS) system. CLS Bank is a special-purpose bank legally incorporated in New York, in the United States. (For more information on CLS, see Chapter 8.)

The second involves the establishment of direct links between payment systems using the currencies being traded. This kind of PvP arrangement exists in Hong Kong for foreign exchange trades involving euro, Hong Kong dollars and US dollars. Hong Kong has local RTGS systems in each of these currencies (see Chapter 8). Once payments are matched and funds are available for settlement, a “matcher” will trigger the simultaneous settlement of the relevant payments in the two RTGS systems involved. Any unmatched payments at the end of the day are cancelled. In 2006 the central banks of Hong Kong and Malaysia set up a cross-border PvP link between Hong Kong’s US dollar RTGS system and Malaysia’s ringgit RTGS system in order to settle these currency



Source: ECB.

pairs on a PvP basis. Moreover, in 2009 a system was set up in China for the PvP settlement of the renminbi against the euro, the US dollar, the Japanese yen, the pound sterling and the Hong Kong dollar.

A third – but rarely used – form of PvP involves settlement obligations arising from trades being settled on the books of a single correspondent bank, where both counterparties have accounts with that bank in the relevant currencies and that bank explicitly offers a PvP service.



## CHAPTER 2

# KEY CONCEPTS – SECURITIES

### I GENERAL ASPECTS

#### I.1 THE SECURITIES MARKET

Financial markets are important for the efficient allocation of resources in the economy and economic growth. Modern financial markets are characterised by the presence of a variety of financial instruments, including securities (such as debt instruments and equities) and derivatives (such as futures, options and swaps).

One important component of the financial market is the *securities market* (another being the *derivatives market*, which is explained in Chapter 3). The purpose of a securities market is to bring together two groups of participants: those who have capital to invest (i.e. investors) and those who want to borrow that capital (e.g. firms and public bodies). Thus, as an alternative to borrowing money from an intermediary (e.g. a bank), firms and public bodies can raise funds directly from investors by issuing securities.

Securities markets are marketplaces where securities are bought and sold. Securities markets are divided into two categories: primary markets and secondary markets. A *primary* market is a market in which newly issued securities are offered for sale. They may be offered to the public in a procedure called an “initial public offering” (IPO). Alternatively, they may be offered to select investors in a private placement. The primary market is thus a place where firms and public bodies (i.e. issuers) raise the funds they need for investment purposes. By contrast, the *secondary* market is where securities are bought and sold once they have been issued in the primary market. *Investors* are households, firms and other economic actors that invest surplus funds or savings in order to earn a return on their holdings. Investors normally trade in securities markets through an intermediary. *Institutional investors* are a particular type of investor and mainly comprise banks, mutual funds, pension funds and insurance companies.

For the securities market to work, it needs to be underpinned by arrangements and infrastructures for the handling of securities. As in the case of payment systems, this involves intermediaries, rules, procedures and processes, as well as organisations that provide trading, clearing and settlement services. It relies on institutions that provide securities accounts and related services. There are market arrangements, such as standards, conventions and contracts for the provision and use of various services, as well as arrangements for consultation and cooperation within the industry and with other stakeholders. Again, these operations and systems need to be underpinned by a sound legal basis – which includes laws, standards, rules and procedures laid down by legislators, courts, regulators, intermediaries, system operators and central bank overseers.

The infrastructures and arrangements for the handling of securities are, to some extent, more complex than those for the handling of payments. Since securities are, as a rule, delivered in exchange for payment, there are two delivery legs to consider – the cash leg and the securities leg. The handling of securities also involves a wider range of functions and participants.

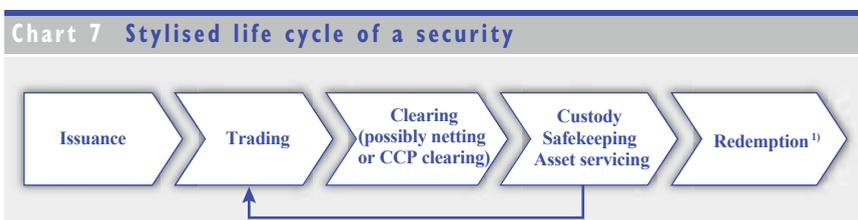
## 1.2 FUNCTIONS AND INSTITUTIONS IN THE SECURITIES INDUSTRY

This section aims to provide an overview of the various entities that are active in securities markets and the functions they perform. In this respect, it looks at the issues relevant in the various stages of the life cycle of a security, as illustrated in Chart 7.

The first stage in the life cycle of a security is *issuance* – the creation of new securities. The entity issuing the securities is called the *issuer*. Securities used to be issued as physical certificates, but are nowadays largely issued only in book-entry form – i.e. they exist only as electronic accounting records. A *notary function* will provide for the registration of securities with a registrar and subsequently ensure that there is no undue creation of securities. This function is often assigned to a *central securities depository* (CSD), a “storehouse” providing for the safekeeping of securities. A corresponding service for international securities (i.e. Eurobonds) is provided by international central securities depositories (ICSDs).

CSDs have different types of *holding structure*. A CSD may hold accounts for all final owners of securities (“direct holding”). Alternatively, in a tiered structure, intermediaries (*custodians*) hold accounts (“omnibus accounts”) with the CSD, while themselves holding accounts on their books for final owners (“indirect holding”). Mixed structures, combining features of the two types of holding structure, are also common. As part of this safekeeping, CSDs – and in particular custodians – also provide asset servicing, ranging from the handling of corporate events (coupon or dividend payments, splits, etc.) to more sophisticated and diverse services, such as accounting, risk analysis, collateral management and securities lending.

In *trading*, buyers and sellers agree to exchange securities for funds in accordance with agreed terms. Trading may take place at an exchange or multilateral trading facility (“public markets”), or in the over-the-counter (OTC) market or at other trading venues (“private markets”). Investors are those who buy, hold and sell securities. Since access to trading venues is regulated and/or restricted, most investors will not directly participate in trading themselves, but instead use intermediaries, such as *broker-dealers*. When the intermediary executes trade



Source: ECB.

1) For debt instruments (e.g. bonds).

orders on behalf of a customer, it is said to be acting as a *broker*; when it executes trades for its own account, it is said to be acting as a *dealer*.

Once a securities trade has been agreed, the parties to the trade confirm the terms agreed, and instructions are generated for the execution of the trade (i.e. the delivery of securities and the transfer of funds) and sent for clearing and settlement. *Clearing* includes the process of transmitting, reconciling and, in some cases, confirming securities transfer orders prior to settlement, possibly including the netting of orders and the establishment of final positions for settlement. In some markets, there may be a *central counterparty* (CCP), a central provider of clearing services which interposes itself between the two parties and provides multilateral netting and centralised risk management.

The actual delivery of the securities and the corresponding payment is referred to as “settlement”. Settlement services are offered by CSDs, which operate securities settlement systems. Sometimes an intermediary (e.g. a custodian) can effect settlement internally in its own books. As a rule, securities are delivered against payment in a DvP procedure, unless it has been agreed that securities will be delivered free of payment (FOP). DvP requires interaction between the SSS and a payment system. The cash leg may be settled at the central bank or in the books of a commercial bank.

It is important to note that issuance, safekeeping (i.e. custody) and asset servicing are primary market activities relevant for any security created. Trading, clearing and settlement services occur only when there is secondary market activity. These services are also referred to as “trading” and “post-trading services”. The latter may involve anything from the matching of trades to clearing and settlement. These issues are explained in more detail in subsequent sections.

<b>Function</b>	<b>Institutions</b>
Notary function	Issuer CSD for each security issue (sometimes shared with registrars); ICSDs for the Eurobond market
Trading	Exchanges; over-the-counter markets; electronic communication networks (ECNs); broker-dealers; investors
Clearing	CSDs; agent/custodian banks; CCPs
CCP function	CCPs
Settlement	CSDs; agent/custodian banks
Banking function	Banks (Some CSDs, as well as the two ICSDs, also hold a banking licence and can provide banking services.)
Custody (safekeeping) function	CSDs; custodian banks; brokers (if permissible under the applicable legislation)
Other services (e.g. processing of corporate actions)	Custodians (mainly local agents)

Source: Chan, D. et al., “The securities custody industry”, *Occasional Paper Series*, No 68, ECB, Frankfurt am Main, August 2007.

### 1.3 ISSUANCE AND CENTRAL SECURITIES DEPOSITORIES

In modern economies, the volume of securities being issued and traded is so large that, in order to ensure the efficient and safe issuance, safekeeping and transfer of securities, these are issued directly in the books of a public registrar, a special entity serving a whole securities market. The registrar maintains issuer accounts and carries out the notary function, ensuring for each issue that the amount of securities issued equals the amount of securities outstanding at all times, thereby ensuring that there is no undue creation of securities. In most jurisdictions, the notary function is entrusted directly to the CSD – the entity responsible for the safekeeping and transfer of securities for the whole market. In a few jurisdictions, however, the notary function is entrusted to a separate registrar. Where this is the case, the CSD interacts with the registrar to notify it of changes in ownership and reconcile the balances of its safekeeping accounts with those of the registrar’s issuance accounts.

Thus, a CSD will normally hold two types of securities account: issuer accounts, and safekeeping accounts recording ownership of outstanding securities. Issuer accounts are relevant only for the issuance of securities and the fulfilment of the notary function. Transfers of ownership as a result of secondary market trades do not affect issuer accounts.<sup>2</sup> Instead, the CSD simply registers any change of ownership by means of a book-entry transfer from one safekeeping account to another. As CSDs were set up to centralise the holdings of national securities markets, they were, at the outset, typically domestic in scope. A security is normally issued in a *single* CSD.

Between the decision to raise funds through securities markets and the actual issuance of securities, a number of administrative steps need to take place: the issuer usually appoints a bank (which participates in the local CSD) as an “issuing and paying agent” (IPA). The IPA is usually charged with requesting the securities’ unique International Securities Identification Number (ISIN) from the securities market coding agency. In the interests of efficiency, this coding agency function is usually assigned directly to the local CSD, but in some jurisdictions it can be performed by a separate entity. The IPA also collects funds from securities underwriters and transfers the funds to the issuer. The IPA may also deal with the exchange on behalf of the issuer if the securities are going to be listed.

<sup>2</sup> Legally, a security always represents an obligation on the part of the issuer. Even if an issuer buys back securities, these securities continue to exist. Only if they are legally cancelled do they actually cease to exist.

#### Box 9 Developments in issuance

Originally, issuance involved a physical certificate, which was delivered to the investor. For security reasons, investors needed to keep certificates in a safe place, and often held them at their bank. This solution became impracticable as securities markets grew, since events such as splits that took place during the life cycle of a security involved the annotation of the certificate, and some rights contained in parts of the certificate required separate processing (e.g. in the case of coupons).

Over time, it became apparent that the general processing of securities could be significantly improved in terms of safety and cost-efficiency by concentrating certificate holdings in a single depository. As a result, central securities depositories were created in the various national markets (sometimes with different CSDs holding different asset classes). Thus, with the introduction of electronic processing technology, the industry moved over to the recording of holdings in book-entry form, with certificates being *immobilised* at the CSD.

Nowadays, following technological and legal advances, securities are *dematerialised* – i.e. they are issued only in electronic, book-entry form in the issuer’s account in the books of the CSD. Nevertheless, there are still some markets where the legal framework provides for the issuance and immobilisation of a physical certificate prior to book-entry settlement of transfers.

When securities were issued as physical certificates, it was often the case that the name of the holder needed to be added to both the certificate and the books of the issuer. That meant that, in terms of legal ownership rights, one certificate was not freely interchangeable with another. However, where immobilisation or dematerialisation are employed, each security held electronically in a safekeeping account represents a “fraction of equal value” of a particular securities issue. Such fractions are freely interchangeable and the security is said to be “fungible”. Fungibility is important in the context of repurchase agreement (“repo”) and securities lending activities, as, for any given securities issue, any fraction returned to the owner will be just as valuable as any other fraction.

In addition to national CSDs, there are also international central securities depositories. The 1970s saw the growth of an international securities market for debt instruments which were issued outside the issuer’s country of residence and were not subject to the market regulations, bond market conventions or settlement practices of either the issuer’s country of residence or the country of issue (with the result that such certificates were sometimes described as “homeless”). These international securities became known as “Eurobonds” (with the prefix “Euro” not relating to the currency, but instead being derived from the fact that such instruments were first issued by US issuers for non-US investors, which were mainly located in Europe). Eurobonds are issued in the form of physical certificates, which are then immobilised.

The growth of this market made it necessary to set up specialist institutions to centralise settlement processing, similar to what CSDs had done for national securities markets. Consequently, two ICSDs – now called “Euroclear Bank” (based in Belgium) and “Clearstream Banking Luxembourg” – were set up. While the ICSDs’ main focus has been the facilitation of international activities, they also provide some national CSD services. Besides Eurobonds, ICSDs also provide services for securities (i.e. “normal” debt instruments and equities) that have been transferred to them – via link arrangements (see Section 5) – after originally being issued in a national CSD.

**Table 4 Comparison of services provided by CSDs and ICSDs**

Central securities depositories	International central securities depositories
Depository for domestic securities	Depository for Eurobonds and other securities transferred to them
Clearing, settlement and custody	Clearing, settlement and custody services for international players
Traditionally, no value-added services	Multi-currency and value-added services

Some special features characterise the issuance procedures for Eurobonds. One important feature is the fact that, by contrast with national CSDs, ICSDs have not traditionally had a direct relationship with the securities issued. This has been due to the fact that, although Eurobonds are issued as physical certificates, the two ICSDs have not themselves had vaults in which to store securities issued in physical form. Instead, Eurobonds have been deposited in depositories, typically private banks, which have held the (physical) securities in safekeeping. The further book-entry recording of the securities has then been allocated to the two ICSDs in shares that depend on where the underwriters, the initial investors or their intermediaries hold their accounts – i.e. depending on whether they are members of one ICSD or the other. For this reason, and as an exception to the issuance principle of “one CSD for one security”, it has been possible for the same Eurobond to be “held” and settled in two systems. Changes implemented since mid-2006 in the issuance procedures for Eurobonds mean that CSDs – and the ICSDs themselves – have become directly involved in issuance (see also Box 10 below).

**Box 10 Eurobond issuance**

Eurobonds are issued as physical certificates, and in two forms: *global note* form, where the entire securities issue is represented by a single physical certificate (the form chosen for 90% of Eurobonds); and *individual note* form, where each issue is split into units and each unit is represented by one piece of paper. Global notes can be further subdivided into two categories: *bearer form securities*, where the physical paper certificate serves as the legally relevant record of the indebtedness of the issuer; and *registered securities*, where a private registrar (i.e. a bank) appointed by the issuer keeps the legally relevant record of the indebtedness of the issuer.

Eurobond issues are held in depositories, of which there are two types. Eurobonds in global note form have traditionally been held in safekeeping in *common depositories*, with Eurobonds in individual note form held in *specialised depositories*. While there is one single common depository for each Eurobond issue in global note form, there are typically two specialised depositories for each Eurobond issue in individual note form, one for each of the two ICSDs. The use of depositories means that the custody risk related to Eurobonds has some special features.

As of mid-2006 the issuance procedures for Eurobonds in *global bearer form* have changed, with the establishment of the “New Global Note” scheme. Under this new framework, a direct contractual relationship is established between the issuer and the ICSDs. The issuer is allowed to deposit the physical note in a CSD or ICSD (rather than a private bank), and the ICSDs’ records are considered to be the legally relevant records of both the indebtedness of the issuer and the amounts held on customer accounts with each ICSD. For Eurobonds in *global registered form*, a new scheme along broadly the same lines as the New Global Note arrangement has been set up by the ICSDs and has been available since mid-2010.

Given the declining issuance levels and the already relatively small outstanding amounts for Eurobonds in *individual note form*, there is not enough justification for revising their custody arrangements. These assets have therefore been withdrawn from the list of assets eligible for Eurosystem credit operations. A grandfathering period ending on 30 September 2010 has been established, whereby securities of this type that are issued on or before that date will remain eligible for use as collateral until they reach maturity.

#### 1.4 HOLDING STRUCTURES AND THE CUSTODY INDUSTRY

Securities holding structures can, in general, be divided into direct and indirect holding systems. The terms “direct” and “indirect” refer to the question of whether the investors’ ownership of securities is recorded at the CSD level (“direct”) or the next tier down (“indirect”) in a custody chain. In an indirect holding system, ownership records for end investors will be held not only by the CSD, but also by other entities – custodians.

A *direct holding system* is a custody arrangement which allows end investors to be individually recognised as the ultimate owners of securities at the level of the CSD. The registration and maintenance of changes in the ownership of securities is carried out centrally in the books of the CSD. Direct holding systems exist in several European countries (e.g. Denmark, Finland, Greece, Slovenia and Sweden), as well as outside Europe (e.g. in the Middle East, South-East Asia and China). Direct holding systems are either (i) mandatory as a result of national law, (ii) voluntary, or (iii) combine features of the two (“hybrid systems”). In mandatory systems, all end investors are recognised in the CSD. In hybrid systems, it is typically only domestic end investors’ holdings of securities that have to be recognised at the level of the CSD.

A common feature of the various direct holding systems is the fact that an end investor has to assign an *account operator* for its account(s) in the CSD. The account operator can be any CSD participant that has the right to operate direct holding accounts, including the CSD itself. The account operator is responsible for the maintenance of the account and the carrying-out of any updates as regards the holdings on the account, although these are technically executed in the CSD.

In a direct holding system, corporate events (coupon or dividend payments, share swaps, splits, etc.) need to be booked on accounts maintained in the CSD. The CSD will have to be capable of booking instructions for corporate events

(such as share splits) without delay, which in a direct holding system could be a fairly onerous task. In direct holding systems, the processing of corporate events typically also includes the calculation of any taxes on income.

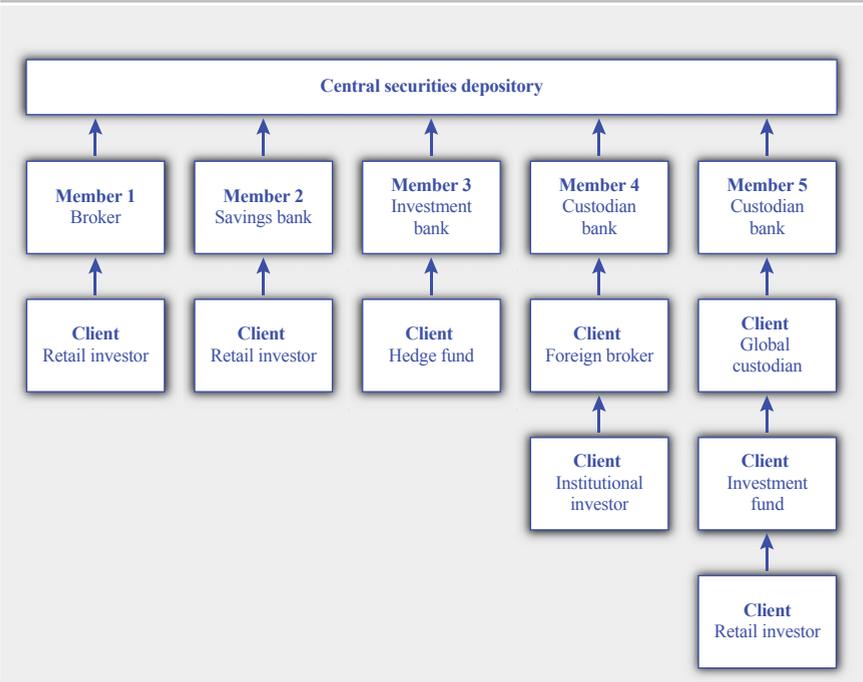
Most direct holding systems were introduced as a result of the majority of the equities in the relevant markets being issued as registered shares. The CSD systems were therefore established on the assumption that the registered owner should also be the person registered on a given securities account. There would then be no need for any custody intermediation and the CSD would be seen as the issuer's agent. In some new markets, the direct holding model has been introduced in the context of large initial public offerings, especially where government-owned businesses have been offered to the public. In that case, the direct holding model is seen as a way of executing such IPOs in a cost-efficient way, having them managed by just one entity (or very few entities).

In an *indirect holding system*, some (or all) end investors' holdings of securities are not recognised at the level of the CSD. Instead, "blocks of securities" are held in intermediaries' accounts with the CSD (called *omnibus accounts*, as they group together the holdings of several investors in one single account with the CSD), while those intermediaries (i.e. custodians) manage the end investors' accounts internally in their own systems. This results in fewer accounts being held at the CSD level. The ICSDs apply the indirect holding model.

Investors may not want to hold – or may not be allowed to access – accounts with the CSD. They therefore make use of the intermediation services of custodian banks (or, depending on the local jurisdiction, other types of non-bank financial intermediary that are allowed to provide custody services). These investors hold their securities accounts with a custodian, which is also charged with executing settlement orders on their behalf. The custodian chosen may hold an omnibus account directly with the CSD, or it may hold one with another intermediary, thereby itself acting as a *sub-custodian*. In this way, a *custody chain* is established (see Chart 8). Each tier holds the ownership records for the tier below. For example, the CSD's records reflect securities ownership by custodians, while the custodians' own records reflect ownership by their direct customers. The custodian bank's ability to keep records of its customers' holdings is critical in order to protect its customers' ownership rights. In order to preserve the integrity of the securities holdings, it is essential for each tier in the custody chain (i.e. each custodian bank) to reconcile its account balances with those of the custodian in the next tier, up to the balances of the accounts held in the CSD. (In the event of discrepancies, the balances of the CSD accounts prevail, as the CSD can be considered the ultimate custodian.)

CSDs provide custody services only to those market participants that are allowed to participate in their systems. Consequently, the custody industry is an important part of the securities market infrastructure and is characterised by the presence of different participants meeting the demands of different investors in different ways, providing services that range from very basic safekeeping to targeted, value-added services.

**Chart 8 Examples of multi-tiered intermediation in securities custody**



Source: Chan, D. et al., “The securities custody industry”, *Occasional Paper Series*, No 68, ECB, Frankfurt am Main, August 2007.

Some custodian banks have specialised in providing access to a variety of markets and offer a “one-stop shop” for international investors. These custodians ensure a presence in numerous national markets by establishing local subsidiaries or branches, or by means of a network of agreements with local sub-custodians, which access the local infrastructures on their behalf (a less frequent solution being remote participation in foreign infrastructures). For this reason, such entities are called “global custodians”.

Custodians receive instructions from their customers and take care of settlement. In theory, they can either forward the instructions to the CSD or, if both parties (and their brokers) are customers of the same custodian bank, “internalise” settlement (i.e. execute the transaction by means of book entries in their own accounts). Where settlement is internalised, the balance of the custodian bank’s account with the CSD will not change. Although statistics on the extent of internalised settlement are not publicly available, custodian banks indicate that it is usually incidental and marginal, even for the largest custodians, because the conditions that must be met in order for internalised settlement to occur are very specific. For example, the client chooses its own trading counterparty, but a custodian cannot settle the transaction in its books unless the counterparty also happens to be a client. At the same time, the securities positions of the two customers that are transacting must be in the same (omnibus) account held with the CSD – with internalised trades resulting in internalised settlement only if the broker of both counterparties is also the custodian.

## Box 11 Some advantages and disadvantages of direct and indirect holding systems

In an indirect holding system, the broker/custodian will split exchange trades into various client transactions in its internal accounting system, and the legal transfer of securities will take place at that stage. This is not possible in a direct holding system, as a broker's internal system may not have legal validity for settlement purposes. Consequently, direct holding requires that the securities settlement system operate at the highest level of ownership – i.e. at the level of the CSD. Exchange trades will therefore need to be split into numerous settlement entries at the booking stage.

An obvious advantage of direct holding systems is that the notary and registry functions – as well as most corporate event and settlement functionalities – can all be performed by the same entity, the CSD. The settlement procedures result in the final and irrevocable transfer of ownership at the end investor level. The accounts held with the CSD represent the legal register for a given security, which makes it easy for the CSD to perform functions related, for example, to corporate events and distribute holder lists for issuers (e.g. where coupon or dividend payments have to be made). One disadvantage is the increased amount of information that needs to be submitted to the CSD for each transaction, since there is a need for information on the end investor in addition to purely trade-related information. Furthermore, a direct holding system requires far more accounts with the CSD than indirect holding systems, in which, for cost-efficiency reasons, a broker often carries out a bulk sale or purchase for a number of underlying end investors rather than effecting separate transactions for each individual client.

## 2 TRADING

### 2.1 TRADING VENUES AND PARTIES

Once a security has been issued in the primary market, it can be sold in the secondary market.

Securities are often listed on a stock exchange – an organised and recognised market on which securities can be bought and sold. Issuers may seek to have their securities listed in order to attract investors, ensuring that the market is liquid and regulated and investors are thereby able to buy and sell securities. Securities are also bought and sold over the counter. OTC markets are used for unlisted securities.

Prices are determined by auction bidding at an exchange, and by negotiation between buying and selling parties (through telephone communication, computerised networks of quotation terminals, etc.) in the case of OTC markets.

The securities trading landscape is changing, with the emergence of new markets and infrastructure. In addition to traditional exchanges, new recognised marketplaces (such as multilateral trading facilities) and other new trading venues (such as electronic communication networks) have been introduced. ECNs are order-driven, screen-based electronic markets for securities trading which bypass

traditional market-makers. In addition, some investment firms are offering their customers sub-trading platforms for securities traded on several exchanges. A securities firm may become a member of several exchanges and allow its customers access to these exchanges via the firm's in-house trading platform. Thus, trading between two members of the same firm is not channelled to the original exchange, instead taking place on the books of that firm.

Investors may be able to trade directly in these markets, but they tend to resort to the intermediation of brokers and dealers. *Brokers* act as agents for investors, communicating bid and ask levels to potential principals and arranging transactions. They do not become principals, but take a commission for their services. *Dealers* are persons or firms acting as principals, buying (or selling) from their own accounts for position and risk. Dealers make a profit by correctly guessing future price movements and selling at a higher price. In the securities industry, investment firms often act as both brokers and dealers, depending on the transaction, and the term “broker-dealer” is commonly used.

## 2.2 TRADE CONFIRMATION AND MATCHING

Once a securities trade has been agreed, the execution of the trade begins with its *confirmation*, a process whereby the two parties confirm to each other the terms of the deal (e.g. the type and amount of securities, the price and the value date of the transaction). Instructions for the execution of the trade are then created and transmitted to the clearing and settlement systems. Instructions may also undergo *matching* in order to reduce the likelihood of errors – e.g. owing to initial input mistakes or a misunderstanding between the parties. (Trade matching can be carried out (i) at the level of the trading platform, (ii) by specialist providers of matching facilities prior to submission for clearing and settlement, or (iii) by the relevant clearing and settlement system itself.)

## 3 CLEARING

### 3.1 GENERAL CONCEPT

Securities *clearing* is the process of transmitting, reconciling and, in some cases, confirming security transfer instructions prior to settlement, potentially including the netting of instructions and the establishment of final positions for settlement. (For more information on netting, see Box 4 in Chapter 1 and Section 3 of Chapter 6.) As an alternative to netting, trades can be settled directly one by one on a gross basis.

The clearing agent may capture, match and confirm trades, as well as calculating obligations relating to securities transfer instructions prior to settlement. “Position netting” (or “settlement netting”) refers to situations where the clearing entity calculates net settlement positions without taking any risk itself. These functions are normally performed by CSDs in their role as operators of securities clearing and settlement systems. Alternatively, the clearing function may be performed by the exchange where the trading takes place.

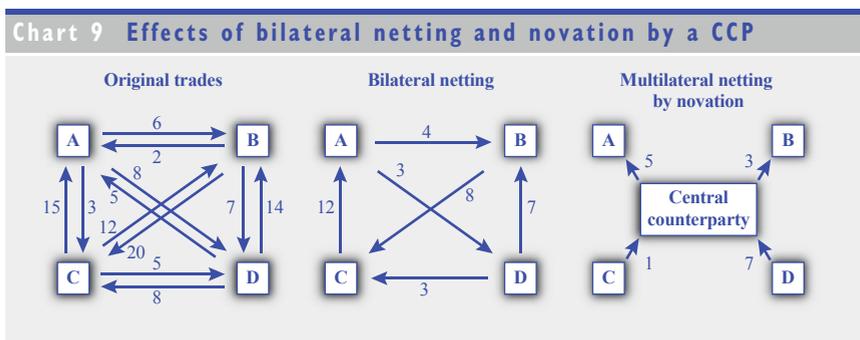
### 3.2 CENTRAL COUNTERPARTY CLEARING

In some markets, the clearing agent acts as a central counterparty. A central counterparty interposes itself between the two parties in a securities trade, becoming the buyer to every seller and the seller to every buyer. Two new contracts are created – between the buyer and the central counterparty, and between the central counterparty and the seller – to replace the original single contract between the two parties to the trade. CCPs were originally set up to serve derivatives markets, particularly for the clearing of futures and options contracts. However, in some markets the list of financial products covered by CCPs has been extended to include cash securities.

The legal process of replacing the original counterparties and becoming the single counterparty for all participants is generally called “novation”. Another legal concept enabling a CCP to become the sole counterparty is called “open offer”. In an open offer system, if predetermined conditions are met, the CCP is automatically and immediately interposed between the buyer and the seller at the moment they agree on the terms of the transaction, and there is never a contractual relationship between the buyer and the seller.

Many of the benefits of CCP clearing can be attributed to *multilateral netting*. Multilateral netting allows a substantial reduction in the number of settlements, thereby considerably reducing operational costs, including settlement fees. In addition, “netting by novation”, a service offered by CCPs, allows a reduction in individual contractual obligations, thus affecting market participants’ books and balance sheets. To the extent that national legislation limits the trading volume of a given participant to a certain percentage of its balance sheet, netting by novation could create more trading opportunities for that participant. Netting by novation may help to reduce the margin requirements that collateralise current and potential future credit exposures. CCP clearing may also help to reduce the capital required in order to support participants’ trading activity. In addition, CCP clearing helps to maintain anonymity where the trade execution process is itself anonymous, which can prove valuable where market participants fear that their trading activities will have an impact on the market.

In addition to multilateral netting, a CCP offers benefits mainly by providing *risk management services*. When trading in securities, market participants are



Source: ECB.

exposed to the risk that their trading counterparties will not settle their obligations when these become due (“liquidity risk”) or will not settle their obligations at all (“counterparty credit risk”). In order to protect themselves against such risks, market participants can take preventive measures – e.g. by placing limits on exposure and employing collateralisation. CCP clearing houses manage risks for their members, replacing exposures to multiple counterparties with a single exposure to a single central counterparty. CCPs allow their members to achieve multilateral netting of credit risk exposures on contracts cleared. They also typically employ robust margining procedures and other risk management controls, with the result that they are more creditworthy than most (if not all) of their participants. A CCP has the potential to reduce liquidity risk by broadening the scope of payment netting. Its default procedures are often supported by specific provisions of national law, which tend to reduce legal risk. Thus, central counterparties enable market participants to trade without having to worry about the creditworthiness of individual counterparties. This does not mean that CCPs eliminate counterparty credit risk, but they manage and redistribute it much more efficiently than market participants could do in isolation. Finally, CCPs tend to establish stringent operational requirements for back office operations, including the automated submission of trade information and business continuity planning. This reduces operational risk.

CCP clearing is of benefit not only to individual participants, but also to the economy as a whole. For instance, since the single counterparty makes it easier for market participants to manage counterparty credit risk, the number of trading opportunities increases. As a result, market liquidity increases, trading is stimulated, transaction costs decline and the functioning of capital markets improves.

Given their probable systemic importance from a financial stability viewpoint, CCPs should comply with oversight standards, such as the Recommendations for Central Counterparties produced by the Committee on Payment and Settlement Systems and the International Organization of Securities Commissions (IOSCO).

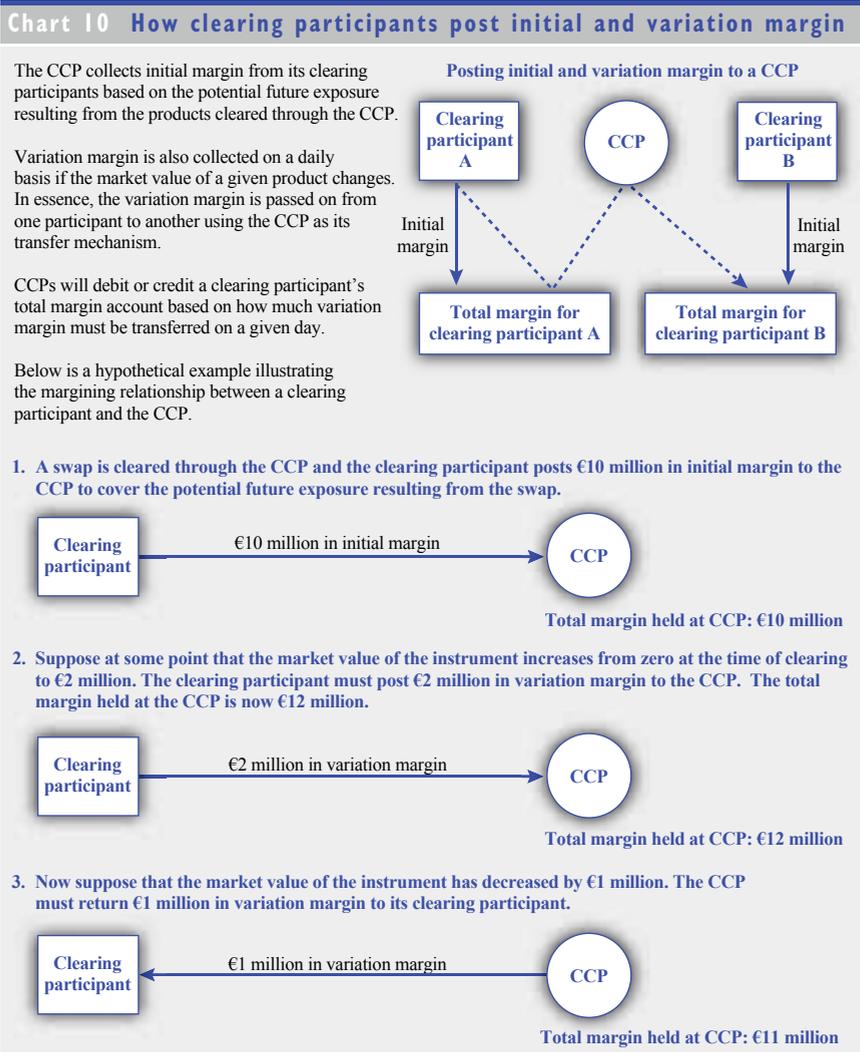
### **3.3 MAIN RISKS AND RISK MANAGEMENT PROCEDURES OF CCPs**

Like any market participant, CCPs are exposed to legal and technical risks. While such risks are not specific to CCPs, it is particularly important that CCPs take appropriate steps to mitigate these risks, given their potential systemic implications.

As its members’ counterparty, the CCP is exposed to the risk of one or more clearing members defaulting. In the field of securities, this can, in particular, trigger principal risk and replacement cost risk. Principal risk is the risk taken by the CCP if it delivers a security, but is not able to take receipt of the corresponding payment, or if it makes a payment, but does not receive the security it has bought. In principle, this risk has been largely eliminated by the introduction of delivery-versus-payment mechanisms in securities settlement systems (see Section 4.2). It is, however, very important that CCPs settle their obligations only in settlement systems which can demonstrate that they have put in place DvP mechanisms which are effective and legally sound.

CCPs are also exposed to replacement cost risk, a type of risk that is not prevented by DvP mechanisms. Replacement costs result from the solvent party needing to buy the securities which have not been delivered (or sell the securities which have not been paid for) at a time when market conditions may have developed unfavourably. This kind of risk cannot be eliminated and needs, therefore, to be mitigated.

Safeguards to protect against the default or insolvency of a participant can be divided into three categories. First, there are safeguards designed to minimise the probability of a clearing participant failing. For example, the clearing of derivatives usually takes place within a tiered structure. The CCP restricts direct



Source: Duffie, D., Li, A. and Lubke, T., "Policy perspectives on OTC derivatives market infrastructure", *Staff Reports*, No 424, Federal Reserve Bank of New York, New York, rev. March 2010.

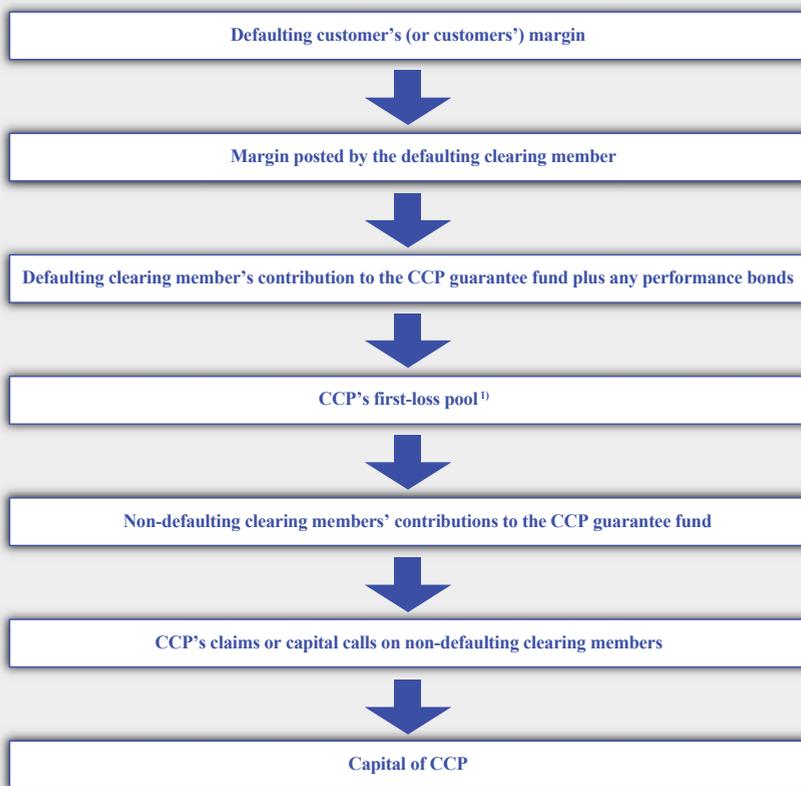
participation in the clearing process to the most creditworthy sub-set of market participants (i.e. those meeting certain financial and operational requirements). Only these members have a principal-to-principal relationship with the CCP for all contracts accepted for clearing. Market participants that are not clearing members need to establish an account relationship with a clearing member in order to effect settlement. This can be a direct relationship with the clearing member, or it can be done indirectly through a clearing broker.

Second, there are safeguards designed to minimise the loss incurred by the CCP if a clearing member fails. Margin requirements are used to collateralise a participant's current and potential future credit exposures stemming from trades, with participants required to make deposits in cash or high-quality bonds with the CCP (in accordance with the principle that the "defaulter pays"). In highly volatile markets, sophisticated systems are used to calculate any additional margin requirements that may be necessary during the day. Such margin calls have to be met immediately (i.e. cash or securities must be delivered to the CCP that same day). Another way of minimising losses is to limit the build-up of such exposures by conducting offsetting transactions. This is particularly common in the derivatives markets.

Third, there are safeguards designed to cover losses that exceed the value of the defaulting member's margin collateral. For this purpose, CCPs employ safeguards such as guarantee (or clearing) funds, member guarantees and insurance schemes – all of which involve some mutualisation of risk (in accordance with the principle that "survivors pay") – and maintain their own resources (i.e. own capital).

Clearing members are normally required to maintain two separate groups of accounts at the clearing house: one for their own assets, collateral and positions; and another for their customers' assets, collateral and positions. In some jurisdictions, the second group have to be in the form of omnibus accounts, which provides the CCP with a higher level of protection, as the assets of a clearing member's other customers may be used to cover the positions of a defaulting customer. In such a situation, the clearing member or broker is obliged to reimburse any non-defaulting customers' assets that are removed from the omnibus account by the clearing house. That said, this obligation is meaningless if the broker does not have sufficient assets to cover the losses of the defaulting customer. However, the CCP cannot use the assets in the omnibus account to cover positions or losses derived from the clearing member's proprietary account. In other jurisdictions, the clearing member may open a separate account for each of its customers (thereby increasing the level of protection provided to customers).

**Chart 11 Examples of a CCP's lines of defence against a default by a clearing member**



Source: “Making over-the-counter derivatives safer: the role of central counterparties”, *Global Financial Stability Report*, IMF, Washington DC, April 2010.

Notes: This is an illustrative example of the lines of defence of a CCP. It should be noted that these structures, orders and nomenclatures vary from CCP to CCP and are not legally mandated (although their differences clearly have significant financial and operational implications). This chart assumes that a clearing member defaults because a customer fails to meet its obligations and its collateral is insufficient. Clearing member defaults may be triggered for other reasons, including reasons unrelated to the derivative involved in the transaction.

1) The first-loss pool is an initial level of funds contributed by the CCP. Even if these are absorbed, the CCP remains able to function.

### 3.4 CCP INTEROPERABILITY AND LINKS

Activities in securities and derivatives markets need to be supported by services at each stage of the transaction chain – i.e. trading, clearing and settlement. For the chain of services to be efficient, interoperability should exist between the three stages – i.e. between the trading venue, the clearing provider and the settlement provider. This is known as “vertical links”. There may also be more than one service provider operating at one or more of the three stages – e.g. a CCP may

serve two or more trading venues. In more complex markets, each stage may be served by multiple service providers, and the range of services offered may more or less overlap. In order to foster competition and give market participants the freedom to choose their preferred service provider, interoperability is also needed between providers within a given stage. This is known as “horizontal links”. Links may be cooperative or competitive in nature. Interoperability results in advanced forms of relationship whereby service providers agree to work together to establish solutions – i.e. service providers do not simply establish links to standard services already offered by other providers.

In order to make the clearing of trades more efficient and less costly for their members, CCPs cooperate with each other – usually by establishing links between them, but also, in some cases, by resorting to other forms of consolidation (e.g. alliances or mergers). Three main types of cooperation can be identified.

*Cross-participation:* This involves two CCPs setting up a link between them that enables participants in a CCP serving one market to trade on another market served by a separate CCP, while clearing those (new) trades using their existing arrangements. In this way, participation in a single CCP is sufficient in order to clear trades conducted in different markets. There are various types of cross-participation arrangement, one being a situation where a CCP becomes a clearing member of another CCP without any further integration of the two systems. The CCPs involved need to set up a framework for the joint management of positions and, where applicable, the exchanging of margins. Typically, such arrangements involve the two CCPs recognising each other’s risk management framework. Moreover, the linked CCPs are not required to meet the same participation criteria as ordinary clearing members. (These have a special status and are not regarded in the same way as ordinary clearing participants.)

*Cross-margining:* These arrangements allow a legal entity participating in different CCPs serving different exchanges to reduce the total amount of margins and other collateral that have to be deposited with each CCP. Such arrangements are attractive to the extent that there is a significant – and reliable – negative correlation between the price risk of one product and the price risk of another (in which case the margin required for the two products can, in fact, be offset). However, it should be noted that a CCP accepting multiple products and/or directly serving multiple markets may achieve the same reduction in its margin requirement through internal offsetting, without any need to establish a link with other CCPs. Consequently, these types of link are more common in countries which have a large number of specialist CCPs, each serving different products and/or markets.

*Merger of clearing systems:* Perhaps the strongest form of integration occurs where two (or more) CCPs merge their clearing systems to create a single system – with or without the legal merger of the CCPs involved. In the case of a full legal merger, the CCPs first merge to form a single legal entity and then migrate to a single clearing platform. This form of integration is often driven by mergers at the level of trading. Alternatively, the CCPs may remain separate legal entities

and merge only their clearing platforms. A participant in a particular CCP retains its relationship with that CCP, but all risk management is performed by the wholly integrated systems of the linked CCPs. In this case, requirements need to be harmonised in respect of participation, defaults, margins, financial resources and operations, with all CCP participants subject to those requirements.

## 4 SETTLEMENT

Settlement is the act of discharging obligations in respect of funds or securities transfers between two or more parties. Settlement of a trade in securities typically involves two legs: the transfer of the securities from the seller to the buyer, and the transfer of funds from the buyer to the seller. The settlement can be organised in different ways. Trades can be settled continuously one by one, with securities and funds being transferred on a gross basis for each trade. Often, however, settlement takes place at a given point in time for a “collection of trades” (see Section 4.1). At the time of settlement, securities and cash may each be delivered on a gross or net basis – i.e. in accordance with different settlement models, such as “gross-gross”, “gross-net” and “net-net” models.

In a securities settlement system, settlement takes place between members of the system – settlement members. Membership is governed by access criteria. Thus, investors which sell and buy securities will generally employ different intermediaries for the settlement of such transactions. Moreover, it should be noted that the institutions taking part in trading or clearing may not all be members of the settlement system. Depending on the rules of the system, such institutions may settle their trades as customers of settlement members (i.e. as indirect participants).

Where an active secondary market exists, the SSS (particularly for public debt instruments) is likely to be of systemic importance from a financial stability viewpoint. It should therefore comply with relevant oversight standards, such as the CPSS-IOSCO Recommendations for Securities Settlement Systems.

### 4.1 SETTLEMENT DATES AND INTERVALS

The *settlement date* is the date on which the securities trade is settled – i.e. the actual day on which the transfer of securities (and cash) is completed. Although procedures for the handling of securities have developed considerably, in most markets a number of business days still elapse between trading (“the trading date”) and settlement (“the settlement date”).

Rolling settlement is a procedure whereby settlement takes place a given number of business days after the date of the trade. This contrasts with accounting period procedures, in which the settlement of trades takes place only on a certain day (e.g. a certain day of the week or month) for all trades occurring within the accounting period. The amount of time that elapses between the trade date (“T”) and the settlement date (“S”) is called the “settlement interval” or “settlement cycle”. This is typically measured relative to the trade date – e.g. if three business days elapse, the settlement interval is said to be “T+3”.

In a rolling settlement cycle, trades settle a given number of days after the trade date, rather than at the end of an accounting period, thereby limiting the number of outstanding trades and reducing aggregate market exposure. An important argument in favour of shorter settlement cycles is that the longer the gap between the execution and settlement of a trade, the larger the number of unsettled trades and the greater the risk of one of the parties becoming insolvent or defaulting on a trade (i.e. the greater the counterparty credit risk and liquidity risk). Moreover, the longer the settlement cycle, the more time the prices of the securities have to move away from the contract prices, thereby increasing the risk of non-defaulting parties incurring a loss when replacing unsettled contracts (i.e. the greater the replacement cost risk). In 1989 the Group of Thirty (G30) recommended that final settlement of cash securities transactions occur by T+3 – i.e. within three business days of the trade date. However, the G30 also recognised that, in order to “minimise counterparty risk and market exposure associated with securities transactions, same-day settlement is the final goal”.

#### **Box 12 Settlement intervals**

In many developed economies, the minimum standard is rolling settlement at T+3 – with the exception of OTC transactions, where the terms of settlement are negotiated bilaterally. However, many markets are already settling before T+3 (with many government securities markets already settling on T+1, for instance). Likewise, where demand exists, it may be appropriate for securities settlement systems to support T+0 for repo and OTC transactions. However, it is important to emphasise that the appropriate length of a settlement cycle for a particular type of security or market will depend upon various factors, such as transaction volumes, price volatility and the extent of cross-border trading (including trading by foreign investors) in the instrument. In fact, while shortening settlement cycles allows certain benefits to be achieved in terms of risk reduction, it is neither cost-free nor without certain risks. For example, in markets with significant trading by foreign investors or cross-border activity, it is more difficult to confirm trades in a timely manner on account of differences in time zones and national holidays, combined with the frequent involvement of multiple intermediaries.

In most markets, the shortening of the settlement cycle might require substantial reconfiguration of the trade settlement process and the upgrading of existing systems. Without proper preparation, shortening settlement cycles could result in an increase in settlement failures. Thus, another important element to consider when weighing up the costs and benefits of such changes is the availability of alternative means of limiting pre-settlement risk (such as trade netting through a CCP) or the existence of other measures to enhance settlement efficiency – such as the possibility of automatically recycling unsettled trades for a certain period of time or the introduction of a system of penalties for repeated failure to settle.

## 4.2 DELIVERY VERSUS PAYMENT

The settlement of securities transfers takes place either on a free-of-payment basis or on a delivery-versus-payment basis. FOP settlement may be employed, for example, when securities are transferred as collateral in a pledge arrangement. In DvP settlement, the discharging of the obligation to deliver securities is made conditional on the successful discharging of the obligation to transfer cash, and vice versa. This is done in order to shield the two parties from the risk of losing the full value of the transaction following the non-delivery or default of their counterparty. In order to achieve this objective in the most efficient way, CSDs – or, more precisely, securities settlement systems – need to interact with the payment system.

DvP settlement has two dimensions: first, a *technical* dimension, as a procedure is needed in order to exchange information about the status of the cash and securities legs of the transaction, to make sure that the one leg is made conditional on the successful completion of the other (i.e. to ensure that securities are delivered only if cash is delivered, and vice versa); and second, an *economic* dimension, in which each party either receives the expected assets or has returned to it the assets that it was ready to deliver. The enforcement of these rights needs to be technically and legally sound in order to achieve the objectives of DvP. At no point in time should either of the two counterparties be in possession of *both* assets (i.e. both the cash and the securities).

From a procedural point of view, a DvP process usually involves three logical steps:

1. the securities are blocked in the account of the seller to make sure that they are reserved for delivery to the buyer (and thereby made unavailable for any other transfers), and a message is sent to the application executing the cash transfer;
2. cash is debited with finality from the account of the buyer and credited to the account of the seller, and a message regarding the status of the transaction is sent to the application executing the securities transfer;
3. the blocked securities are either debited with finality from the securities account of the seller and credited to the securities account of the buyer, or, if the cash transfer was unsuccessful, released back to the seller.

## 4.3 INTERACTION BETWEEN SECURITIES AND CASH SETTLEMENT SYSTEMS

The interaction between the systems or applications executing the securities and cash legs can take various forms, as different models have been adopted in the various markets, often as a result of historical developments in the industry and the organisation of payment and settlement functions (e.g. depending on the nature of the settlement asset used to discharge the cash delivery obligation). The main interaction models in place are:

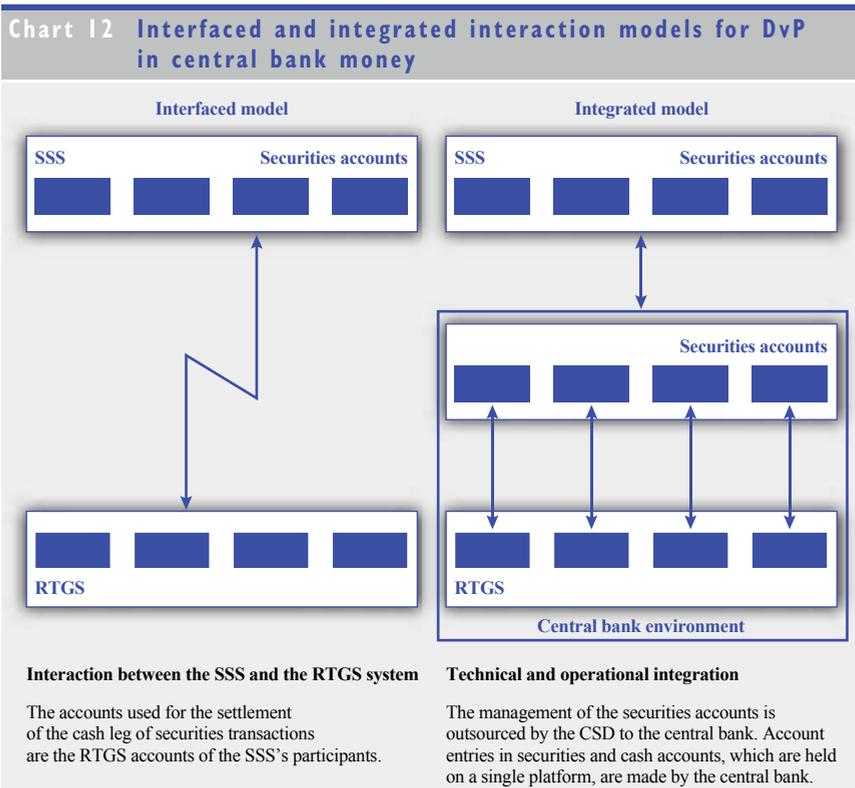
1. the *interfaced model*, in which the securities settlement system and the payment system (e.g. an RTGS system) interact through a communication

interface in order to exchange information on the status of the two legs in the respective systems;

2. the *integrated model*, in which both the securities accounts and the cash accounts are maintained on a single technical platform, with settlement achieved (i) in commercial bank money where the CSD has the right to maintain cash accounts, or (ii) in central bank money where either the CSD securities accounts or the central bank cash accounts are outsourced to the single technical platform.

Furthermore, a third model, sometimes called a “guarantee model”, is used in various countries. In this model, memorandum cash accounts in the SSS, which are pre-funded during the day at the central bank, are used for the night-time settlement of securities (i.e. when the payment system is closed).

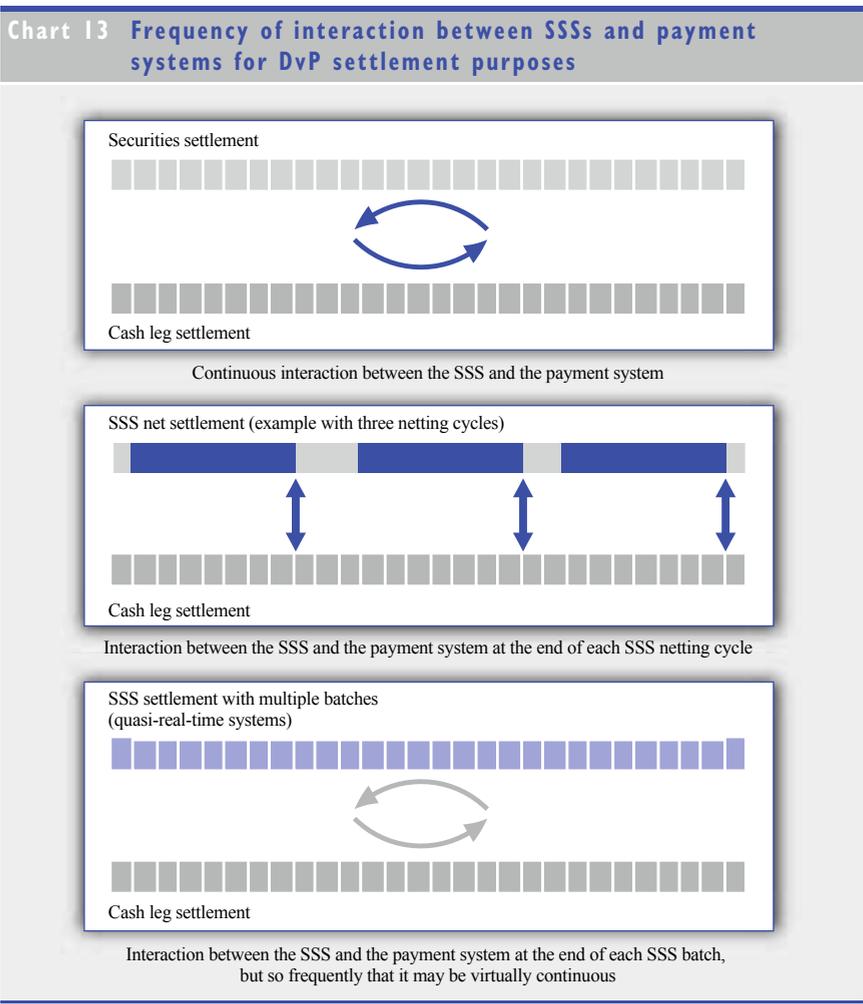
Another very important aspect to consider is the *frequency of interaction* between the SSS and the payment system. Such interaction may follow different modalities depending on the organisation of the settlement process. Particularly important is the question of whether or not securities and cash can be settled during the day with intraday finality. For example, it will not be possible to deliver collateral during the day for intraday credit purposes if securities and cash are settled only once a day (normally at the end of the day).



Source: Adapted from *The use of central bank money for settling securities transactions – current models and practices*, ECB, Frankfurt am Main, May 2004.

There are various ways of achieving intraday settlement with finality for securities transactions. One is the real-time gross settlement of securities, in parallel with the real-time gross settlement of cash transfers. This allows trade-by-trade settlement, and interaction is therefore continuous when the operating times of systems settling in securities and cash accounts overlap. This type of interaction produces one cash settlement request for each transaction settled, and it can be used in both integrated and interfaced models.

Another is to allow multiple settlement cycles to take place during the day. At the end of each cycle, the SSS interacts with the payment system in order to effect cash settlement (where the payment system needs to provide settlement with intraday finality). Such batches may be settled on a gross or net basis. Where the number of batches is sufficiently large (i.e. tens/hundreds per business day), interaction with the funds transfer system is almost continuous, with the result that settlement resembles real-time settlement.



Source: *The use of central bank money for settling securities transactions – current models and practices*, ECB, Frankfurt am Main, May 2004.

**Table 5 Major funds transfer systems in euro**

(2007; EUR billions per working day)

<b>1. TARGET</b>	<b>2,419</b>
2. Euroclear Bank	616
<b>3. CLS</b>	<b>564</b>
4. Euroclear France	476
<b>5. EURO1</b>	<b>228</b>
6. IBERCLEAR	205
7. Monte Titoli	199
8. Clearstream Banking Frankfurt	125
9. Clearstream Banking Luxembourg	112
<b>10. PNS</b>	<b>64</b>

Source: ECB.

#### 4.4 EMBEDDED PAYMENT SYSTEMS

In some circumstances, the cash accounts used to achieve DvP settlement may be held in the books of the SSS itself. In this case, the SSS has an *embedded payment system*. If the payment system is embedded, both the securities and the cash are transferred within the same organisation. Examples of SSSs with embedded payment systems are: central bank CSDs (typically for the settlement of government securities), which naturally use central bank money; and, at the other end of the spectrum, private CSDs (or ICSDs) using commercial bank money.

A payment system embedded in an SSS may handle significant amounts of cash and may have a risk profile comparable to those of systemically important payment systems, which are subject to central bank oversight.

#### 4.5 BANKING SERVICES FACILITATING SECURITIES SETTLEMENT

In the course of the settlement process, participants may be unable to meet their obligations on account of a shortage of either funds or securities. This may result in settlement being delayed, or even failing entirely. This, in turn, could trigger a chain of subsequent failures (sometimes called a “daisy chain”) in the case of back-to-back transactions (i.e. transactions where securities are bought and sold with the same settlement date, in which case securities received in a purchase transaction are immediately “redelivered” to settle the sale transaction). One party’s failure to settle a trade may affect other parties’ ability to meet their obligations and may ultimately create systemic risk. For this reason, there are various banking services aimed at facilitating settlement. These consist of cash credit facilities and securities lending programmes.

If, in the settlement of securities, a participant has a shortage of funds, it may be able to overcome this problem by drawing on (intraday) *credit lines* that it has established with other parties. The credit line could be with a bank, a custodian or, if the participant is eligible, the central bank. In some jurisdictions, the CSD is allowed under national legislation to extend credit to its own participants in

order to facilitate settlement. Where this is the case, rigorous risk management is needed to ensure that the CSD function is not endangered by risks incurred in the provision of credit. Moreover, in some countries the CSD holds a full banking licence and is thus entitled to offer its participants a full set of banking services. The two ICSDs, which serve the Eurobond market, hold banking licences.

*Securities lending programmes* have proved very helpful in increasing market liquidity and facilitating securities settlement. By lending securities in return for a fee, holders of securities portfolios that are not actively traded (e.g. institutional investors) can enhance the return on their portfolio. Borrowers of securities may prefer to pay a lending fee rather than fail to deliver securities. In that case, securities with the same ISIN code will subsequently have to be returned, in accordance with the terms agreed. Securities lending programmes are typically set up and administered by a CSD (with the CSD acting as an intermediary interposed between the lenders and borrowers of securities) or, alternatively, offered by custodian banks to their customers. Securities lending is based on contractual arrangements, with such lending increasingly being collateralised in one way or another.

The range of entities providing credit in the form of cash or securities may vary depending on the specific jurisdiction.

### **Box 13** Procedures in a securities transaction – a slightly complex example

Once a trade has been executed in an exchange or an OTC market, there are still a number of (post-trade) stages to be completed in order to achieve an effective transfer of value between counterparties (i.e. the exchange of securities for payment). These procedures can vary considerably from one country to another, with differences possible even in the way that various securities are traded within a single country. This box does not seek to cover all of the many variations and local conditions embedded in such systems around the world. Instead, it presents the procedures that are typically undertaken in a securities clearing and settlement system. As indicated earlier, the secondary market life cycle of a securities transaction involves three phases: the execution of the trade, clearing and settlement.

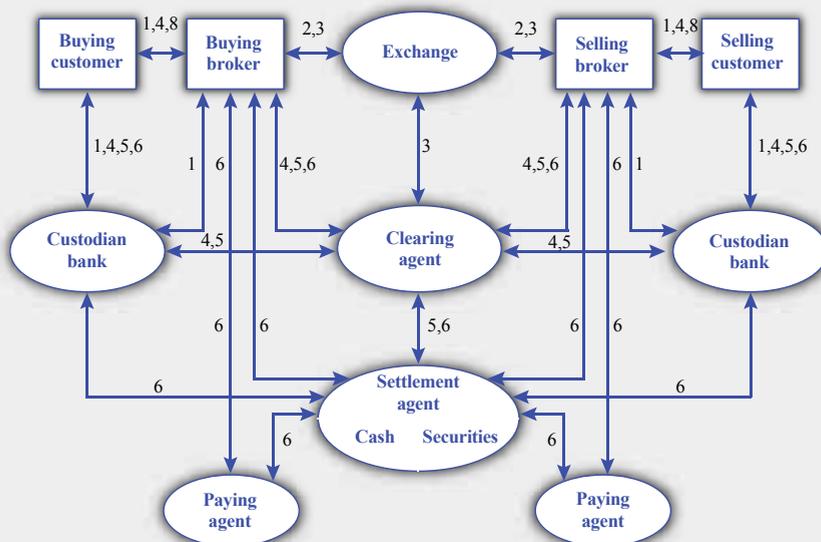
Thus, the process begins with the execution phase. The two parties agree to exchange a certain amount of securities for a certain amount of funds on a particular settlement date. The transaction details could be agreed directly between the two counterparties. However, transactions are normally effected by broker-dealers in an exchange or OTC market. The chart illustrates a transaction which is processed through an exchange. The execution phase consists of three steps.

In Step 1, the buyer and the seller place their orders with their respective brokers and/or custodian banks. In Step 2, the brokers execute their clients' orders in the exchange. In Step 3, the exchange sends the clearing agent and the brokers details of the transactions executed. These could be sent in paper form or through electronic processing and communication systems. Usually, the exchange sends trading details to the clearing agent on day T.

Once the trade has been executed, the clearing phase starts. “Clearing” or “processing” refers to the procedures necessary in order to determine the obligations of direct market participants (broker-dealers, etc.) in terms of the delivery of securities and funds following the execution of a trade. It involves the capture, matching, comparison and confirmation of trades (Step 4) and the calculation of settlement obligations (Step 5).

In Step 4, the brokers (both the buyer’s and the seller’s) send details of the trade to the clearing agent. The brokers send their customers confirmation of the execution of their orders, with that confirmation containing details of the trade. The clearing agent compares the two sides of the trade and sends a report to each broker and custodian. This step illustrates the central role of the clearing agent, which receives information from all of the other entities (i.e. the exchange and the brokers) and is therefore able to compare the various transaction details. During this phase, the information flow continues until there are no errors in the details of the trade. In some cases, these processes may occur outside of the clearing agent as part of the execution process. When the trades are transmitted as “locked-in” transactions by the computer systems of the exchanges or OTC markets, the details of the trades have already been matched. Once the trade has been captured, matched, compared and confirmed, the calculation of the settlement obligations starts.

### Securities clearing and settlement procedures



Source: ECB.

In Step 5, the clearing agent sends the brokers, custodians and settlement agent the securities balances and the fund balances. This can happen in one of several ways. Some systems calculate the obligation for every individual trade (i.e. clearing occurs on a gross or trade-by-trade basis). In other systems, obligations are subject to netting (bilateral or multilateral – often the latter), which is the agreed offsetting of positions or obligations by trading partners. Thus, netting reduces a large number of individual obligations to a smaller number of obligations. Settlement obligations have now been established and settlement instructions can be generated.

Once the clearing phase has ended, the settlement phase begins. In Step 6, the securities are delivered in exchange for funds. The settlement of a securities trade involves the final transfer of securities from the seller to the buyer and the final transfer of funds from the buyer to the seller. As regards the securities leg of a transaction, securities transfers have historically involved the physical movement of certificates. However, securities are increasingly being immobilised or dematerialised in CSDs, which enables securities transfers to occur through accounting entries on the books of the central depository. As for the cash leg, a CSD may also offer cash accounts and allow funds transfers on its own books as a means of payment for securities. Alternatively, these funds transfers may occur on the books of a settlement bank, such as the central bank or a commercial bank. If the central bank is used, the brokers may be forced to use a paying agent for cash transfers if non-bank brokers are not allowed to hold accounts with the central bank.

The processing of transfer instructions often involves several stages. If during any of these stages the transfer can be rescinded by the sender of the instruction, the transfer is said to be “revocable”. Once the transfer becomes final (i.e. an irrevocable and unconditional transfer takes place), the parties’ settlement obligations are discharged. The final transfer of a security by the seller to the buyer constitutes delivery, and the final transfer of funds from the buyer to the seller constitutes payment. Once delivery and payment have occurred, the settlement process is complete.

## 5 CROSS-BORDER HANDLING OF SECURITIES

The globalisation and internationalisation of financial markets results from investors having the possibility of engaging in securities activities in jurisdictions other than their country of residence. This is done in two main ways.

### 5.1 USE OF CUSTODIANS

The traditional method has been the use of a custodian bank participating directly in the payment and securities settlement systems of the country of the issuer or having access to clearing and settlement facilities in that country through a local agent (i.e. a sub-custodian).

### 5.2 LINKS BETWEEN CSDs

A more recent solution developed by CSDs and ICSDs in order to support international investors in their own markets and domestic participants wishing to invest abroad involves the establishment of *links between CSDs*. Links are legal

and technical arrangements and procedures that enable securities to be transferred between CSDs through book-entry processes – i.e. allowing securities issued in one country to be transferred to the CSD of another country where there is an active secondary market in those securities. A link takes the form of an omnibus account held by one CSD (the “investor CSD”) with another CSD (the “issuer CSD”) and requires the establishment of an IT interface for the transmission of instructions related to securities eligible for transfer through the link.

Some securities may, in addition to being listed on their home country exchange (“primary listing”), also be listed on an exchange in another country (“secondary listing”). Most CSDs which have implemented link arrangements offer this service only for foreign securities with a secondary listing on their national exchange. (For example, trades in securities listed and traded on the two exchanges may be settled through a link between the CSDs of the two markets.) Some CSDs offer links allowing the holding of foreign securities for collateral management purposes (one of the arrangements allowing the cross-border use of collateral in the euro area; see also Chapter 9 and Chapter 11). Link arrangements also allow CSDs to offer a service similar to that offered by custodian banks – i.e. providing their members with a single access point for multiple markets.

Links can be used to deliver securities on an FOP or DvP basis. When a DvP link is used, securities are usually first delivered free of payment from one CSD to the other, and then DvP settlement is performed using the local DvP settlement procedures.

A link between two CSDs is *unilateral* when it is used only for the transfer of securities from one system to another, and not vice versa. A *bilateral* link between two CSDs means that a single agreement regulates the transfer of securities to and from both systems.

In a direct link, there is no intermediary between the two CSDs, and the omnibus account opened by the investor CSD is managed by either the investor CSD or the issuer CSD. In an *operated* direct link, a third party (i.e. a custodian bank) opens and operates an account with the issuer CSD on behalf of the investor CSD. However, responsibility for the obligations and liabilities associated with the registration, transfer and custody of securities must remain with the two CSDs from a legal perspective.

*Relayed* links are contractual and technical arrangements for the transfer of securities which involve at least three CSDs: the investor CSD, the issuer CSD and the “intermediary CSD”. (For example, CSD A holds an omnibus account with CSD B (the “intermediary CSD”), which in turn holds an omnibus account with CSD C.)



## CHAPTER 3

### KEY CONCEPTS – DERIVATIVES

#### I GENERAL ASPECTS

##### I.1 THE DERIVATIVES MARKET

Derivatives are an important class of financial instrument and represent a financial market segment that has long exceeded the growth rates of both equity and bond markets. Derivatives are very different from securities. They are financial instruments that derive their value from that of an underlying financial product, commodity or market variable. While derivatives instruments are mainly designed to protect against and manage risks, they are often also used for arbitrage, speculative and investment purposes. They facilitate the pricing of risk and play an important role in price discovery across financial markets. A derivative is a contract concluded between a buyer and a seller concerning a transaction to be effected at a future point in time. The life of a derivatives contract (i.e. the period of time between the conclusion of the contract and its fulfilment or termination) varies greatly, ranging from a few days to several decades. In the course of its life, the value of the derivatives contract will fluctuate in line with the fluctuations in the value of the underlying asset.

The three main types of derivative are forwards, options and swaps. The main categories of underlying asset are interest rates, foreign exchange, credit, equities and commodities. Most segments of the derivatives market are global in nature.

In the derivatives market, fully standardised products are traded on exchanges, while more idiosyncratic products are traded bilaterally over the counter. Indeed, most derivatives are traded on the OTC market. Bilaterally traded contracts allow the product to be tailored to the specific needs of the parties involved. Developments in financial engineering, including the creation of new and increasingly complex structured derivatives, have driven the strong growth observed in OTC derivatives markets – particularly markets for credit derivatives. By contrast with the securities markets, the derivatives market is not divided into primary and secondary markets. Secondary trading does not normally take place. Instead, in order to cancel out the economic meaning of existing contracts, offsetting contracts are concluded.

The derivatives market is largely a professional wholesale (i.e. inter-dealer) market, with trading taking place mainly between large *broker-dealers*. The market-making dealers are mainly large banks and investment firms (or securities houses). The broker-dealers' clients – the *buy side* – are typically financial institutions (e.g. important large institutional investors such as mutual funds, hedge funds and pension funds). The buy side also includes non-financial institutions such as corporations and insurance companies. Although insurance companies account for a small share of outstanding market volumes, they play an important role in the credit derivatives market as sellers of large amounts of protection.

Market infrastructure services for OTC derivatives have not been particularly comprehensive or consistent. Instead, a wide variety of third-party service providers (or “vendor services”) are available at all stages of the value chain.<sup>3</sup> While exchange-traded derivatives are cleared through central counterparties, these services are not available for the large majority of OTC derivatives. (For information on CCPs, see Sections 3.2 and 3.3 of Chapter 2.) Thus, OTC derivatives are generally cleared on a bilateral basis. The dramatic growth seen in the OTC market has not been accompanied by the development of sufficiently sound and efficient post-trading practices or systems, and this poses a number of challenges in terms of financial stability. With large risk exposures between a limited number of large financial institutions, the OTC derivatives markets are clearly of systemic relevance.

Derivatives trades submitted for CCP clearing are subject to netting by novation, whereby clearing members have risk exposures only vis-à-vis the CCP. Another legal concept allowing the same result to be achieved (i.e. a single risk exposure vis-à-vis the CCP) is called “open offer”. Here, the CCP immediately becomes a counterparty to both the buyer and the seller once the two have agreed on the terms of a trade (see Section 1.4). There are two ways of settling a derivatives contract: a cash payment corresponding to the net value of the contract at the time of its fulfilment (the method used for the vast majority of transactions); or physical delivery of the underlying asset in exchange for payment of the agreed price (a method seen in only a very small percentage of transactions).

## 1.2 MAIN TYPES OF DERIVATIVE

The three main types of derivative are forwards, options and swaps.<sup>4</sup>

A *forward* is a non-standardised contract whereby two parties agree to exchange one asset for another at a future date at a prearranged price. In other words, a buyer agrees at the time the contract is concluded to buy a certain asset at a certain point in the future at a price agreed at the time the contract is concluded, and the seller agrees to deliver that asset at that future point in time. *Futures* are standardised forwards traded on exchanges.

An *option* is a contract that entitles – but does not oblige – the buyer to buy (in the case of a “call option”) or sell (in the case of a “put option”) the underlying asset at a certain point in time or within a specified period in the future at a predetermined price (the “strike price”), in return for the payment of a premium. The premium represents the maximum possible loss for the buyer of an option. Options are settled only if they are exercised, and will be exercised only if the buyer is “in the money” – i.e. only if the strike price is lower than the

<sup>3</sup> An overview of the various kinds of third-party service is provided in Annex 6 of the CPSS report *New developments in clearing and settlement arrangements for OTC derivatives*, CPSS, BIS, Basel, March 2007.

<sup>4</sup> For sources and more detailed information, see: *Ensuring efficient, safe and sound derivatives markets*, European Commission staff working paper, SEC(2009) 905 final, European Commission, July 2009; and *OTC derivatives and post-trading infrastructures*, ECB, Frankfurt am Main, September 2009.

current market price in the case of a call option or higher than the market price in the case of a put option.

A *swap* is a derivatives contract for the exchange of assets – e.g. an agreement to exchange one cash-flow stream for another (on an agreed notional principal amount). Swaps vary depending on the type of underlying asset, but they all function in more or less the same way.

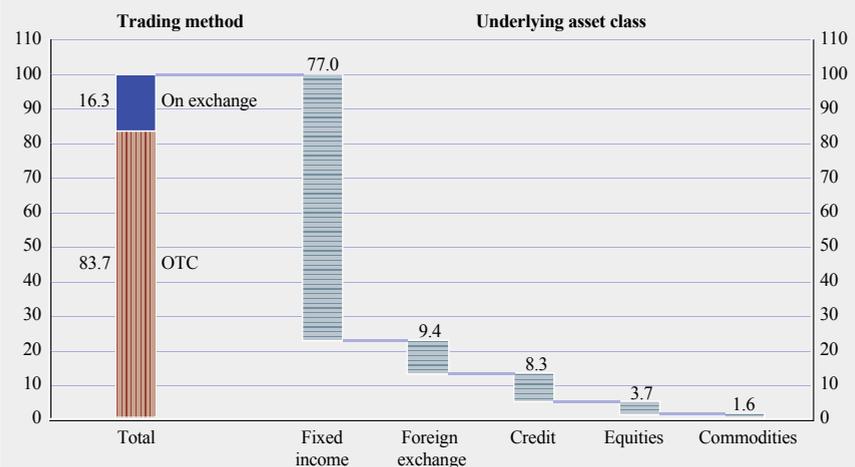
The main types of asset underlying derivatives are interest rates, foreign exchange, credit, equities and commodities.

*Interest rate derivatives* are the largest class of derivative. There are many types of interest rate derivative, the main ones being interest rate swaps, interest rate options and forward rate contracts. An interest rate swap is an agreement to exchange two streams of interest payments denominated in the same currency (e.g. a floating interest rate for a fixed interest rate). The maturities of such swaps vary greatly, ranging from overnight to 30 years. Interest rate derivatives facilitate the management of specific and structural interest rate risks faced by market participants. Interest rate derivatives are by far the most commonly traded derivative on the OTC market.

The main types of *foreign exchange derivative* are outright forwards, swaps and options. An outright foreign exchange forward involves the exchange of one currency for another on a pre-specified date in the future at a prearranged exchange rate. A foreign exchange swap is an agreement to exchange one currency for another for a given period of time and then exchange them back at a prearranged exchange rate. In a foreign exchange swap, two parties exchange

**Chart 14 Breakdown of the global derivatives market by trading method and underlying asset class<sup>1)</sup>**

(percentages; notional amounts outstanding as at June 2007)



Source: Deutsche Börse (2008).

1) Exotic underlyings (e.g. weather, freight rates and economic indicators) account for less than 0.1%.

**Table 6 The size of the OTC derivatives market, by risk category and instrument**

(USD billions)

Risk category/instrument	Notional amounts outstanding				
	June 1999	June 2007	June 2008	Dec. 2008	June 2009
<b>Total contracts</b>	<b>81,458</b>	<b>516,407</b>	<b>683,814</b>	<b>547,371</b>	<b>604,622</b>
<b>Foreign exchange contracts</b>	<b>14,899</b>	<b>48,645</b>	<b>62,983</b>	<b>44,200</b>	<b>48,775</b>
Forwards and FX swaps	9,541	24,530	31,966	21,266	23,107
Currency swaps	2,350	12,312	16,307	13,322	15,072
Options	3,009	11,804	14,710	9,612	10,596
<b>Interest rate contracts</b>	<b>54,072</b>	<b>347,312</b>	<b>458,304</b>	<b>385,896</b>	<b>437,198</b>
Forward rate agreements	7,137	22,809	39,370	35,002	46,798
Interest rate swaps	38,372	272,216	356,772	309,760	341,886
Options	8,562	52,288	62,162	41,134	48,513
<b>Equity-linked contracts</b>	<b>1,511</b>	<b>8,590</b>	<b>10,177</b>	<b>6,159</b>	<b>6,619</b>
Forwards and swaps	198	426	2,657	1,553	1,709
Options	1,313	6,119	7,521	4,607	4,910
<b>Commodity contracts</b>	<b>441</b>	<b>7,567</b>	<b>13,229</b>	<b>3,820</b>	<b>3,729</b>
Gold	189	426	649	332	425
Other commodities	252	7,141	12,580	3,489	3,304
Forwards and swaps	127	3,447	7,561	1,995	1,772
Options	125	3,694	5,019	1,493	1,533
<b>Credit default swaps</b>	<b>...</b>	<b>42,581</b>	<b>57,403</b>	<b>41,883</b>	<b>36,046</b>
Single-name instruments	...	24,239	33,412	25,740	24,112
Multi-name instruments	...	18,341	23,991	16,143	11,934
<b>Unallocated</b>	<b>10,536</b>	<b>61,713</b>	<b>81,719</b>	<b>65,413</b>	<b>72,255</b>

Source: *BIS Quarterly Review*, BIS, Basel, November 2009.

equal principal amounts of two currencies on the basis of a spot rate – including the exchange of interest payment streams in the swapped currencies – for a predetermined period of time. At maturity, the principal amounts are exchanged back at the original spot rate. Foreign exchange options entitle – but do not oblige – a party to exchange a specified amount of one currency for another at a prearranged exchange rate at a future point in time. More exotic products include non-deliverable forwards, which are outright forward (or futures) contracts in which the two parties do not exchange the principal amounts of the two currencies, instead settling only the difference between the contract rate and the spot rate for the agreed principal amount on a pre-determined date in the future. Together, outright forwards and swaps account for around half of the market for foreign exchange derivatives. Three major currencies – the US dollar, the euro and the Japanese yen – accounted for some 75% of this market in mid-2009.

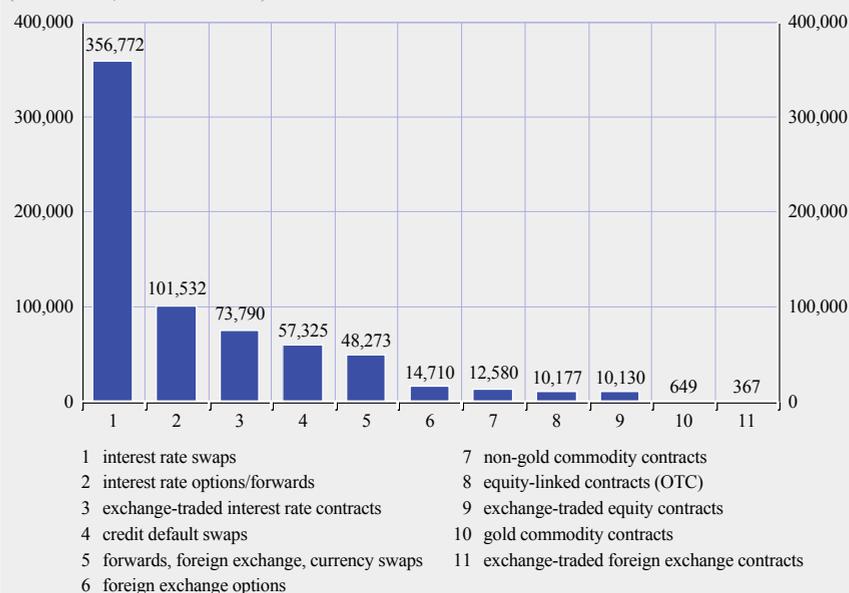
The most common type of *credit derivative* is the credit default swap (CDS). A credit default swap is a contract between two parties whereby the buyer of protection pays a regular fee to the seller of protection until the contract

Risk category/instrument	Gross market values				
	June 1999	June 2007	June 2008	Dec. 2008	June 2009
<b>Total contracts</b>	<b>2,627</b>	<b>11,140</b>	<b>20,375</b>	<b>32,244</b>	<b>25,372</b>
<b>Foreign exchange contracts</b>	<b>582</b>	<b>1,345</b>	<b>2,262</b>	<b>3,591</b>	<b>2,470</b>
Forwards and FX swaps	329	492	802	1,615	870
Currency swaps	192	619	1,071	1,421	1,211
Options	61	235	388	555	389
<b>Interest rate contracts</b>	<b>1,357</b>	<b>6,083</b>	<b>9,263</b>	<b>18,011</b>	<b>15,478</b>
Forward rate agreements	12	43	88	140	130
Interest rate swaps	1,222	5,321	8,056	16,436	13,934
Options	123	700	1,120	1,435	1,414
<b>Equity-linked contracts</b>	<b>244</b>	<b>1,116</b>	<b>1,146</b>	<b>1,051</b>	<b>879</b>
Forwards and swaps	52	240	283	323	225
Options	193	876	863	728	654
<b>Commodity contracts</b>	<b>44</b>	<b>636</b>	<b>2,209</b>	<b>829</b>	<b>689</b>
Gold	23	47	68	55	43
Other commodities	22	589	2,141	774	646
Forwards and swaps					
Options					
<b>Credit default swaps</b>	<b>...</b>	<b>721</b>	<b>3,192</b>	<b>5,116</b>	<b>2,987</b>
Single-name instruments	...	406	1,901	3,263	1,953
Multi-name instruments	...	315	1,291	1,854	1,034
<b>Unallocated</b>	<b>400</b>	<b>1,259</b>	<b>2,303</b>	<b>3,645</b>	<b>2,868</b>
<b>Memorandum item:</b>					
Gross credit exposure	<b>1,119</b>	<b>2,672</b>	<b>3,859</b>	<b>4,555</b>	<b>3,744</b>

matures or a credit event occurs for a reference entity. If a credit event occurs, the protection buyer either: (i) receives compensation in cash for the reduction in the value of the insured asset; or (ii) provides the protection seller with bonds issued by the reference entity up to the value of the protection purchased (i.e. the notional value of the contract) and receives the par value in return. CDSs were initially developed as a form of insurance against defaults by corporate borrowers. The protection buyer exchanges the risk of the reference entity defaulting for the (lower) risk of both the protection seller and the reference entity defaulting simultaneously. Credit events for CDSs include bankruptcy, failure to pay and restructuring. It is not necessary for the protection buyer to suffer an actual loss in order to be eligible for compensation if a credit event occurs. There are two types of CDS: instruments insuring against a credit event occurring in relation to a single reference entity, which can be a company or a sovereign entity (a “single-name CDS”); and instruments insuring against a credit event occurring in relation to a pool of reference entities – e.g. through an index (a “multi-name CDS”). Index-related products typically have a higher degree of standardisation than single-name products.

**Chart 15 Global derivatives market by instrument: notional amounts outstanding**

(USD billions; data for June 2008)



Source: BIS.

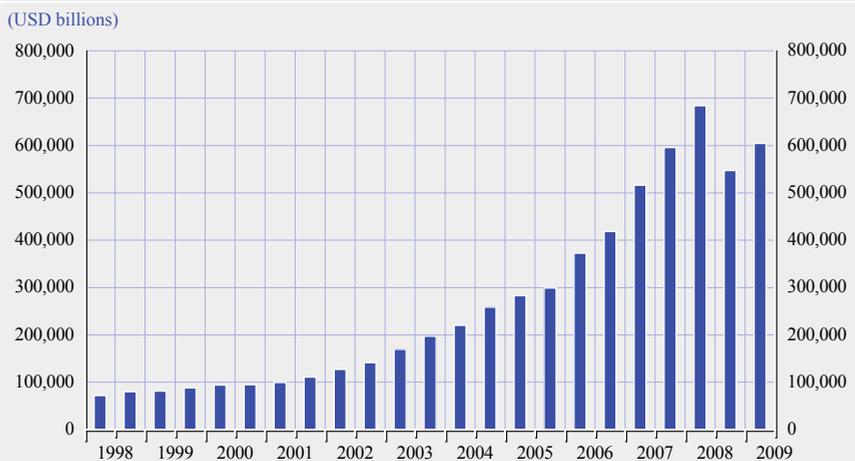
The main types of *equity derivative* are equity options, equity swaps and equity forwards. The asset underlying an equity derivative is either an equity security or an equity index. There are two types of equity option: call options and put options. A call option entitles – but does not oblige – the holder to buy a specific equity (or a basket of equities) at an agreed price at a predetermined point in time (or period of time) in the future. Conversely, a put option gives its holder the right to sell an equity (or a basket of equities) at a future point in time (or period of time) with the same conditions. Equity options account for some 75% of the global OTC market for equity derivatives. Equity swaps involve exchanging the return from one equity (or equity index) for the return from another. Finally, equity forwards are contracts to buy or sell an equity (or a group of equities) at an agreed price on a predetermined future date.

*Commodity derivatives* are based on a wide variety of underlying assets, such as energy, metals and agricultural products. The market is very diverse, and use is made of all contract types – i.e. forwards, futures, options and swaps. The market structure differs from segment to segment, some being more standardised with on-exchange trading, while others are less standardised with trading purely over the counter. Commodity derivatives can be settled either financially or physically.

### 1.3 THE SIZE OF THE OTC MARKET

When determining the size of the OTC derivatives market, three figures should be considered. The *notional amounts* of OTC derivatives contracts are the nominal amounts involved. These are used merely as a point of reference for calculations

**Chart 16 OTC derivatives: notional amounts outstanding**



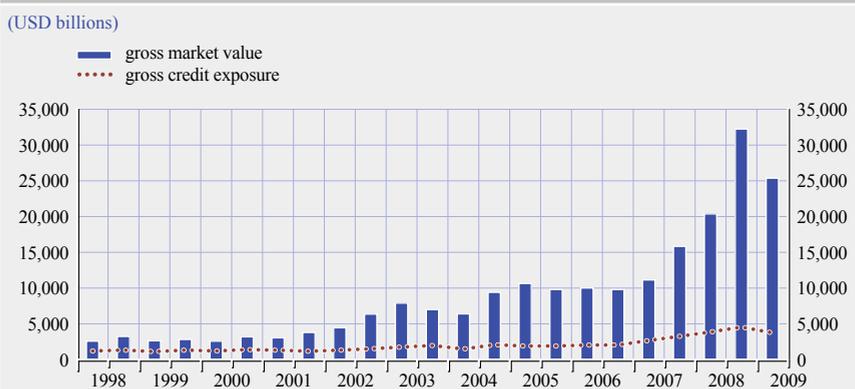
Source: BIS.

and are not actually exchanged. Consequently, they are not an accurate indication of exposures. Notional amounts rose to USD 605 trillion in the first half of 2009, an increase of 10% by comparison with the second half of 2008.

A more accurate indicator of actual risk exposures in the OTC derivatives market is the *gross market value*, as this measures the cost of replacing all existing OTC derivatives. According to the BIS, this stood at USD 25 trillion in the first half of 2009, a decrease of 21% by comparison with the second half of 2008.

Gross market values still need to be adjusted to take account of the netting or collateralisation of OTC positions. Thus, it is difficult to obtain a precise figure which accurately measures the actual exposures in the OTC market. According to the BIS, when enforceable bilateral netting agreements are taken into account (but not collateralisation), *gross credit exposures* in the global OTC market stood

**Chart 17 Gross market value and gross credit exposure in OTC derivatives markets**



Source: BIS.

at approximately USD 3.7 trillion in the first half of 2009.<sup>5</sup> These figures show that exposures in the global OTC derivatives market are highly relevant from the point of view of systemic stability, especially in view of the fact that those exposures are highly concentrated in a limited number of major OTC derivatives dealers.

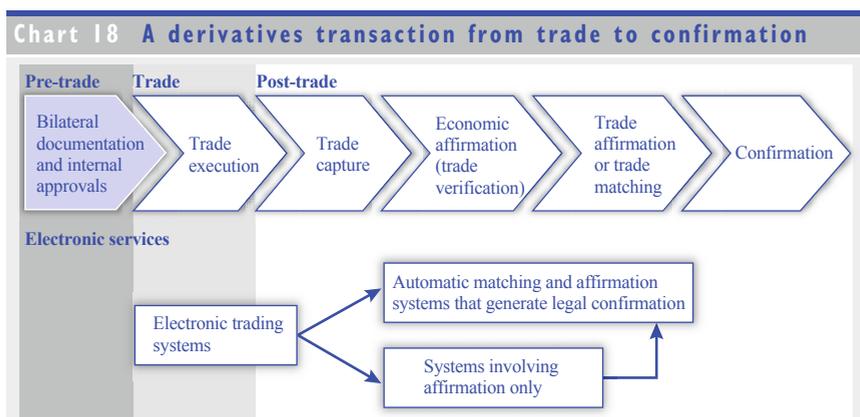
#### 1.4 A STYLISED LIFE CYCLE OF A DERIVATIVES CONTRACT

Before an institution starts trading in derivatives, it will enter into contracts governing that trading activity (often based on master agreements, supported by documentation on collateralisation), concluding contracts with exchanges in the case of exchange-traded instruments and concluding contracts with its counterparties in the case of OTC trading. Internally, it will conduct counterparty credit reviews and establish credit lines and trading limits for the counterparties concerned. The International Swaps and Derivatives Association (ISDA) has developed most of the standard documentation in the derivatives industry, while the European Banking Federation (EBF) has sponsored relevant documentation under the European Master Agreement.

The first step in the creation of a derivatives contract is *trade execution*, which occurs when two parties agree to a transaction – be it on exchange or over the counter. The trading of OTC derivatives has traditionally taken place over the phone, with the two parties trading directly or through a broker. However, electronic trading systems are becoming increasingly common, especially for the more standardised OTC derivatives.

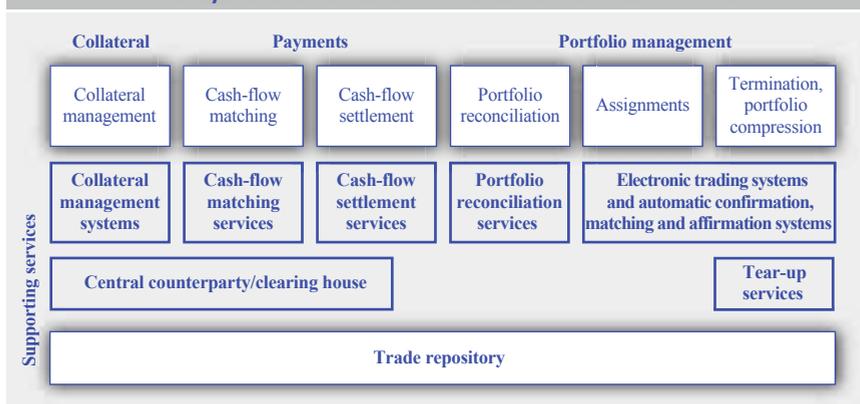
Once a trade has been executed, the details of that trade need to be *captured*. This is necessary for post-trade processing and risk management. If trading takes place on an exchange, this will be done by the exchange. If trading takes place over the counter, the parties must capture the details of the trade in their own

<sup>5</sup> OTC derivatives market activity in the first half of 2009, BIS, Basel, November 2009.



Source: *New developments in clearing and settlement arrangements for OTC derivatives*, CPSS, BIS, Basel, March 2007.

**Chart 19 Life cycle elements of an OTC derivatives trade**



Source: *New developments in clearing and settlement arrangements for OTC derivatives*, CPSS, BIS, Basel, March 2007.

internal systems. Data on trades executed using third-party electronic trading systems can often be transferred to internal systems by means of automated procedures. Before the parties begin the process of reviewing the full terms of the trade – which will result in the trade being confirmed – they may also choose to verify a set of key economic details relating to the trade (a process called *economic affirmation* or *trade verification*).

The process by which the final agreed record of the derivatives transaction is created is called *confirmation*. There are two ways of confirming a contract. One method – *trade affirmation* – involves one party providing the relevant details to the other, which then verifies that information, resulting in an agreed trade. The second method – *trade matching* – involves the two parties exchanging their records of the trade or submitting them to a third-party service provider. If the trade details match, the trade is agreed. In both cases, the two parties to the trade are obliged to store all information on the contract in their internal systems and maintain it for the duration of the contract. For centrally cleared trades, the information is also communicated to the CCP. Moreover, depending on the procedures used, the trade may, at the point of confirmation at the latest, also be reported to a *trade repository* (TR; see Section 2.4).

Once a derivatives contract has been confirmed, it will undergo a range of further post-trade life cycle management processes, the organisation of which will depend, for example, on whether the contract is cleared bilaterally or by a central counterparty. These include collateral management, the handling of cash flows, portfolio reconciliation, netting, portfolio compression and the termination of contracts.

*Collateralisation* is compulsory in CCP-cleared trades, while it is also increasingly being used in order to manage counterparty credit risk exposures arising from bilaterally cleared derivatives. Collateral management involves, among other things, calculating collateral requirements and facilitating the transfer of collateral between the parties concerned. Collateral management is an operationally complex process. Collateral management services are provided by CCPs for the

trades that they clear, while for bilaterally cleared contracts the counterparties need to have their own internal systems or make use of third-party providers. Collateral is often provided in cash form, but securities are also increasingly being used (using the services of CSDs, ICSDs and custodians).

In many derivatives contracts, payments need to be exchanged periodically between counterparties. The handling of payment obligations may involve *cash-flow matching*, which (in bilateral relationships) allows the two parties to check in advance that they have matching information on upcoming payment events. *Cash-flow settlement* – i.e. the actual transfer of funds due – is typically based on standard settlement instructions, with payments being settled in a number of ways through correspondent banking or payment systems (see Chapter 1). Where contracts are cleared by a CCP, the CCP may offer services relating to cash-flow settlement.

*Portfolio reconciliation* is the verification of the existence of outstanding contracts between counterparties and the comparison of their principal economic terms. Managing collateral deposited with a large number of counterparties may be challenging. Portfolio reconciliation is particularly useful in facilitating bilateral collateral management processes. Reconciliation covers the whole portfolio: trade populations, key financial terms and mark-to-market values (i.e. a counterparty's valuation of a particular contract, and thus the risk derived from it). If disputes arise regarding collateral (or payment) obligations, reconciliation provides means of resolving them. Major broker-dealers regularly reconcile their OTC derivatives portfolios with their major counterparties, often on a daily basis.

Netting (see Box 4 in Chapter 1) is used in both bilateral and CCP clearing as a means of reducing and improving the management of counterparty risk exposures. Where a contract is cleared in a CCP, the CCP will, through netting by *novation*, interpose itself between the two counterparties, becoming the buyer to every seller and the seller to every buyer. As a result, the members of the CCP will only have counterparty risk exposure vis-à-vis the CCP. A single risk exposure vis-à-vis the CCP is also achieved by means of a legal concept called *open offer*. In the open offer framework, provided that all agreed conditions are met, the CCP automatically and immediately interposes itself between the buyer and the seller the moment they agree on the terms of the transaction, without the two ever entering into a contractual relationship with each other.

Counterparties may, for various reasons, seek to terminate derivatives contracts before their maturity date. Counterparties may, for example, have entered into a number of contracts which cancel each other out in terms of their economic meaning, but require the management of collateral, payment flows, etc. In these circumstances, it may be in the interests of both parties to *terminate* contracts. The termination of a derivatives contract can be triggered by four actions or events: the cancelling out of the original contract with an offsetting contract; the contract being given to another trading party through *assignment*; the expiry of the contract; or the fulfilment of the contract. The process of cancelling out offsetting contracts (on a bilateral or multilateral basis) is also referred to as *portfolio compression* (see Section 3.3).

## 2 TRADING AND POST-TRADE SERVICES

### 2.1 STYLISED EVOLUTION OF PRODUCTS AND TRADING MODALITIES

Initially, derivatives tend to be highly structured, tailor-made *niche products* which are traded manually on either a dealer-to-dealer or a dealer-to-client basis. At the next stage, derivatives become *flow products*, being traded between broker-dealers in much larger quantities, but still on a manual basis. At this stage, broker-dealers typically face growing strains in terms of their back office capacity, and the accurate pricing and management of risks becomes more difficult. To increase efficiency, flow products may, to some extent, be standardised and evolve into *electronically traded products*. At this stage, trading between broker-dealers is largely automated, but continues to be conducted on a bilateral basis.

As trading volumes increase, problems relating to back office capacity and risk management grow, and limitations in terms of available trading partners also become more acute. This leads to the development of *exchange-like products*, which are traded on multilateral private dealer platforms. Such platforms make trading and risk management more efficient by means of multilateral netting (sometimes coupled with CCP clearing) and enhance access to the buy side. At their final developmental stage, with full standardisation of contracts, derivatives become *on-exchange products*, often coupled with CCP clearing, in order to reap further benefits in terms of trading efficiency, risk management, price transparency and liquidity.

### 2.2 ON-EXCHANGE TRADING

Organised derivatives exchanges have existed for some 300 years. In the early days, derivatives were based on agricultural products. Over time, these instruments have been complemented first by derivatives based on commodities and then by products based on financial assets or variables.

Only fully standardised derivatives are traded on public exchanges. Exchange-traded contracts are standardised by the exchanges where they are traded. There is, in principle, an infinite range of parameters that can be referred to in a standard contract of a particular kind.

An exchange is a central marketplace where all orders sent for execution by dealers (whether on their own behalf or on behalf of their customers) are collected and matched. Exchange-traded contracts are, as a rule, subject to CCP clearing, whereby the trading parties usually remain anonymous to one another. The most common exchange-traded derivatives are futures and options.

The organisation of the clearing and settlement of exchange-traded derivatives has traditionally mirrored the organisation of the exchanges themselves. Each exchange has an affiliated clearing house (or operates its own) that clears contracts for that exchange. In a way, these clearing arrangements and their reliability are regarded as comprising part of the product offered by the exchange

to its customers. The integrity of transactions is vital to attracting customers to a derivatives market, and that integrity depends on the creditworthiness of the clearing house and the reliability of its clearing arrangements. Clearing houses for derivatives typically take the form of central counterparties.

One way for exchanges to ensure that their clearing infrastructure is reliable is to maintain control over it: a clearing house for derivatives may be a department within an exchange or an independent legal entity (in which case it is typically owned by the exchange or by its clearing members). However, the trend observed towards the demutualisation of exchanges raises the issue of whether the clearing and settlement functions associated with on-exchange trading should be distinguished from the trade execution function fulfilled by the exchange. Thus, the clearing and settlement of exchange-traded derivatives may be organised differently in different countries or markets for historical, legal, regulatory and/or antitrust reasons.

### **2.3 OVER-THE-COUNTER TRADING**

In the OTC derivatives market, trading takes place as a result of two trading parties bilaterally agreeing a new contract. Such contracts may be fully tailored to the specific needs of the two parties or, at the other end of the spectrum, they may be identical to exchange-traded contracts. Depending on the extent to which the contracts are standardised, trading may be manual or supported by automated systems. Electronic multilateral trading venues have been established for some frequently traded and highly standardised OTC contracts (i.e. “plain vanilla” contracts), such as interest rate swaps.

For interest rate derivatives, there are three types of trading practice: voice-based trading in the “direct market”, where banks negotiate directly; voice-based and electronic trading in the inter-dealer market; and voice-based or electronic execution platforms in the dealer-to-client market. Overall, voice-based trading continues to dominate, given the nature of the market. For foreign exchange derivatives, too, the trading channel of choice remains voice-based brokerage. For credit and equity derivatives, transactions between broker-dealers take place on electronic platforms provided by inter-dealer brokers. For credit derivatives, dealer-to-client transactions may be conducted by phone or on dealer-to-client platforms. In view of their bespoke and non-standard nature, most OTC commodity trades are voice-brokered. However, execution networks are increasingly being used.

### **2.4 TRADE REPOSITORIES**

For exchange-traded and/or CCP-cleared derivatives, contract information will be available at the exchange or CCP (leaving a transparent trail in terms of positions, prices and exposures). By contrast, for bilaterally cleared OTC trades, information on legal documentation and the economic details of contracts is usually stored in broker-dealers’ individual proprietary systems, which are not necessarily compatible with each other and are not always updated. Moreover, information is highly fragmented. These weaknesses create uncertainty about

exposures and counterparties, and it is very difficult for both market participants and public authorities to monitor exposures and possible vulnerabilities.

A *trade repository* (also referred to as a *trade information warehouse*) is a support infrastructure that serves as a central registry (in the form of an electronic database) for all relevant economic and legal information related to derivatives contracts. Information on trades is sent to the trade repository at the time of confirmation at the latest. A trade repository is a key tool for storing and aggregating relevant market information and making it available to public authorities, market participants and other interested parties. Moreover, third-party providers offering automated services during various post-trade stages will, by connecting to the trade repository, be able to base their services on the records maintained by the repository. Trade repository data may also be used by CCPs. Furthermore, once a complete record of a contract (a “golden record”) has been established, it can then be updated with any relevant new information. This means that up-to-date information necessary for the processing of payments, clearing, settlement and other post-trade events over the life of a contract can be obtained from the trade repository, depending on the relevant business model.

Trade repository services are a recent innovation, first being used in 2006 for credit derivatives. However, particularly given the lessons learned by market participants and public authorities as a result of the financial crisis that erupted in 2007, trade repository services are now being introduced for other OTC derivatives.

## 2.5 ASSIGNMENT

There may be situations in which a party wishes to exit an OTC derivatives position. One way of doing so is through the *assignment* (also called “novation”) of a contract, whereby one counterparty (the transferor) exits a trade contract and is replaced by another party (the transferee), which becomes the new counterparty to the remaining original party. Thus, the transferor exits the deal and its contractual obligations are shifted to the transferee. Hedge funds, for example, often resort to assignment rather than seeking to exit a position by negotiating the termination of the contract or entering into an offsetting contract.

Master agreements require a transferor to obtain the prior written consent of its original counterparty in order to effect assignment. In the past, however, dealers have accepted the assignment of derivatives trades without such prior consent. In such circumstances, if assignment is conducted before a trade has been confirmed, it could result in problems and delays in the confirmation process for trades. It could also create confusion as to the identities of counterparties to outstanding trades and thereby undermine the effectiveness of the management of counterparty credit risk. This could, in turn, result in disagreements about collateral requirements and a failure to make timely payments on derivatives contracts. The availability and active use of trade repository services (see Section 2.4) allows the mitigation of these problems.

### 3 CLEARING

Exchange-traded derivatives are, as a rule, cleared on a multilateral basis in a CCP. OTC derivatives are typically cleared by means of bilateral arrangements. However, in recent years CCP services have become available for some sufficiently standardised OTC products (e.g. some interest rate swaps, some credit default swaps and some equity derivatives).

#### 3.1 BILATERAL CLEARING

In the OTC derivatives market, each trading party and broker-dealer is responsible for the conduct of post-trading functions and the life cycle management of its outstanding contracts, including the monitoring of positions and the management of counterparty risk exposures.

A derivatives contract binds the counterparties together for the duration of that contract (which could be decades), with the result that they are exposed to counterparty credit risk – i.e. the risk that the other party will not honour its obligations – for the entire duration of the contract. The contract’s economic value to the respective parties varies with the value of the underlying asset. For each individual contract, one party is said to be “in the money” (i.e. the present value of its future cash flow is positive), while the other is said to be “out of the money”. To monitor developments in the value of the parties’ portfolios and manage counterparty risk, contracts are regularly marked to market. Once a party has built up a claim on the other party, it is entitled to ask for collateral in order to mitigate the risk of its counterparty failing to honour its obligations or defaulting before the contract matures. Timely revaluation of portfolios and prompt collateralisation is particularly important while markets are volatile.

Managing collateral (and contract-related cash flows) for a large number of bilateral relationships is operationally challenging and can be hampered by differences in counterparties’ internal trade documentation and mark-to-market estimates. Such differences can also significantly impair the credibility of bilateral collateral management, as disputes between counterparties regarding the collateral to be exchanged are not uncommon. In order to proactively address such problems, portfolio reconciliation services (see Section 1.4) are increasingly being used.

**Table 7 Use of portfolio reconciliation services**

(percentage of trades reconciled at stated intervals)

	Daily	Weekly	Monthly	Yearly
Total sample	28	10	14	44
Large dealers	56	5	3	37

Source: *ISDA Margin Survey 2010 – Preliminary Results*, ISDA, April 2010.

Note: 90% of survey respondents indicated that they performed some form of portfolio reconciliation.

**Table 8 Percentage of trades which are subject to collateral agreements**

(percentages)	All OTC derivatives	Fixed income derivatives	Credit derivatives	Foreign exchange derivatives	Equity derivatives	Precious and base metal derivatives	Energy and other commodity derivatives
All respondents	70	79	93	57	71	60	64
Large dealers	78	84	97	63	68	69	62
Small/medium dealers	68	77	91	54	72	52	65

Source: ISDA Margin Survey 2010 – Preliminary Results, ISDA, April 2010.

Collateral is usually exchanged on a net basis for the total portfolio of derivatives contracts concluded by two parties. Collateral is typically provided in cash, with securities and other assets being provided less often.

In the context of bilateral clearing, an important development is the extension of prime brokerage arrangements to cover OTC derivatives. *Prime brokers* are specialist intermediaries that act as custodians and provide specialist services to clients, particularly hedge funds. In a prime brokerage contract for OTC derivatives, a prime broker agrees to act as an intermediary for specific eligible transactions conducted by a hedge fund client with one of a list of approved executing broker-dealers. Once the executing dealer and the fund have agreed to a trade, the fund and the executing dealer each notify the prime broker of the terms. If the prime broker agrees, it becomes the counterparty to two back-to-back trades: one with the fund and the other with the executing dealer. As with CCPs, prime brokerage arrangements concentrate risk and risk management. Thus, the legal soundness of prime brokers' contracts and the robustness of their processing capabilities and risk management systems are of vital importance to the safety of such arrangements.

**Table 9 Collateralisation levels by type of counterparty**

(share of exposures collateralised; percentages)	All OTC derivatives	Banks/ broker-dealers	Hedge funds	Institutional investors	Sovereign/ supra-national Corporations	Other	
All respondents	69	78	141	58	25	47	91
Large firms	73	87	146	73	31	32	41
Small/medium firms	68	76	134	43	20	57	131

Source: ISDA Margin Survey 2010 – Preliminary Results, ISDA, April 2010.

## 3.2 CCP CLEARING

Where trades are cleared centrally by a CCP, each party will have one single counterparty risk exposure – an exposure vis-à-vis the CCP, an institution specialising in risk management. One of the key benefits of CCP clearing is the fact that, as a result of multilateral netting by novation, clearing members' credit risk exposures are much smaller than they would be in bilateral relationships. Moreover, CCPs apply consistent, highly robust risk management tools to all exposures. (For more information on CCPs, see Sections 3.2 and 3.3 of Chapter 2.) Furthermore, CCP clearing allows transparency on counterparty risk exposures.

The clearing of derivatives usually takes place within a tiered structure. The CCP restricts direct participation in the clearing process to the most creditworthy sub-set of market participants (e.g. those meeting certain capital and other requirements). Only these market participants have a principal-to-principal relationship with the CCP for all contracts accepted for clearing. Market participants that are not clearing members need to establish an account relationship with a clearing member in order to effect settlement. This can be a direct relationship with the clearing member, or it can be done indirectly through a clearing broker.

A CCP's risk management is more challenging for OTC derivatives than for exchange-traded derivatives. There are two specific reasons for this. First, as OTC derivatives contracts are often more complex and reliable prices are less clearly observable, they require the use of more complex pricing models, which may involve model risk. Second, any default procedures for OTC contracts must accommodate the relative illiquidity of the instruments being cleared. Thus, a number of interrelated factors influence a CCP's decision on whether or not a particular product should be eligible for central clearing. This decision will depend on factors such as the extent to which the product is standardised, its risk characteristics, the availability of price information and the trading liquidity of the product.<sup>6</sup> Conversely, the risk management procedures implemented will affect both the cost of participation in the CCP and the risk stemming from such participation.

While central clearing is preferable to bilateral clearing for transparency and financial stability reasons, it would be extremely difficult – and costly – to make all OTC derivatives subject to CCP clearing. CCP clearing has been available for a range of OTC interest rate swaps since 1999 and for selected OTC equity derivatives since 2005. The first CCP services for credit default swaps were launched at the end of 2008. As this instrument received a lot of attention in conjunction with the financial crisis, central clearing services are now offered by several CCPs following efforts by authorities and market participants.

In some countries and regions of the world (e.g. in the United States), CCPs tend to be more specialised, while in other countries and regions (e.g. in Europe) various CCPs now offer cross-product clearing (i.e. clearing covering various

<sup>6</sup> See *Guidance on the application of the 2004 CPSS-IOSCO Recommendations for Central Counterparties to OTC derivatives CCPs*, CPSS-IOSCO consultative report, BIS, Basel, May 2010.

different securities and derivatives) and, following a process of consolidation involving alliances and mergers, cross-border clearing and netting.

### 3.3 PORTFOLIO COMPRESSION

Although parties trading in OTC derivatives may not have large net exposures, they may have large numbers of equal and opposite trades with multiple counterparties. As a result, while their net exposures may be small, their gross exposures may be large. Although in such cases the various contracts almost cancel each other out in terms of their economic meaning, risk management, collateralisation and the handling of payment flows have to be performed on the basis of gross exposures for a large number of bilateral relationships, with corresponding challenges for operational and counterparty risk management.

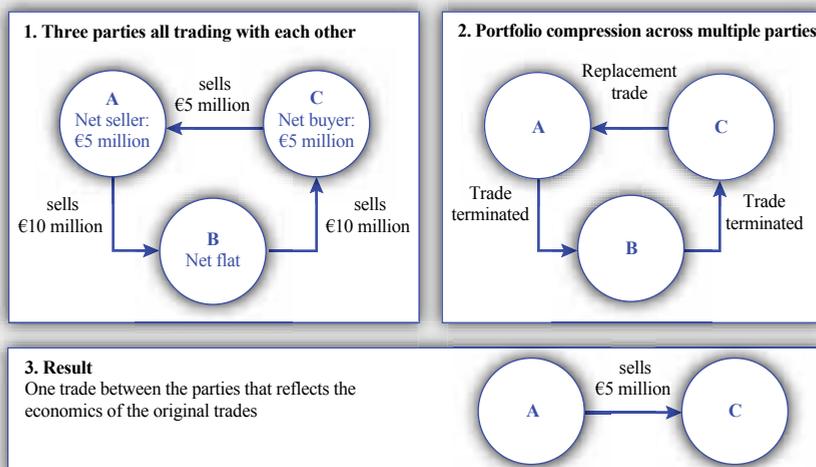
Portfolio compression (also referred to as the “termination” or “tearing-up” of trades) is a process that identifies offsetting – and thus redundant – trades that can be removed from a party’s books without changing its market risk profile. This reduces the notional value of the party’s derivatives and thus its gross exposure. It also reduces the notional size of the market. Compression may be performed on either a bilateral or a multilateral basis, typically being most effective for market participants who act as both buyers and sellers (i.e. broker-dealers).

The benefits of portfolio compression are that it reduces: (i) counterparty credit risk (without changing the net market exposure of an institution); (ii) operational risks and costs; (iii) administrative burdens and costs; and (iv) the overall cost of capital. Portfolio compression also offers benefits for CCPs, as it can also be used to compress CCPs’ portfolios. It may also facilitate default management, since the smaller and simpler a defaulting party’s portfolio is, the quicker and easier it will be to manage the consequences of that default.

Portfolio compression requires that contracts be highly standardised. The more liquid and standardised the contracts, the easier it is to identify and match eligible trades and tear them up. In practice, portfolio compression is predominantly used with interest rate and credit default swaps and, to some extent, energy swaps. It has been particularly useful in reducing risk exposures in the CDS market. Indeed, between the start of 2008 and spring 2010 a notional value of some USD 50 trillion was removed from the market and parties’ balance sheets by means of compression cycles. While additional trading has taken place in the meantime, this compression saw the notional size of the market halved to some USD 30 trillion from its peak of over USD 60 trillion.<sup>7</sup>

<sup>7</sup> See: *Ensuring efficient, safe and sound derivatives markets*, European Commission staff working paper, SEC(2009) 905 final, European Commission, July 2009; and Duffie, D., Li, A. and Lubke, T., “Policy perspectives on OTC derivatives market infrastructure”, *Staff Reports*, No 424, Federal Reserve Bank of New York, New York, rev. March 2010.

## Box 14 How portfolio compression works



1. – Party A buys €5 million of protection from Party C, but sells €10 million of protection to Party B. Party A is thus a net seller of €5 million in product X.
  - Party B has two credit derivatives positions in product X. It buys €10 million of protection from Party A and sells the exact same amount of protection to Party C, so its net position in product X is zero.
  - Party C sells €5 million of protection to Party A, but buys €10 million from Party B. Thus, Party C is a net buyer of €5 million in product X.
2. Portfolio compression eliminates the two trades that Party B has with Parties A and C, and creates a replacement trade between A and C taking into account their original trade.
3. The Result:  
There is now one trade across all three parties without affecting the economics of the original trades.

Source: Duffie, D., Li, A. and Lubke, T., “Policy perspectives on OTC derivatives market infrastructure”, *Staff Reports*, No 424, Federal Reserve Bank of New York, New York, rev. March 2010.

### 3.4 RECENT INITIATIVES

During the financial crisis that erupted in 2007 and then intensified following the collapse of Lehman Brothers in September 2008, several financial market segments faced severe challenges, resulting in stalled trading and dysfunctional markets. Institutions were hesitant about trading, as they lacked information on counterparties’ risk exposures. One contributing factor was the lack of transparency regarding risk exposures in derivatives markets, particularly for the OTC segments.

Following the crisis, there is now a broad policy consensus across the G20 on the need to increase the use of CCPs for OTC derivatives and ensure that OTC derivatives transactions are reported to trade repositories. In particular, the use of these infrastructures is expected to significantly reduce counterparty risk and enhance transparency in OTC derivatives markets. While this work has initially focused on credit default swaps in view of the immediate systemic risk concerns regarding these markets in the context of the financial crisis, it has subsequently been extended to cover all OTC derivatives. This has already resulted in several CCPs and trade repositories being set up for OTC derivatives, and more are expected to be established in due course.

The main policy priorities and initiatives in major economies relate to the establishment of legislation on OTC derivatives and related infrastructures (including the improvement of transparency and risk management for bilaterally cleared transactions), as well as the establishment of effective arrangements for cooperation between authorities on the question of CCPs and trade repositories for OTC derivatives.

The alignment of the various legislative frameworks in place around the world is highly desirable given the global nature of OTC derivatives markets and the global financial stability implications of the new infrastructures for OTC derivatives. It is important that such legislation be consistent with the international standards drawn up by the European System of Central Banks (ESCB), the Committee of European Securities Regulators (CESR), the CPSS and IOSCO for financial market infrastructures. Elements under consideration in the various legislative initiatives include: (i) provisions increasing (and potentially requiring) the use of CCP clearing for eligible (i.e. sufficiently standardised and liquid) OTC derivatives; (ii) provisions on requirements regarding the authorisation, risk management and transparency of CCPs and trade repositories for OTC derivatives, with a view to ensuring the safety and resilience of these infrastructures and their effective contribution to enhanced market transparency; and (iii) provisions on effective access – including cross-border access – by all competent authorities (including central banks) to the information stored in trade repositories, in line with their information needs. As some OTC derivatives are not sufficiently liquid and standardised to be eligible for central clearing, specific measures are also envisaged in order to promote enhanced risk management and transparency for these transactions. These measures include the mandatory reporting of transactions to trade repositories, enhanced collateralisation and potentially the introduction of capital charges for credit exposures stemming from bilaterally cleared contracts.

Given the global nature of the OTC derivatives market, cooperative oversight arrangements are being set up by the overseers and regulators responsible for the new CCPs and trade repositories in accordance with international principles

for cooperative oversight. In this context, efforts are being made to allow information to be shared horizontally with a wide variety of authorities across the various infrastructures.<sup>8</sup>

## 4 SETTLEMENT

Exchange-traded and OTC derivatives are settled in a similar manner, using one of two methods. The first is *cash settlement*, which entails a cash payment corresponding to the net value of the contract at the time of its fulfilment. This method is used for the vast majority of derivatives based on financial assets. The other method is the physical delivery of the underlying asset in exchange for payment of the agreed price. This is seen in a very small percentage of all transactions. However, physical delivery is often used for derivatives based on commodities.

Traders on derivatives markets usually offset their positions in the assets underlying the derivatives before the derivatives mature (i.e. before the settlement date) by effecting an offsetting derivatives transaction. The clearing and netting of these interconnected transactions is therefore crucial. This normally leads to the settlement of simple cash payments (i.e. payments from net debtors to net creditors). The derivatives' underlying assets are only settled where traders' net positions in underlying assets remain uncovered.

### 4.1 DERIVATIVES SETTLED IN CASH

The process of clearing and netting derivatives transactions typically leads to the settlement of simple cash payments – i.e. payments from net debtors to net creditors. Cash settlement is also practical for derivatives contracts which foresee payment flows in various currencies.

These cash payments may be made through a *payment system* (in central bank money if central bank accounts are used, or in commercial bank money if settled in the books of a bank). Alternatively, those cash payments may be settled by means of *correspondent banking* arrangements on the books of a bank. Where legislation allows a CCP to maintain cash accounts for its members, funds could also be transferred using an *embedded payment system* (see Section 4.4 of Chapter 2) within the CCP.

There are also cash flows that need to be settled during the life of a derivatives contract (such as the periodic payments made for some types of contract, payments related to initial and variation margins, and contributions to clearing funds). These payments will also be made using one of the channels described above.

As regards the settlement asset, there is a tendency in Europe for clearing houses to settle cash transactions in euro in central bank money (i.e. all euro area CCPs

<sup>8</sup> More information on challenges, policy priorities and initiatives under way in relation to OTC derivatives can be found in Russo, Daniela, “OTC derivatives: financial stability challenges and responses from authorities”, *Financial Stability Review: Derivatives – financial innovation and stability*, Banque de France, Paris, July 2010.

have settlement links with TARGET2). In the United States, tiered structures are more common for cash settlement, with the result that cash transactions are usually settled via accounts held with one or more commercial banks.

Finally, it should be noted that the *CLS system* (see Section 3.3 of Chapter 9) acts as the main payment settlement system for cash-settled CDS and non-deliverable forward foreign exchange transactions on the OTC market. It settles all cash payments for CSDs which are confirmed electronically in the Depository Trust & Clearing Corporation's trade information warehouse in the United States, which automatically feeds up-to-date trading details into CLS's electronic settlement process. The two systems exchange real-time information on the status of all payment instructions that have been submitted to CLS. Settlement members submit their payment instructions directly to the CLS system for the matching of payment orders. Once these instructions have been validated, they are settled on the settlement members' accounts with CLS Bank. Institutions that do not have a direct relationship with CLS Bank have to establish access via a member of the CLS system. In providing this payment settlement service, CLS acts as an offshore system for all eligible currencies bar the US dollar.

## 4.2 DERIVATIVES SETTLED PHYSICALLY

Upon the maturity of the relevant derivatives contract, the underlying asset is settled by means of the delivery of the underlying asset in exchange for the payment of the agreed price.

The physical delivery of securities (e.g. in the case of an equity option or a CDS which is settled physically) takes place by means of book entry in a CSD or ICSD or via a custodian. If both counterparties have an account with the same CSD, settlement takes place in the accounts of that CSD. If they have accounts with different CSDs, it may be possible to deliver securities from one party to the other using *link arrangements* (i.e. direct, indirect or relayed links) between the CSDs concerned (see Section 5 of Chapter 2). Where CSD delivery is not possible or impracticable, the parties can make use of settlement services involving one or more custodian(s).



## CHAPTER 4

### KEY CONCEPTS – RISKS

#### I INTRODUCTION

In payment, clearing and settlement systems, participants face the risk that settlement in the system will not take place as expected, usually owing to a party defaulting on one or more settlement obligations. This “settlement risk” includes, in particular, credit risk, liquidity risk, operational risk and legal risk. These risks can lead to systemic risk if problems within one financial institution spread to others. Payment, clearing and settlement systems that are capable of generating such a domino effect or causing problems to spread to the domestic or international financial system are referred to as “systemically important systems”. Risks arise both as a result of the specific features of an individual system or arrangement (such as the fact that the completion of a transaction requires the settlement of two related legs, or the specific netting arrangements in place) and on account of the interdependence of the various systems.

This chapter provides an introduction to some key concepts regarding risks relevant in the handling of payments and transactions relating to financial instruments. It also endeavours to provide some examples of ways to mitigate such risks. More detailed information on these risks and their mitigation can be found, for example, in the various reports of the Committee on Payment and Settlement Systems published by the Bank for International Settlements.<sup>9</sup>

#### 2 CREDIT RISK

Credit risk is the risk that a counterparty will not settle (i.e. discharge) an obligation for full value, neither when that obligation becomes due nor at any time thereafter. It stems from the extension of any form of unsecured (i.e. non-collateralised) credit and from a failure to synchronise the various interrelated elements (or “legs”) of a transaction. For example, in interbank payments, payment data may be exchanged directly between banks (with funds credited to receiving customers) before interbank settlement has been completed.

Other examples of asynchronous settlement are: (i) the two currency legs involved in foreign exchange transactions; and (ii) securities transactions with two delivery legs (i.e. a securities leg and a cash leg), the two legs of which are often processed and settled in separate systems. In such situations, there is a risk

<sup>9</sup> See, for example: *Core Principles for Systemically Important Payment Systems*, CPSS, BIS, Basel, January 2001; *Recommendations for Securities Settlement Systems*, CPSS and IOSCO, November 2001; *Recommendations for Central Counterparties*, CPSS and IOSCO, November 2004; *Progress in reducing foreign exchange settlement risk*, BIS, Basel, May 2008; and *The interdependencies of payment and settlement systems*, BIS, Basel, 2008. (The first three will be reviewed in 2010 by the CPSS and IOSCO.) See also Iivarinen, Timo et al., “Regulation and control of payment system risks – a Finnish perspective”, *Bank of Finland Studies*, A:106, Suomen Pankki – Finlands Bank, Helsinki, 2003.

of the purchaser of an asset delivering funds to its counterparty but not receiving the asset purchased, which would entail a loss equal to the full principal value of the asset involved.

Credit risk includes:

- principal risk or counterparty risk – i.e. the risk of losing part or all of the value of a transaction in the event that the seller of a financial asset delivers but does not receive payment or the buyer pays but does not receive the asset in question;
- replacement cost risk, or the risk of losing unrealised gains (also called “market risk” or “price risk”) – i.e. the risk that, owing to a party to a transaction failing to discharge its obligation on the settlement date, the other party to the trade will have to replace the original transaction at current market prices and thereby incur replacement costs.

In settlement systems, credit risk is also understood to include the risk of the settlement agent failing (see Section 2.3).

## 2.1 CREDIT RISK IN PAYMENT SYSTEMS

In an RTGS system, individual payments are settled one by one, usually in central bank money, with immediate finality. As a result, RTGS settlement in central bank money eliminates credit risk for other participants in the system.

In a net settlement system, there is normally a certain time lag between the system’s acceptance and processing of a transaction and its final settlement (i.e. payment data are often delivered to the receiving system participant – with funds potentially being credited to receiving customers – prior to interbank settlement being completed). During this period the receiving participant will have credit risk exposure to the sending participant.

The credit risk involved in net settlement systems can be reduced by various methods, several of which are detailed below.

- The frequency of net settlement cycles during the day can be increased, which serves to reduce the duration of participants’ credit risk exposure in each cycle.
- Upper limits can be placed on the size of individual payments.
- The size of intraday exposures can be restricted by means of bilateral or multilateral sender or receiver limits. Limits can be set individually by participants or centrally by the system. The most common forms of limit are: (i) bilateral net receiver limits (i.e. credit caps), whereby each bank in the system defines the maximum intraday net credit position that it is prepared to incur with regard to every other bank in the system on the basis of its assessment of those other banks’ creditworthiness; and (ii) system-wide net sender debit limits (i.e. debit caps), which are set centrally in the system,

placing a limit on the aggregate net debit position that a bank is permitted to have vis-à-vis the rest of the system participants taken as a whole. To be effective, any limits should automatically be controlled by the system on a continuous basis and should not rely exclusively on monitoring by participants.

- Loss-sharing arrangements can be implemented to cover the largest possible debit position of a participant, so that settlement can be completed even if the participant with the largest risk exposure (i.e. the largest net debit position) fails to settle. (There are also cases where the two largest risk exposures are covered.) Such arrangements have three components:
  - a) an agreement on the method of loss-sharing, which could be on either a “defaulter pays” basis (i.e. each participant is required to collateralise any exposures it creates for other participants), or a “survivors pay” basis (i.e. losses from a party’s default are borne by the surviving participants in accordance with some predetermined formula, be it in equal shares or on some kind of pro rata basis);
  - b) an agreement on the extent and form of collateralisation, which could, for instance, take the form of (i) a cash or securities-based collateral pool, or (ii) dedicated and irrevocable credit lines or guarantees provided by trusted third parties;
  - c) practical arrangements for effecting settlement in the event of a loss being incurred – i.e. establishing the existence and extent of the loss, triggering the implementation of the loss-sharing agreement and activating the required liquidity.

Loss-sharing arrangements could potentially lead to a second round of settlement failures – e.g. where a bank which previously had only just enough liquidity to cover its original obligations was called upon to provide additional funding in excess of its liquid resources.

- Membership of a system can be limited to those banks that are considered least likely to default on a settlement obligation. Whatever the criteria used to define such a group, they need to be publicly disclosed and must be objective and non-discriminatory. Even so, no form of restricted membership can ever guarantee that participants will never default.

## 2.2 FOREIGN EXCHANGE SETTLEMENT RISK

Foreign exchange settlement risk arises when one party to a foreign exchange transaction transfers the currency it has sold without being certain that the currency it has bought has been (or will be) delivered. Some institutions may have exposures to foreign exchange settlement risk that are extremely large relative to their capital base. This is particularly dangerous if this risk is poorly understood and controlled by the institutions concerned. Foreign exchange settlement risk is of considerable concern to regulatory authorities, as its materialisation could have serious consequences from a financial stability viewpoint.

The main sources of foreign exchange settlement risk are:

- differences in time zones and payment system opening hours;
- settlement of the two currency legs in two separate national large-value payment systems, particularly if one of the currencies is delivered via a system which does not offer intraday settlement finality;
- a lack of optimised internal payment processing practices within banks, and early payment cancellation deadlines (which affect the duration of risk exposures);
- inadequate risk management by individual banks.

In order to eliminate foreign exchange settlement risk, the settlement of the two legs of a foreign exchange transaction must be truly simultaneous. In view of the size of the global foreign exchange market and the amounts of money that are potentially at risk, G10 central banks developed a strategy in the mid-1990s to reduce systemic risks arising from the settlement of foreign exchange trades. This resulted in the development by the private sector of a dedicated system, Continuous Linked Settlement, which provides a PvP mechanism for the settlement of foreign exchange transactions (see Section 5.2 of Chapter 1 for a description of PvP and Section 3.3 of Chapter 8 for a description of CLS).

### 2.3 SETTLEMENT AGENT RISK

Settlement agent risk refers to the risk that the settlement agent serving a payment system or correspondent banking arrangement could fail (see also Section 3 of Chapter 1). This could lead to uncertainty regarding the status and possible cancellation of customer and interbank payments submitted to the settlement agent, as well as the loss of existing settlement balances (i.e. deposits) held with that agent. The risk of losing settlement balances is also relevant as regards issuers of e-money.

In most systemically important payment systems, the settlement bank is the central bank, which in practice eliminates participants' credit risk as regards the settlement agent. In the securities markets, most CSDs settle in central bank money given their systemic importance. However, the ICSDs, as well as numerous CSDs, settle all or part of their transactions in commercial bank money.

In arrangements where the settlement agent is an institution other than the central bank, it is important that the central bank and the banking supervisor(s) have in place an oversight and supervisory regime that is sufficiently rigorous to minimise the likelihood of the settlement agent failing.

## 2.4 CREDIT RISK IN SECURITIES SETTLEMENT SYSTEMS

The major sources of credit risk in securities settlement systems relate to two types of time lag and a lack of synchronisation.

First, a time lag between the conclusion and settlement of a securities transaction will give rise to replacement cost risk if there is a failure to deliver either the securities or the funds, or if insolvency proceedings are opened against one of the parties to the transaction, with the result that the transaction cannot be executed and has to be replaced. It may not be possible to replace the transaction on the same terms (if at all). The longer the time lag between the conclusion and settlement of the transaction and the greater the fluctuation in market prices, the higher the replacement cost risk.

Replacement cost risk can be avoided by settling securities transactions in real time, with settlement taking place as soon as the transaction is concluded. This risk can also be mitigated by adopting specific measures aimed at facilitating securities settlement both directly (e.g. by shortening the settlement cycle) and indirectly (e.g. by requiring prompt trade confirmation and/or matching and by promoting access to ancillary services such as securities lending or, where available, CCP clearing and netting (see Sections 3.2 and 3.3 of Chapter 2)).

Second, if there is a time lag between the settlement of the two legs of the transaction (i.e. the securities leg and the cash leg), a counterparty could fail after it has received the asset purchased but before it has delivered the asset sold. The party that delivers its asset first has a credit risk exposure to its counterparty equivalent to the agreed value of the principal. The longer the time lag between the completion of the securities and cash legs, the longer the party in question is exposed to that principal risk. Settlement on a delivery-versus-payment basis ensures that securities are delivered only if payment takes place (and vice versa), thereby providing a mechanism for eliminating such settlement-related principal risk. The widespread adoption of DvP mechanisms by CSDs and the ICSDs has certainly made a significant contribution to the reduction of this risk.

## 2.5 CUSTODY RISK

Custody risk is the risk of a loss being incurred on securities in custody as a result of the custodian's insolvency, negligence, misuse of assets, fraud, poor administration or inadequate record-keeping.

In order to mitigate custody risk, it is essential that the custodian keep customers' securities separate from its own in its books ("account segregation"), in order to protect customers' securities against possible claims by the custodian's creditors.

Moreover, in indirect holding systems for securities (see Section 1.4 of Chapter 2), it is essential to prevent custodians from unduly creating securities or making entries that result in negative balances being held on securities accounts. The undue creation of securities by a custodian is a mistake in an accounting or book-keeping activity which results in a situation where the total value of the

overall holdings of a particular security recorded on the relevant accounts in the CSD exceeds the total value of the original issue of that security (as evidenced by the total value shown in the relevant issuance account held at the CSD). The undue creation of securities can be prevented at the various stages of the custody chain by reconciling the custodian's accounts with the CSD's accounts.

In order to further minimise custody risk, it is advisable, in those jurisdictions where this practice is permitted, that a customer's explicit consent be required before a custodian can use a customer's securities for its own business (e.g. for securities lending or as collateral for its own credit).

## 2.6 RISKS IN INTERNALISED SECURITIES SETTLEMENT

In jurisdictions permitting indirect holding systems, securities transactions can be settled in the books of a custodian bank without a corresponding accounting entry being made in the books of the CSD. This practice, which is referred to as "internalised settlement" or "book-entry settlement", occurs where a custodian bank has two customers transacting with each other and the custodian transfers the customers' securities and cash holdings within its books without having to forward the instructions to the national CSD and payment system.

As in the case of settlement in CSDs and ICSDs, principal risk also arises when the settlement of securities transactions is internalised in the books of a custodian bank. However, settlement-related principal risk arising from internalised settlement can be eliminated if the custodian bank uses accounting procedures modelled on DvP mechanisms (i.e. by "blocking" securities in the seller's account until the funds are successfully transferred from the buyer's account).

Moreover, in principle the degree of customer protection in the case of internalised settlement differs from that available where settlement takes place in the books of a CSD. This is due to the protection often provided in the case of the latter by legislation to prevent the unwinding of transactions – e.g. the Settlement Finality Directive (SFD) in the European Union (EU; see Chapter 10).

Securities held in custody with a custodian are in fact held outside the balance sheet of the custodian. By contrast, cash held with a custodian bank represents a claim on that bank and is therefore shown in its balance sheet. Thus, in the event of the custodian bank becoming insolvent, funds held with that custodian will be lost (to the extent that they are not protected by a deposit guarantee scheme). Securities held with the custodian will not be lost, but they will probably not be available to the owner while the administrator ascertains who owns which securities. A securities transaction internalised by the custodian bank which was being processed at the time of the custodian's insolvency would not be protected from unwinding. While this could result in a loss for an individual customer, such an event would not normally have systemic consequences, and so general protection against unwinding similar to that provided in the case of settlement in the books of a CSD (i.e. in a "system") has so far not been considered necessary.

## 2.7 RISKS RELATED TO CENTRAL COUNTERPARTIES

In some post-trading arrangements for securities and other financial instruments (such as derivatives), the clearing function is handled by means of the intervention of a central counterparty. The CCP interposes itself between the parties to a trade and, through netting by novation and substitution, becomes the seller to every buyer and the buyer to every seller. This means that the dealers know the identity of their immediate counterparty (i.e. the central counterparty). Dealers will normally prefer a risk on a well-known counterparty to a risk on an unknown party. This is especially relevant in anonymous trading, where the resulting risk exposure will ultimately take the form of exposure to the central counterparty. This applies in particular to cross-border and offshore transactions, where there is often less knowledge of the counterparty than for domestic transactions.

The use of a central counterparty entails the concentration of settlement risk in a single entity. Thus, if the central counterparty is unable to fulfil its obligations or suffers sudden operational problems, this can have significant consequences and can potentially trigger a systemic crisis. As a result, authorities have, in recent years, increasingly focused their attention on central counterparties' rules and procedures for risk management.

The central counterparty specialises in managing credit risk and is expected to apply the best available risk mitigation techniques and adopt measures to safeguard against the failure or insolvency of its members (see Section 3.3 of Chapter 2).

A CCP will seek to maintain financial resources sufficient to cover any losses in excess of margin requirements. In order to assess the amount of resources needed, CCPs develop scenarios comprising extreme but plausible market conditions and conduct stress tests. A CCP's financial resources can take a variety of forms, including a clearing fund provided by participants or other parties, loss-sharing arrangements, insurance arrangements, capital, or other similar provisions. A CCP's rules will normally ensure that the resources posted by a defaulter are used before any other financial resources when it comes to covering losses.

CCPs employ default procedures to limit the potential for the effects of a default to spread beyond the defaulting participant. Default procedures seek, among other things, to minimise the losses of the defaulting participant, to wind down its positions in an orderly manner and to enable the CCP to continue fulfilling its obligations. Moreover, CCPs have arrangements to facilitate the prompt closing-out, hedging or transfer of a defaulting participant's proprietary positions. The longer these positions remain open, the larger the potential credit exposures.

For more information on issues related to CCPs' management of credit, liquidity, operational and legal risks, see the CPSS-IOSCO Recommendations for Central Counterparties of 2004 and the ESCB-CESR Recommendations for Securities Settlement Systems and Recommendations for Central Counterparties in the European Union of 2009.

### 3 LIQUIDITY RISK

Liquidity risk is the risk that a counterparty will not settle (i.e. discharge) an obligation for full value when it becomes due. This does not imply that the counterparty or participant is insolvent, since it may be able to effect the required settlement at some unspecified time thereafter.

Liquidity risk materialises if a party does not have the necessary funds or assets at its disposal when the obligation becomes due. This could, for example, be due to operational problems or a temporary inability to convert assets into cash in a timely manner owing to adverse market conditions. One party's failure to settle an obligation for full value when it becomes due may, in turn, result in another party becoming unable to fulfil its obligations in full when these become due. To prevent this from happening, the non-defaulting party may have to procure liquidity or assets from other sources at short notice – e.g. by borrowing in the market. This may entail extraordinary costs – e.g. a high interest rate. If the shortfall occurs close to the end of the day, obtaining the liquidity or assets needed could prove to be extremely difficult.

Market infrastructures, such as large-value payment systems, securities settlement systems and central counterparties, most of which are systemically important, are used for the clearing and settlement of critical transactions in the financial system. Such systems need to be able to complete settlement on time every day, in order to maintain confidence in these systems and support trading and liquidity in the markets they serve. If a systemically important system fails to settle properly on a given day, its participants and the wider markets can be exposed to large systemic liquidity, market and credit risks. It is important to note that liquidity problems in such a system can add and contribute to much larger liquidity difficulties in financial markets. Given its tendency to compound other risks, it is difficult to isolate liquidity risk.

The current international oversight standards, as set out by the CPSS and IOSCO, state that systems covered by those standards should be able to effect settlement when obligations become due and have arrangements allowing them to withstand the failure of the participant with the largest exposure.

In particular, net payment and securities settlement systems settling in central bank money, systems settling in commercial bank money, and central counterparty clearing may all be strongly affected by the stressful situations that arise as a result of the failure of a major participant – especially if market conditions were already adverse prior to that failure. The failure of Lehman Brothers on 15 September 2008 and the market stress that followed provided valuable insights into how market infrastructures and markets perform in very stressful conditions. Normally liquid markets, some of which were already under stress, became severely strained. Elevated market, credit and liquidity risks led market participants to stop lending or trading securities, which severely affected the liquidity of credit and securities markets. This also placed a strain on liquidity lines committed to market infrastructures. This episode showed that while market infrastructures proved robust and were able to ensure the settlement of obligations on time, infrastructure operators, central banks and other competent authorities need to pay more attention to risk management – particularly the management of liquidity risk.

### 3.1 LIQUIDITY RISK IN PAYMENT SYSTEMS

The liquidity risk in a net payment system depends, among other things, on the features of the specific system, the organisation and legal soundness of the netting arrangements in place, and the means and frequency of settlement.

Liquidity risk can be limited by the arrangements used to limit credit risk (see Section 2.1), as well as by arrangements ensuring settlement even in the event of the failure of the participant with the largest exposure. These arrangements could, for instance, take the form of a liquidity or collateral pool, dedicated credit lines established by liquidity providers or guarantees provided by trusted third parties.

The continued availability of information on net positions allows participants to better anticipate their liquidity needs at the time of settlement. Access to central bank credit facilities by participants in a net settlement system will increase the probability of the successful and timely completion of settlement.

All other things being equal, the settlement of individual payments in RTGS systems entails larger liquidity requirements than settlement in net settlement systems. If liquidity is limited, RTGS systems can experience gridlocks and deadlocks, which can prevent the execution of payments at the agreed time. A *gridlock* is a situation in which a failure to execute one or more transfer orders prevents the execution of a substantial number of orders submitted by other participants. Gridlock resolution mechanisms are used to resolve such situations and may involve the changing of queue priorities, the temporary bypassing of any “first-in, first-out” processing, the use of bilateral or multilateral offsetting in queues, etc. A *deadlock* is a stalemate situation whereby transfer orders cannot be settled by any means without infringing upon the constraints of the system (e.g. its limits). A deadlock can only be resolved by injecting sufficient liquidity into the system or adding transfer orders to queues in order to enable further processing.

At the same time, the ongoing settlement of payments in RTGS systems means that participants’ liquidity management is more flexible than in net settlement systems, where liquidity has to be available at fixed times.

There are a number of ways of limiting liquidity risk in RTGS systems.

1. Queuing facilities can be provided, possibly in combination with priority levels for payments. If balances are not sufficient for settlement, the relevant payment is placed in the queue until sufficient liquidity becomes available. The assignment of priorities may allow the order of payments in the queue to be changed.
2. Where banks are subject to reserve requirements, allowing them to be used on an intraday basis for payment purposes will increase available intraday liquidity.

3. Intraday credit (or intraday liquidity) can be made available by the central bank by means of intraday overdrafts or repurchase agreements. This reintroduces intraday credit risk in the payment system, but its provision by the central bank is explicit and subject to specific terms (relating, for example, to overdraft limits, collateralisation or price). Most central banks require that any credit provided be fully collateralised by means of eligible assets. In this regard, it is important that the pool of eligible collateral be large enough not to restrict the amount of liquidity available.
4. Sophisticated queue release algorithms and/or the offsetting of transfer orders can be used to reduce the overall liquidity level needed for the settlement of payment transactions, thereby softening the adverse impact of any liquidity problems at participant level. (For more information on queue release algorithms, see Box 5 in Chapter 1.)

## 3.2 LIQUIDITY RISK IN SECURITIES SETTLEMENT SYSTEMS

Liquidity risk in the settlement of securities transactions concerns the risk of incurring a loss (i.e. a cost) because funds or securities are not received at the expected time – e.g. if the expected funds or securities have already been deployed in order to settle other trades. If a party seeks to sell securities so as to receive funds, but the relevant trade is not settled on time, that party may have to borrow funds or sell securities at short notice, both of which may entail a loss. In the same way, a party which seeks to buy securities, but does not receive the necessary funds on time in order to pay for them, may be obliged to borrow equivalent securities in the market in order to honour any agreed resale with same-day value. It should be noted that while funds are by definition fungible, securities have a different level of liquidity, and so a failure to deliver securities may have a significant impact in terms of causing subsequent failures in back-to-back transactions involving an obligation to deliver a specific security.

Any settlement mechanism that contributes to transactions being settled at the agreed point in time will reduce liquidity risk. This could, for instance, be a credit facility at the settlement bank to ensure that sufficient liquidity is available for settlement, or a securities lending facility administered by the central securities depository or a custodian (see also Section 4.5 of Chapter 2). Having a well-functioning money market and securities lending market helps to reduce liquidity risk, since this makes it easier (and potentially cheaper) to borrow liquidity or obtain securities at short notice.

## 4 OPERATIONAL RISK

### 4.1 GENERAL CONSIDERATIONS

Historically, operational risk was regarded as the risk of technical failures such as a computer breaking down or faulty software. It was soon recognised that this interpretation was too narrow and the definition was expanded. An internationally recognised definition – one which is widely used within the financial services industry – was provided in the context of the Basel II framework.

The Basel Committee on Banking Supervision defines operational risk as “the risk of losses resulting from inadequate or failed internal processes, people and systems or from external events”.

This definition has a broader focus and, in addition to technology, also includes organisational aspects and other relevant factors. It creates an awareness that operational failures are not caused solely by the malfunctioning of technical components and can also be the result of errors, fraud, inaccessibility of key staff, unavailability of external stakeholders, etc.

In a nutshell, operational risk management could be described as a continuous and systematic process whereby risks are proactively identified, their potential consequences are assessed and plans are developed to address them (i.e. they are either mitigated or accepted). Its overall objective is to take appropriate action in order to: (i) minimise the probability of a risk occurring; and (ii) limit the consequences of those risks that, despite all measures taken, do materialise.

In the past, credit, liquidity and settlement risks have been considered the key risks, while operational risk has led a kind of shadowy existence. One possible explanation for this phenomenon is the fact that operational risk has for a number of reasons been regarded as the most complex of all the various types of risk. First, managing operational risk is not a scientific discipline based on mathematical calculations, but rather a task comprising a considerable number of elements that require professional judgement. Second, it is difficult to identify all possible sources of operational risk, hard to quantify that risk and a particular challenge to determine the likelihood of a risk event occurring. The last of the three is especially true for “tail events” – i.e. events which are very unlikely to occur but could have huge consequences, for example the terrorist attacks of 11 September 2001. In recent years, issues related to operational risk have become highly prominent.

## **4.2 OPERATIONAL RISK MANAGEMENT AND BUSINESS CONTINUITY**

The tragic events of 11 September 2001 highlight the importance of managing operational risk in a comprehensive and effective manner. In this respect, particular attention is paid to business continuity and the way in which business continuity management relates to operational risk management.

It should be recalled that, in general, the two disciplines follow the same approach. Both aim to establish the risks that a system is exposed to and identify vulnerabilities, with the ultimate objective of facilitating better informed decision-making on risks.

Operational risk management focuses on every conceivable risk that could potentially affect the smooth operations of a system or service. Business continuity management looks at just one particular – albeit very important – aspect, namely operational failures that could disrupt the delivery of key services. Consequently, the two disciplines have many similarities and overlap in several areas. We can see, therefore, that the implementation of an effective business continuity management programme will improve the operational risk profile

of the relevant system. In this respect, business continuity management can be regarded as a specialist discipline which is complementary to – and at the same time forms part of – the overall operational risk management process.

Recognised best practices and standards suggest that an effective business continuity management programme should typically comprise the following four key elements:

- a business impact analysis with a view to identifying critical activities and determining recovery objectives;
- a well-defined business continuity strategy;
- appropriate plans and procedures to ensure the continuity of critical services;
- the testing, maintaining and reviewing of existing plans in order to validate their effectiveness and ensure that they are kept up to date.

#### **4.3 OPERATIONAL RISK MANAGEMENT IN PAYMENT, CLEARING AND SETTLEMENT SYSTEMS**

Payment, clearing and settlement systems are basically exposed to the same types of risk. That is true whether they are wholesale or retail systems, and whether they handle transactions on an item-by-item, net or hybrid basis. What matters is the risk profile of the system concerned – i.e. the consequences of an operational risk event vary depending on the design and nature of the system.

The uninterrupted provision of services is a key concern for payment, clearing and settlement systems. Hence, guaranteeing the availability of the system is of fundamental importance for a system operator. However, it should be recalled that the scope of operational risk is broader than this. Thus, an operator must also ensure that assets are protected against unauthorised manipulation and confidentiality is preserved.

There are many operational risk events which could potentially harm systems with a variety of different designs. Consequently, it would be overly ambitious and not at all viable to discuss the consequences that an operational failure could have for a particular system, or even the financial market in which it operates. This would require more detailed knowledge about the system in question and a better understanding of the relevant business environment (e.g. cross-system relationships).

For example, an operational disruption is of particular importance if a system is deemed “systemically important”. The cross-system relationships of a systemically important system mean that such a failure could easily spread across financial markets and ultimately have systemic repercussions. A disruption of this kind would also be a concern for other systems, such as retail payment systems, given that extended system downtime would have a detrimental effect

on both the reputation of the system in question and confidence in the system operator's ability to provide robust and resilient payment services.

The same is true with regard to fraud. If an attacker manages to circumvent controls and process a fraudulent transaction, the financial losses will probably be larger in a large-value payment system than in a retail payment system.

Nevertheless, what all systems have in common is the need to manage operational risk in an effective manner and create a "risk culture". In this respect, at a generic level, the role of the system operator is twofold:

1. to develop a holistic operational risk management framework in order to ensure the security and operational reliability of the system and ultimately strengthen the resilience of financial markets;
2. to demonstrate the effectiveness of risk management (including business continuity) through the explicit identification of sources of operational risk, the assessment of their potential consequences, and the continuous monitoring and adequate addressing of such risks (i.e. their acceptance or mitigation).

## 5 LEGAL RISK

Legal risk is the risk of a loss being incurred on account of the unexpected application of a law or regulation, or because a contract cannot be enforced. This often manifests itself in an unforeseen interpretation of either the system's contractual basis or the legislation on which the contracts between the parties are based – e.g. in connection with a court ruling.

### 5.1 LEGAL RISK IN PAYMENT SYSTEMS

A sound legal basis for a payment system defines – or provides a framework allowing relevant parties to define – the rights and obligations of operators, participants and regulators. Most risk management mechanisms are based on assumptions about the rights and obligations of parties to transactions, and it is therefore essential that these rights and obligations be established with a high degree of legal certainty so that those mechanisms function predictably when called upon in times of stress.

An example of legal risk is uncertainty regarding a system's rules concerning the finality of payments. Consequently, a participant may, for instance, deploy the funds received from an incoming payment in the belief that the payment in question is final. If this is not actually the case, the participant could suffer a loss if insolvency proceedings were opened against another participant and the payments exchanged were reversed.

Another example of legal risk is uncertainty as to the validity of net claims against a defaulting party. This could result in the liquidator of a failed bank challenging the netting procedure, with the result that the surviving banks could be required to pay all of the gross amounts owed to the failed bank, with those

banks compensated only later (and not necessarily in full) for the gross amounts that they should have received from the failed bank.

Legal risk in payment systems can be prevented on a centralised basis by adopting new, less ambiguous legislation. For example, the Settlement Finality Directive adopted in 1998 helped to establish greater clarity as regards the finality of payments in EU payment systems. A participant can also seek to protect itself against legal risk by obtaining a legal opinion in order to have a more robust interpretation of a system's contractual basis or the applicable legislation.

## **5.2 LEGAL RISKS IN SECURITIES SETTLEMENT SYSTEMS**

In principle, the legal risks to which participants in securities clearing and settlement systems are exposed do not differ from those inherent in payment systems. However, the legal complexity is greater, given the specific characteristics of securities. In particular, legal enforceability needs to be ensured as regards entitlement to securities, custody operations and the realisation of collateral. Moreover, the need to settle both cash and securities increases the potential for conflicts of law, since the two legs of the transaction (i.e. the cash leg and the securities leg) are subject to different rules.

A special type of legal risk can arise if there is uncertainty concerning the legislation governing ownership of the securities. This may result in uncertainty about the ownership of securities held with a custodian that goes into liquidation.

Legal risk arises most frequently in connection with cross-border securities transactions, an area in which the mitigation of such risk poses particular challenges given the increased likelihood of conflicts of law and uncertainty as to the law governing a given transaction. Clear rules on the resolution of such conflicts are therefore essential.

## **6 SYSTEMIC RISK**

Systemic risk is the risk that the inability of one participant to discharge its obligations in a system will cause other participants to be unable to fulfil their obligations when they become due. This could potentially result in significant liquidity or credit problems spilling over into other systems or markets, thereby threatening the stability of the financial system. The original inability to discharge obligations may be caused by operational or financial problems.

### **6.1 SYSTEMIC RISK IN PAYMENT SYSTEMS**

By their very nature, networks such as payment, clearing and settlement systems are potentially a key institutional channel for the propagation of systemic crises, as they have the potential to increase, shift, concentrate or otherwise transform risks in unanticipated ways.

The vulnerability of a system to systemic risk depends on a number of factors. The size and duration of participants' credit and liquidity exposures in the interbank settlement process are basic factors affecting the potential for systemic risk. The longer these exposures last and the larger they become, the greater the likelihood of some participants being unable to fulfil their obligations, and the more likely it is that one participant's failure to discharge its obligations will have a more serious impact on the financial health of other participants. Thus, interbank funds transfer systems in which large intraday exposures tend to accumulate between participants have greater potential for systemic risk.

Systemic risk could ultimately lead to the disruption of the financial system or undermine public confidence in the nation's financial infrastructure and currency, and may affect the functioning of the wider economy. Central banks therefore have a particular interest in limiting systemic risk in large-value funds transfer systems, as aggregate exposures tend to increase with the aggregate value of transactions, and so potential risks in large-value transfer systems are often significantly greater than those in retail funds transfer systems.

The risk of a systemic crisis is normally judged to be smaller for RTGS systems than for net settlement systems. There are two reasons for this: firstly, in an RTGS system there is no credit risk for other participants in the system; and secondly, in RTGS systems there is no risk of unexpected payment obligations arising during the settlement process if another participant fails to fulfil its obligations. Moreover, there is no risk of the settlement institution (i.e. the central bank) failing.

## **6.2 ROLE OF CRITICAL PARTICIPANTS IN PAYMENT, CLEARING AND SETTLEMENT SYSTEMS**

In payment, clearing and settlement systems, it is not unusual to have in place a tiered participation model where a limited number of members clear or settle transactions, potentially on behalf of a large number of second-tier market participants. For instance, the settlement of US government bond markets relies on two major custodians whose smooth operation and operational soundness is critical for the smooth functioning of the market.

Where a limited number of participants act as upper-tier intermediaries and a large share of clearing and settlement systems' transaction volumes is concentrated in those participants, the operational and financial soundness of those upper-tier participants becomes essential to the smooth functioning of the entire system, as their sudden unavailability has the potential to trigger systemic risk.

For instance, if an institution acting as a custodian is unable to deliver and receive securities, this could have a knock-on effect on the liquidity of its clients' market counterparties, which will be expecting to receive cash as the proceeds of transactions or securities needed for onward delivery to others in exchange for cash. The systemic impact resulting from the operational outage of a large, otherwise healthy institution can be substantial in terms of the functioning of systems and markets. For this reason, central bank overseers and securities

regulators increasingly require that operators of systemically important clearing and settlement systems identify their critical participants and set up appropriate business continuity measures.

### **6.3 INTERDEPENDENCIES OF SYSTEMIC RELEVANCE IN THE GLOBAL FINANCIAL MARKET**

The network of national and cross-border systems that comprise the global payment, clearing and settlement infrastructure has evolved significantly in recent years. Many systems are becoming increasingly interconnected through a wide range of complex relationships. As a result, the smooth functioning of an individual system often depends on the smooth functioning of other related systems.

The safety of the global payment and securities settlement infrastructure requires not only that system operators, financial institutions and service providers have a robust understanding of payment and settlement risks, but also that they manage those risks effectively. However, the closer interdependencies observed among systems change the risks present in the global infrastructure and create new challenges as regards the achievement of effective risk management. On the one hand, those closer interdependencies have helped to strengthen the global infrastructure by restricting several sources of settlement costs and settlement risk. On the other hand, interdependencies have increased the likelihood of disruption spreading quickly and widely across a number of systems.

In order to limit the likelihood of disruption spreading quickly to a large number of systems, it is necessary for system operators, financial institutions and service providers to adapt their risk management practices in line with the more complex, integrated environment resulting from those closer interdependencies. Central banks and other authorities have to review and, where necessary, adjust their policies in the light of the challenges posed by interdependencies.

## CHAPTER 5

# THE MOST RELEVANT ECONOMIC CONCEPTS IN THE FIELD OF MARKET INFRASTRUCTURE SERVICES

This chapter presents and discusses some key economic concepts in the field of payment, clearing and settlement services. While this chapter cannot seek to provide exhaustive coverage of all the general economic concepts applicable in this field – which spans the disciplines of economics, industrial organisation, finance and business – it presents a select number of key underlying concepts. It deals, in particular, with the concepts of network effects and externalities, economies of scale and scope, natural and quasi-monopolies, moral hazard, cost recovery and pricing, public goods and two-sided markets.

### I NETWORK EFFECTS AND EXTERNALITIES

The concept of a network is important in economics, as it applies to a variety of industries, such as telecommunications, airlines and railways. Network economies focus on strategic interaction between firms and its impact on consumers' choices as regards products and services. Networks consist of links that connect nodes. In a typical network, the addition of a new merchant or consumer (i.e. a new network node) increases the value of the network for all participants, thereby increasing participants' willingness to pay for network services. This is called a *network effect*. One consequence of a network effect is that the purchase of a good or service by one individual indirectly benefits other actors who own that good or service or use the network. This type of side effect is known as a *network externality*. Network externalities can be positive or negative.

The concept of a network can also be applied to payment systems and the trading, clearing and settlement of securities and other financial instruments. Market infrastructures have network characteristics. This means that the benefit that an individual market participant derives from trading, clearing or settling on a given platform or in a particular system increases when another participant chooses to do business in that network. New participants joining a system increase the benefits for existing members, as those existing participants are able to do business with more counterparties. For example, stock exchanges and derivatives exchanges exhibit network externalities. The act of matching buyers and sellers for assets generates a composite good, namely the exchange transaction. As the number of buyers and sellers on an exchange increases, market liquidity increases. Larger numbers of buyers and sellers and increased order flows will, in turn, attract further order flows. And as volumes increase, the marginal cost of transactions falls.

Network effects may, however, also create obstacles to innovation and competition. For example, when a completely new system is set up, if it has to compete with established systems, it will be difficult for the new system to become a highly valuable payment network with a large number of users. Even after a network has been set up, network effects can result in obstacles to free market developments on the supply and demand sides. On the supply side (i.e. from the perspective of a provider of payment services), network effects can lead to markets having high entry barriers. This means that a new payment provider or operator must be prepared to accept losses – potentially over a long period of time – until it achieves a market share sufficient to cover those initial costs (i.e. until it reaches “critical mass” and its revenues cover its costs). On the demand side (i.e. from the user’s perspective), considerable rigidities and dependency may occur. Once a user has chosen a certain system, switching to a competing system can be costly. For example, in order for a merchant to use an alternative network, new system-specific investment has to be carried out in order to interface with that new system. In other words, users face lock-in costs, which are likely to hinder competition, especially if each system is protected by proprietary standards.

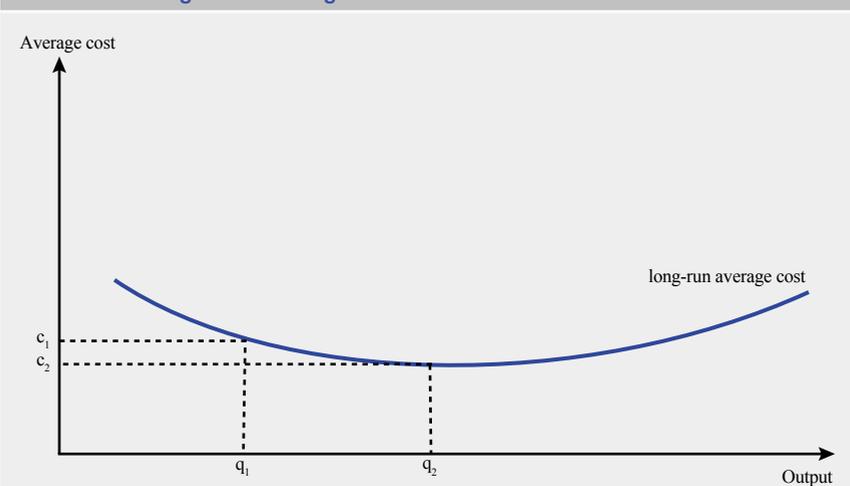
One way to overcome these obstacles is to separate the provision of services from the provision of physical infrastructures. Market infrastructures are often provided centrally, while participants compete to provide services within those common infrastructures. This can be seen in many other sectors with network features, such as the telecommunications industry, where services are provided on a competitive basis, while a common supplier provides the necessary infrastructure. Separating the provision of infrastructure from the provision of services in this way is likely to improve efficiency by introducing competition only in the provision of services (i.e. not in the provision of the underlying infrastructure, where concentration may allow economies of scale; see below).

## 2 ECONOMIES OF SCALE AND SCOPE

In economic theory, *economies of scale* exist where the average unit cost decreases as output increases. Economies of scale are often measured in terms of cost-output elasticity, which reflects the percentage change in the cost of production that results from a 1% increase in output. In other words, cost-output elasticity equals one when marginal and average costs are equal. In that case, cost increases are proportionate to output and there are neither economies nor diseconomies of scale. Where economies of scale are present, the marginal cost is less than the average cost and cost-output elasticity is less than one. In the case of diseconomies of scale, the marginal cost is greater than the average cost and cost-output elasticity is more than one.

Chart 20 shows a production process in which an increase in output from  $q_1$  to  $q_2$  results in the average unit cost falling from  $c_1$  to  $c_2$ . Correspondingly, there are diseconomies of scale when a doubling of output means that costs more than double. The concept of economies and diseconomies of scale can also be applied to other business activities, such as the provision of payment services.

Chart 20 Long-run average cost curve



Source: ECB.

The payment industry exhibits considerable economies of scale. First, the value that an individual participant derives from using a particular payment system increases with the number of other parties using that same system. Hence, payment systems are networks with positive network externalities that give rise to significant economies of scale. Second, high levels of initial investment (often referred to as “sunk costs”) are required in order to establish a payment system, and considerable fixed costs are incurred in the operation of such a system. A payment system comprises complex infrastructure, including: clearing and settlement arrangements; communication networks and access devices/interfaces providing links to participants’ own systems; and rules, rights and functions all the way along the value chain. These elements, together with the staff and resources necessary in order to set up, maintain and protect the system, contribute to the high fixed costs in the payment industry. Thus, the presence of more than one payment system implies a duplication of costs. Conversely, variable costs, which consist mainly of communication costs, are relatively low.

Consequently, in order to reap the benefit of their considerable investment, service providers typically need to create a critical mass of business activity in order to achieve economies of scale. Where providers of payment and securities infrastructure are successful in attracting significant business volumes, these set up costs can be spread over a larger number of transactions, thereby allowing services to be provided at a lower cost.

The combination of significant economies of scale and network dynamics can lead to a relatively high level of market concentration and considerable consolidation of payment systems within a country (or a larger geographical area such as a common currency area). However, while concentration can be beneficial for the overall efficiency of the market, especially in the short term, there is also a risk of such highly concentrated market power being abused. More importantly, there is the potential for cost inefficiencies to arise in the long run, when consolidation leads to a natural monopoly (see Section 3), reducing

the incentive to control costs and strive for technological or organisational innovation. These inefficiencies are most likely to occur in non-contestable markets, where barriers to entry prevent competition.

In practice, there are two main reasons why the payment processing market has high barriers to entry. First, payment systems involve relatively large set up costs. These are mostly “sunk”, as they cannot easily be recovered owing to the specific nature of the investment. Hence, a market incumbent can easily deter market entry by threatening to undercut the prices of a potential competitor. Second, a potential market entrant needs to attract a certain number of participants and a certain volume of business before becoming a viable alternative for the carrying-out of payments.

*Economies of scope* are conceptually similar to economies of scale, although there is no direct relationship between the two. Whereas economies of scale relate primarily to efficiencies associated with supply-side changes (i.e. increases or decreases) in the scale of production for a single product type, economies of scope refer to efficiencies related to demand-side changes for different types of product. Thus, the efficiency of production may increase as the number of products produced increases (e.g. where synergies between products mean that offering a complete range of products will be more beneficial to the consumer than offering a single product).

In general, economies of scope are present when the total output of a single firm or production unit producing two different products is greater than the total output that could be achieved by two different firms or production units (e.g. payment service providers) producing those two products separately. If the single firm’s total output is less than that of the two individual production processes, diseconomies of scope are present. This could occur, for example, if the production processes for the two products conflicted with each other.

Economies of scope are also relevant from the point of view of costs. If, for a given level of inputs, a firm producing two different products generates more output than two independent firms producing those two products separately (i.e. economies of scope are present), the single firm will be able to produce both products at a lower cost than the two independent firms combined. Economies of scope occur when there are cost savings arising from by-products in the production process.

Economies of scope can also be found in payment, clearing and settlement services. Payment systems may exhibit economies of scope arising from the integration of several functions in the transaction chain – i.e. from the bundling together of similar or interrelated services or activities. Thus, a single supplier may be able to provide a package of interrelated services at a lower cost than a group of individual suppliers. Suppliers may also take advantage of economies of scale and scope in order to provide users with a more attractive package of services. Concrete examples can be found all the way along the transaction chain – e.g. in the form of co-branding projects uniting retailers and the payment card industry, or communication network providers offering authentication or even payment authorisation services based on their technical infrastructure.

Moreover, economies of scope can arise where large-value payment systems also process payments other than large-value transfers – for instance where a central bank-operated RTGS system processes different types of transaction between the relevant central bank and its counterparties, different types of retail payment, or transactions related to the final settlement of other (ancillary) systems. If there are significant economies of scope in this area, it will be more cost-effective to have payment systems processing more than one type of transaction, rather than having a separate system for each type of transaction. While this would ultimately argue in favour of full consolidation, with all payments being processed in one system, caveats similar to those mentioned for economies of scale apply.

Economies of scope are also one of the main reasons for the bundling (i.e. tying together) of services. A common form of bundling is when a monopolist or quasi-monopolist requires customers buying its products or services to buy another product or service as well. By selling the products or services as a package rather than separately, the monopolist or quasi-monopolist can increase its total profits. One example of the bundling of services is when a stock exchange requires that transactions executed on that exchange be settled in an affiliated CSD (potentially also requiring that they be cleared by an affiliated central counterparty).

### 3 NATURAL AND QUASI-MONOPOLIES

The existence of economies of scale typically has important implications for market structures and economic welfare. In economic theory, a market with strong network effects combined with economies of scale typically generates a *natural monopoly*. Payment, clearing and settlement systems are typically characterised by significant economies of scale and have a tendency to evolve into natural monopolies or *quasi-monopolies*.

A natural monopoly occurs when a single firm can satisfy the entire market's demand at a lower total cost than several individual firms. A natural monopoly automatically implies that the market is imperfect, since the basic characteristics of market competition and incentives to innovate are missing. It can also be regarded as a market failure if the monopolist uses its unique market position to pursue its own isolated interests. The monopolistic supplier can, for example, raise prices or decrease the quality of its service in order to maximise its profits. As a result, the issue of how best to regulate a payment system in a monopolistic position is a very relevant one, and the strength of the above-mentioned adverse effects will depend on the incentives and rules set out in order to resolve conflicts of interest.

In practice, in the fields of payments, clearing and settlement pure monopolies are more likely to be found in smaller markets. Larger currency areas and international market segments are very often served by duopolies, a fact which reflects market participants' attempts to retain a minimum degree of competition. Historically, participants have usually cooperated to create at least one of the two infrastructures. There are many examples of such duopolies – for instance EURO1 and TARGET2, Visa and MasterCard, Clearstream and Euroclear,

and CHIPS and Fedwire. Such duopolies seem to be sustainable even where the two networks are not of a similar size, possibly as a result of slight differences in the products they offer. Competing products are not regarded as perfect substitutes, but will, for example, be used as such if relative prices vary substantially.

#### 4 MORAL HAZARD

In general, the phenomenon of *moral hazard* can be seen as action taken by economic agents which maximises their own utility to the detriment of others in situations where they do not bear the full consequences of their actions. In cases of moral hazard, agents behave in a less cautious way, leaving other parties to take responsibility for the consequences of those actions. In other words, if an economic agent is partly or fully insulated from risk, it is very likely to be less careful than it would be if it were fully exposed to that risk.

Moral hazard may also be present in the handling of payments, clearing and settlement. For example, a profit-maximising provider of a product or service is likely to place more emphasis on efficiency than safety if it will not have to bear all of the costs arising from a failure in the use of that product or service.

Moreover, modern payment, clearing and settlement infrastructures enable economic agents to initiate and process large amounts of payment and settlement transactions almost instantly. The development of such infrastructures has helped financial markets to become more efficient. At the same time, it is important that these infrastructures be appropriately protected against financial and non-financial risks. The infrastructure itself should not become a source of risk, and participants in a system that succumb to moral hazard should not impair the smooth functioning of that system. If such a participant were big enough, it could have an adverse effect on the system, with possible domino effects for other participants. In particular, were the system in question to be closely connected to other infrastructures, this could have serious repercussions for the wider financial system.

In a worst case scenario, this kind of systemic risk could even exacerbate any existing financial crisis. Financial turmoil and its potential economic effects might then call for rapid policy responses under severe pressure. In the event of a financial crisis, the market might expect the central bank or the government to step in – e.g. by providing emergency liquidity to address the destabilising effects of shocks. Expectations of a “public bail-out” could change the market’s expectations and behaviour – e.g. in terms of liquidity risk management, relative price expectations and investment strategies.

The potential size and effects of systemic risk in payment, clearing and settlement systems largely depends on the effectiveness of the measures taken to limit moral hazard. In practice, in trying to strike an appropriate balance between the safety and efficiency of infrastructure, managers of market infrastructure implement pre-emptive mechanisms that help to reduce the probability of incidents and/or limit both the detrimental effects of any operational incidents and the

materialisation of financial and non-financial risks. However, such mitigating measures typically entail costs – for example investment or opportunity costs.

In some circumstances, market participants may come to believe that a systemically relevant market infrastructure will be regarded by public authorities as being so big or closely connected to other infrastructures that it could not be allowed to fail (i.e. “too big or interconnected to fail”), which may result in the system operator (and system participants) not having strong enough incentives to invest in appropriate safety measures. Thus, expectations of public intervention in crisis situations can constitute an obstacle to the sound development of payment, clearing and settlement systems. To prevent such a situation arising, public authorities may be inclined to adopt precautionary measures ensuring that risks and costs are internalised and shared among the participants in the system. Potential measures include institutional and/or capital requirements for system operators, rules on risk management, and loss-sharing agreements among participants. Pre-emptive measures related to individual institutions are an integral part of banking supervision and securities regulation. These complement payment systems oversight measures focusing on the smooth and efficient functioning of systems.

## 5 COST RECOVERY AND PRICING, AND PUBLIC GOODS

The principle of full cost recovery relates to the recouping of the full cost of a service or product. In addition to the costs directly associated with the production of the product or service (e.g. the cost of staff, hardware and software), indirect costs (e.g. the cost of capital and overheads) should also be taken into account. All cost elements should be identified and allocated on a comprehensive, robust and defensible basis. A decision on applicable amortisation periods is also an essential element of cost calculations.

Payment systems often compete, for example, for the processing of large-value or retail payments. In principle, competition between two systems applying the principle of full cost recovery should lead to a situation where the prices reflect the costs and risks incurred when making payments in the two systems (assuming that risks are priced in an equitable way). Financial institutions could then decide which system they wish to use for their payments on the basis of the information contained in these prices and the design and rules of the two systems (e.g. their risk management features). In the long run, the two systems would have incentives to innovate in order to gain a competitive edge by lowering costs and reducing risks. This would result in an efficient allocation of payment traffic across the two systems, taking into account the preferences of financial institutions as regards the costs and risks involved in making payments. In short, it would result in the “socially efficient allocation” of payment traffic. Deviations from full cost recovery would distort the relationship between the two systems’ prices.

Conversely, bundling and cross-subsidisation of different services will lead to inappropriate relative prices and may encourage users to choose a service which is less cost-efficient than an available alternative. Pricing strategies can be a powerful way of steering the behaviour of users. However, if services are not

priced on the basis of cost, the relative use of such services is likely to deviate from the socially optimal outcome.

According to economic theory, a good or service is “public” if its use is “non-rival” (i.e. its use by one agent does not hinder another agent’s use of it) and if no one can be prevented from using it once it has been produced or provided by someone else. Examples of public goods are lighthouses, law enforcement and the air that we breathe. Since economic agents cannot be prevented from using the good and its use is non-rival, producers cannot charge prices that would recover the cost of that good on a market. Consequently, those goods or services can be enjoyed or consumed without direct payment.

The maintenance of financial stability is a public policy goal. The smooth functioning of systemically important payment, clearing and settlement systems has a strong bearing on financial stability. Thus, transactions and activities which may have an impact on financial stability should be handled in a very prudent manner and should be subject to the highest safety standards. Such transactions should be processed in systems which meet these requirements.

A central bank-operated RTGS system may offer special features or services which privately operated systems either cannot provide or are unlikely to be able to provide in a competitive environment. It offers settlement in central bank money (the safest settlement asset) and allows the central bank to directly manage both normal and crisis situations. It is also expected to offer comprehensive and robust business continuity arrangements.

The special features offered by a public RTGS system facilitate the maintenance of financial stability for the benefit of system participants, the financial sector and the economy in general, thereby constituting a public good.

However, some of those special features are costly to provide. Were the public system required to recover the full cost of those special services through processing and other fees, it might be unable to attract payments that are critical from a risk perspective, which need, ideally, to be processed in that system (while at the same time potentially being unable to achieve critical mass in terms of the number of transactions). Full cost recovery could result in fees being substantially higher than those charged in private systems. This could distort the decisions of financial institutions, encouraging them to choose a system which was not as safe. Consequently, as regards transactions relevant from a financial stability perspective, it may not be socially optimal to recover all costs through fees charged to participants.

If transactions benefit from the increased safety and reliability offered by a publicly operated payment system, there could be an objective justification for subsidising the marginal cost of processing transactions in that system. In turn, such a subsidy could increase efficiency in systemically important payment and settlement systems if economies of scope are exhibited by the processing of transactions and those services that constitute a public good. In other words, a subsidy is justified whenever the public good is cheaper to provide when the volume of transactions is large rather than small. Subsidising marginal fees

increases the transaction volume in the public system, thereby lowering the average cost of providing the public good. Increased use of these services can be beneficial for the economy and can therefore improve the efficiency of the market outcome.

Determining the value of the public good in a system is a complex task. However, it is important that the size of any subsidy be determined in advance of its application in order to ensure fair competition with alternative systems.

## 6 TWO-SIDED MARKETS

*Two-sided markets* are usually defined as markets in which the presence of two (or more) groups of end users enables interaction between those groups, and producers try to get those two (or more) sides “on board” by setting prices appropriately. Those two distinct user groups provide each other with network benefits. In very simplistic terms, networks with homogeneous users are described as “one-sided”, in order to distinguish them from two-sided networks, which have two distinct user groups whose respective members consistently play the same role (in this case, as users) in transactions.

There are many examples of two-sided markets, including video game platforms (i.e. game developers and gamers), telephone directories (i.e. businesses and readers), software applications (i.e. users and producers) and internet search engines (i.e. websites and surfers). However, the following section looks in more detail at the classic example of the payment card market.

On one side of the market for payment card schemes, consumers make their decision as to whether or not to join a specific card scheme on the basis, among other things, of the number of merchants accepting the card in question for payment. On the other side of the market, merchants consider the number of customers wishing to use that card. Consequently, the value of joining a card scheme depends on expectations regarding the size of the network on the opposite side of the market, as the benefits for each group depend on economies of scale. Consumers tend to prefer cards honoured by more merchants, while merchants prefer cards carried by more consumers. In conclusion, the card industry is characterised by two features: (i) the need to serve a two-sided market; and (ii) the network externalities on both sides of the market (i.e. the benefits for merchants when more people have a card, and the benefits for cardholders when their cards are accepted by more merchants). It is important to note that network externalities depend not on consumption by agents in the same group, but on consumption by different – but compatible – agents on the opposite side of the market.

The pricing policy of each group in a two-sided network influences market participation and the overall volume of demand. As a result, pricing in two-sided markets needs to take network effects into account. This is crucial in determining the proper functioning of two-sided networks.

With a particular focus on the card industry, the following section illustrates the way in which providers in two-sided markets (e.g. providers of card schemes) set prices with a view to maximising aggregate profit for their members (i.e. how the private profit-maximising optimum is determined). Decisions need to be taken on two elements: (i) the price level; and (ii) the price structure. The price level is the aggregate price charged by the scheme to the two sides, and the price structure is the way in which that total amount is divided between the two sides.

The price structure in card schemes is normally such that merchants pay a larger share of the aggregate price than cardholders. In certain instances, cardholders may even be charged a negative amount for using the card. This is the case where they are charged no user or annual fee and receive benefits for using the card (e.g. airline miles, cash reimbursements or bundled services such as travel insurance).

There are many examples of two-sided markets where costs are not evenly distributed between the two types of client. Newspapers are generally sold to readers at a price below the cost of production, while the majority of newspapers' revenues are collected from advertisers. A newspaper may even be given to readers for free, with its costs recovered entirely from advertisers. However, newspapers do not go so far as to pay their readers. Two-sided markets where negative prices are charged to one of the sides are rare.

This imbalance in the way card schemes allocate costs and obtain their income is caused by the lower *price elasticity* on the merchants' side. Low price elasticity means that merchants' demand for a given card scheme is affected little by changes in prices, so providers of card payments can afford to raise the prices they charge merchants in order to maximise profit.

That low price elasticity is caused mainly by the fact that in many sectors (e.g. hotels, restaurants, petrol stations and supermarkets) accepting card payments has become a necessity for merchants. Substitutes for a given card scheme certainly exist: the merchant could offer its customers the option to pay with other payment instruments, including other card schemes. Customers who cannot pay with their preferred card will normally be prepared to pay with a different payment instrument. However, the merchant might not wish to risk losing a sale (e.g. where a customer has no alternative payment media) or losing future sales (e.g. where a customer does not return because the merchant does not accept the card in question).

The willingness of the merchant to take the risk of not accepting a well-known and widespread card scheme will depend on two factors. The first factor is the "cost-to-income ratio". This is the relationship between the merchant's fee and profit foregone as a result of a lost sale. For example, it can be observed that merchants operating with low profit margins tend not to accept credit cards, while merchants operating with high profit margins are more likely to accept credit card payments. The second factor is the card scheme's level of acceptance within the relevant sector. The card scheme's acceptance level determines consumers' expectations as regards the possibility of paying by card.

When setting prices, a scheme needs to take into account the two demand curves: that of merchants and that of cardholders. A profit-maximising scheme takes into account the price elasticity of demand for both sides of the market and the externalities caused by the demand on one side of the market as regards the demand on the other. For example, a decrease in merchants' fees will increase merchants' demand and cause – through that network externality – an increase in cardholder demand. The optimal price structure, one where total profit is maximised, depends on the elasticity of demand on both sides of the market.

In many card schemes there is a mechanism for the redistribution of income between the actors within the scheme – i.e. the scheme owner, issuers and acquirers. This is often done by means of interchange fees. In practice, the interchange fee is set by the card scheme (or card association), which is generally owned by the issuers and acquirers, which are also represented on the scheme's board. The set of prices that maximises total profits may not be the one that maximises the profits of issuers and acquirers separately. In this case, bargaining power between the issuers and acquirers in the scheme's governance structure influences the interchange fee chosen. Thus, in reality, the interchange fee might differ from the private profit-maximising level owing to this internal bargaining.



## CHAPTER 6

# SOME KEY LEGAL CONCEPTS IN MARKET INFRASTRUCTURE SERVICES

### I A SOUND LEGAL BASIS

The safety and soundness of payment, clearing and settlement arrangements depend to a large extent on the legal framework on which those arrangements are built. Clear and effective legal rules are a prerequisite for establishing market confidence, fostering the protection of investors, and limiting and managing risk. As a result, it is no surprise that most internationally agreed safety and efficiency standards in the fields of payments, clearing and settlement contain a standard on legal risk to the effect that “the system should have a sound legal basis in all relevant jurisdictions”.

When looking at the legal environment relevant to payment, clearing and settlement activities, consideration should be given to the general legal framework in the relevant jurisdictions (e.g. legislation relating to contracts, payments, securities, banking, relationships with debtors/creditors and insolvency), as well as specific legislative acts, case law, contracts (e.g. rules governing individual payment, clearing and settlement systems) and other relevant material.

It is important to note that legal definitions are embedded in the individual jurisdictions and thus apply only in relation to the jurisdiction in question. As a result, it is often impossible to transplant a country’s legal definition – let alone an entire law – directly into the legislation of another country.

This chapter describes some of the main legal concepts underpinning the functioning of systems and services for the clearing and settlement of payments and securities, including the concepts of finality, netting, collateral and conflicts of law. These are presented in the context of the legislation applicable in the Member States of the European Union.

#### Box 15 A basic legal framework

##### Law of general application which supports payment systems

- Property and contract law established through common law (i.e. jurisprudence) or applicable legislation (including civil codes) that creates legally enforceable rights and obligations as regards the making and receipt of payments
- Banking and financial law establishing the rights and obligations of financial institutions as regards the taking of deposits, the granting of loans, the provision and receipt of collateral security, and the holding and trading of securities

- Insolvency law establishing the rights and obligations of the creditors of an insolvent entity
- Law on the use of credit and collateral, including the terms of credit (interest rates, the duration of credit, rights on default, etc.), debtors' rights, and the creation, realisation and prioritisation of rights in collateral
- Law determining which jurisdiction's laws apply, including choice of law clauses in contracts and conflict of law rules
- Law on electronic documents and digital signatures

#### Law specific to payment systems

- Law specific to payment instruments – including currency law, bill of exchange and cheque law, electronic payment law, regulations preventing unfair payment instruments and services, and rules establishing standards for instruments (as regards their size, configuration, coding, etc.)
- Law on the calculation and discharging of payment obligations – including netting, novation, and the finality of payments and settlement
- Law on default proceedings and disputes regarding payments – including the prioritisation of payment settlement claims, settlement guarantees and loss allocation agreements, the prioritisation of rights in collateral for settlement credit, law on evidence regarding electronic payments, and dispute resolution mechanisms such as arbitration clauses
- Law relating to central bank oversight of the national payment system
- Law relating to the establishment and functioning of infrastructure service providers and markets – including the establishment and operation of clearing and settlement arrangements, access to and participation in infrastructure systems, the pricing of infrastructure services, the issuance and redemption of e-money, and the protection of central counterparties from risk
- Law governing securities infrastructure services – including the dematerialisation and immobilisation of securities, book-entry holdings and transfers of securities, delivery versus payment, and the finality of transfers and settlement

Source: Box 15 in *General guidance for national payment system development*, CPSS, BIS, Basel, January 2006.

## 2 FINALITY

Legal certainty as to the effectiveness of transfers of funds and securities is a prerequisite for establishing market confidence, fostering the protection of investors and limiting risk in the financial markets. Of particular relevance

in the context of the legal protection of market infrastructures is the concept of finality.

In the area of market infrastructures for payments and securities, the term “finality” is traditionally used to denote the moment a settlement or transfer becomes “irrevocable and unconditional”. It is often used in a legal sense (i.e. as regards the discharging of obligations, where it means that a transfer or settlement cannot be reversed by the counterparties involved or by third parties), but it is also used in a technical sense (i.e. referring to the making of entries in accounts). A transfer of funds, securities or other assets can be final, as can netting or settlement. Between the time that instructions for the transfer of funds or securities (“transfer orders”) are accepted for settlement by the payment system and the time the order is actually settled, participants are subject to credit and liquidity risks, as the transfer order could be revoked or a system participant could become insolvent.

Finality is important because when it occurs – which depends on the rules and legislation applicable – the obligations generated in the interbank payment, clearing and settlement process are discharged. Thus, the credit, liquidity and systemic risks generated as part of this process cease to exist at this point in time. As a result, finality is the most important concept in any analysis of the credit, liquidity and systemic risks in payment and settlement systems.

In its 1992 report on delivery versus payment in securities settlement systems, the Committee on Payment and Settlement Systems described finality as “a concept that defines when payment, settlement and related obligations are discharged”. Thus, a final transfer is defined as “an irrevocable and unconditional transfer which effects a discharge of the obligation to make the transfer”.

Since then, the concept of finality has increasingly been associated with the reduction of insolvency-related risks resulting from participation in payment, clearing and settlement systems. Against that background, in 1998 the European Union adopted the Settlement Finality Directive<sup>10</sup> (see Chapter 10). The Settlement Finality Directive, which applies to systems designated by their national authorities as being covered by it, created an EU-wide legal framework to reduce systemic risk linked to payment, clearing and settlement systems and protect systems and their participants against the adverse effects of insolvency proceedings opened against another system participant.

The Directive does not itself provide a definition of finality, nor does it define when a transfer becomes final. Rather, the finality of transfer orders (and, by extension, systemic stability) is ensured by a combination of three elements.

First, the Settlement Finality Directive ensures (with limited exceptions) that once transfer orders have been entered in a system in accordance with its rules, those orders and their netting are legally enforceable and binding on third parties – even in the event of insolvency proceedings being opened against a participant,

<sup>10</sup>Directive 98/26/EC of the European Parliament and of the Council of 19 May 1998 on settlement finality in payment and securities settlement systems.

provided that the time at which the transfer orders entered the system under the rules of that system preceded the opening of the insolvency proceedings. This is of particular importance in the event of insolvency proceedings being opened against the entity issuing the transfer order. Thus, administrators are prevented, for example, from selectively choosing (“cherry-picking”) between favourable and unfavourable transactions. This provision applies to all transfer orders entered in a system, regardless of whether they have been subject to netting. It therefore applies to both gross and net payment and securities settlement systems, and also to clearing systems.

Second, the Settlement Finality Directive abolishes “zero-hour rules” (see Section 5), which automatically render void, retroactively, all transactions carried out by a bankrupt participant on the day of the opening of insolvency proceedings.

Third, the Directive provides that a system’s rules must clearly indicate the last possible point at which the relevant parties have the power to revoke a transfer order.

Under the Directive, finality is regarded as precluding the revocation of transfer orders and their settlement and relates exclusively to transfer orders and their settlement in systems. Finality is not absolute: it is possible, exceptionally, to revoke a transfer order where the underlying obligations between the parties concerned involve illegal activities such as fraud or the infringement of legislation on money laundering.

There is a risk of the insolvency of a system participant or the revocation of a transfer order drastically altering the settlement positions of other system participants. As a result, those participants might not have sufficient liquidity or securities to be able to meet their obligations under the system – possibly resulting in further spillover effects, thereby creating systemic risk. Thus, the prevention of systemic risk is essentially the prevention of a situation in which system participants do not have sufficient liquidity or securities at the time of settlement as a consequence of another system participant’s insolvency or the revocation of a transfer order. To that end, it is essential to ensure that all transfer orders entered in a system can be settled, regardless of whether the sending institution has become insolvent or a transfer order has been revoked.

### 3 NETTING

The effectiveness of the reduction of exposures by means of netting depends on the legal soundness of the relevant netting scheme. In the area of payment, clearing and settlement systems, netting is generally understood as “the conversion into one net claim or one net obligation of claims and obligations resulting from transfer orders which a participant or participants either issue to, or receive from, one or more other participants with the result that only a net claim can be demanded or a net obligation be owed”.<sup>11</sup> In a financial market context, netting can take several legal forms (see also Box 4 in Chapter 1).

<sup>11</sup> Article 2 of the Settlement Finality Directive, as amended by Directive 2009/44/EC.

Netting may be performed *bilaterally* between two parties or *multilaterally* between more than two parties. Multilateral netting is generally provided by a central entity, usually a clearing house or a central counterparty.

Agreements on *netting by novation* allow individual payments or forward-value contractual commitments (e.g. foreign exchange contracts) to be discharged at the time of their confirmation and replaced by new obligations, all of which form part of a single agreement. The amounts due under each discharged contract are added to the running balances that the parties are required to pay each other in each currency at each future value date.

The above forms of netting need to be distinguished from *payment netting*. In payment netting, net positions are established for each party at a designated point in time. These positions are calculated as the sum of a party's payment obligations and claims (i.e. the payments sent and received by the party concerned). Thus, after netting, each party has a single net payment obligation or claim. Unless legislation gives validity to the net position, all underlying payment obligations and claims remain legally binding (which is important in the event that one of the parties with a net payment obligation fails prior to settlement).

Although netting – especially multilateral netting – can bring cost and efficiency gains and result in the reduction of credit and liquidity risks, it may actually increase systemic risk if it merely obscures levels of exposure. Moreover, even when actual exposures are reduced, multilateral netting systems can shift and concentrate risks in ways that could increase systemic risk by increasing the likelihood that one institution's failure will undermine the position of others. For reductions in actual exposures to be effective, a netting scheme needs to be legally sound. Only if net amounts are legally binding in the event of a counterparty's failure will the participants experience reductions in their true credit and liquidity exposures.

The Settlement Finality Directive, as amended, ensures that netting is legally enforceable and binding on third parties even in the event of insolvency proceedings and precludes the application of zero-hour rules.

## 4 COLLATERAL

Collateral can be described as assets provided in order to secure the discharging of an obligation. Collateral is of particular importance in financial markets, as it offers protection against credit risk exposures and allows trading to take place between parties that would not otherwise engage in a financial relationship. The number and volume of transactions based on collateral is rising steadily, as creditors that obtain valid and enforceable collateral can thereby cover their credit risk and make credit lines available for further business.

The reduction of credit and systemic risk requires, in addition to the finality of settlement, the enforceability of collateral. This implies that collateral should be insulated from the effects of the insolvency legislation applicable to an insolvent

collateral provider (i.e. the collateral taker should be sure that collateral received cannot be challenged in an insolvency procedure).

Participants in a payment, clearing or settlement system provide collateral to other participants or to the system in order to secure rights and obligations in connection with their participation in that system. This provision of collateral can take various forms, including repurchase agreements, title transfers, pledges, statutory liens and fiduciary transfers. The national legislation governing a system usually specifies the kinds of collateral which can be used in that jurisdiction, and the rules of the system further specify the types of collateral which are considered eligible in that system.

Under the Financial Collateral Directive<sup>12</sup> (see Chapter 10), collateral may take the form of cash, financial instruments (excluding commodity derivatives) or credit claims (i.e. pecuniary claims arising from an agreement whereby an institution grants credit in the form of a loan). The Settlement Finality Directive provides a wider definition of collateral which encompasses “all realisable assets provided under a pledge (including money provided under a pledge), a repurchase or similar agreement, or otherwise, for the purpose of securing rights and obligations potentially arising in connection with a system, or provided to central banks of the Member States”.

There are two legal techniques for providing collateral: (i) the transfer of ownership, including the use of repurchase agreements; and (ii) the creation of a security interest in the form of a pledge agreement or lien. In the case of the former, the collateral provider transfers full ownership of the collateral to the collateral taker in order to secure or otherwise cover the performance of the relevant financial obligations. In the case of the latter, the collateral provider provides collateral by means of security in favour of, or to, a collateral taker, with full ownership of the financial collateral remaining with the collateral provider when the security interest is established.

Permitting both forms of collateral (i.e. both the full transfer of ownership and the creation of a security interest) supports the freedom to provide services and the free movement of capital in the Single Market and contributes not only to the integration and cost-efficiency of the financial market, but also to the stability of the financial system.

## **5 ZERO-HOUR RULES**

When applied in the context of market infrastructures for payments, clearing and settlement, zero-hour rules automatically render void all transactions carried out by a participant on the day of its bankruptcy (or a similar event). In a real-time gross settlement system, such a rule could have the effect of reversing payments that have already been settled and were thought to be final. In a system with deferred net settlement or optimisation procedures, such a rule could cause the

<sup>12</sup>Directive 2002/47/EC of the European Parliament and of the Council of 6 June 2002 on financial collateral arrangements.

netting of all transactions to be unwound. This would entail the recalculation of all net positions and could cause significant changes to participants' balances. In either case, there could be systemic consequences. In the EU, the Settlement Finality Directive prevents the application of zero-hour rules in systems designated as being covered by it. Furthermore, the Financial Collateral Directive precludes the application of zero-hour rules with regard to financial collateral arrangements.

## 6 CONFLICTS OF LAW

Where a system provides cross-border (or multi-currency) services, has cross-border linkages or has foreign (or remote) participants, the rules governing that system should clearly indicate the national legislation applicable to each aspect of the functioning of the system.

The operators of cross-border systems must address the issue of conflicts of law where there are differences between the substantive legislation applicable in the various jurisdictions with a potential interest in the system. Each individual jurisdiction has rules on conflicts of law that specify the criteria that determine the national legislation applicable to such a system. System operators and participants should be aware of the issues surrounding conflicts of law when structuring the rules of a system and choosing the national legislation that governs that system. System operators and participants should also be aware of any constraints on their ability to choose the legislation that will govern the system in question.

It will not be possible for system operators and participants to circumvent the fundamental public policy of their jurisdiction by means of a contractual choice. Such "public law" provisions are usually found in legislation concerning insolvency and the equal treatment of creditors. Subject to such constraints, the legal framework should support appropriate contractual choices as regards the legislation to be applied in the context of domestic and cross-border operations. In many cases, the legislation chosen will be that of the country where the system is located.

The key question is what can be done to reduce (or even remove entirely) the legal uncertainty concerning the legislation applicable in relation to cross-border payment, clearing and settlement systems.

The Settlement Finality Directive and the Financial Collateral Directive are good examples of supranational legal instruments seeking to achieve the desired legal certainty for systems' cross-border operations. Article 9 of each contains rules minimising conflicts of law. These have made a significant contribution to the free cross-border movement of payments and collateral within the EU.

The Directives both adopt the "place of the relevant intermediary approach" (PRIMA). Article 9 of the Settlement Finality Directive specifies that where securities (including rights in securities) are given as collateral to a clearing or settlement system or the central bank of an EU Member State and the right of

that system or central bank (or that of any nominee, agent or third party acting on its behalf) in respect of the securities is legally recorded in a register, account or centralised deposit system located in Member State X, the determination of the rights of such entities as holders of collateral security in relation to those securities is governed by the law of Member State X.

However, that provision applies only to systems and central banks. Consequently, securities provided under other collateral arrangements in the EU are governed by a similar principle (based on Article 9 of the Financial Collateral Directive) concerning the location of the relevant account.

## 7 BOOK-ENTRY SECURITIES

In modern securities markets, it has become common practice for securities not to be held by investors in physical form. Sophisticated structures have been developed to allow the holding and transfer of securities without any physical handling of those assets. Under such structures, one or more specialist entities (i.e. custodians acting as intermediaries) are interposed between the issuer of the securities and the investor. These intermediaries maintain securities accounts, in which positions in respect of securities are recorded. Commercially and economically, credits to and debits from such securities accounts (“book entries”) are regarded as being equivalent to the physical holding and transfer of securities. Legally, however, the status of these book entries and the rights they confer differs from country to country.

In most countries, the holding structure contains a further category of entity – central securities depositories. CSDs provide services enabling the issuance, holding and transfer of securities by book entry. This process may vary from jurisdiction to jurisdiction. Either securities are issued directly in a CSD in dematerialised form (i.e. as an electronic record), or securities issued as physical certificates (either in the form of individual certificates or in the form of a global note representing the entire issue) are physically deposited with a CSD and subsequently immobilised (in the sense that they are permanently held by the CSD and are not circulated) or dematerialised (i.e. converted into electronic records).

Irrespective of whether securities are immobilised or dematerialised, the subsequent holding and transfer of those securities is, at all levels of the holding structure, conducted exclusively by means of book entries in investors’ securities accounts. Book-entry transactions for securities enable the quick and effective transfer of very large numbers of securities following transactions concluded in financial markets, which in the past would have necessitated the physical transfer of large numbers of paper certificates.

## CHAPTER 7

# THE ROLE OF CENTRAL BANKS

### I INTRODUCTION

Central banks, as issuers of money, have always had a keen interest in the smooth functioning of the national payment system and the way it affects the economy. Their involvement has, however, evolved over time, as central banks have increasingly taken on a prominent role in the pursuit of the public good of maintaining trust in the currency and ensuring its smooth circulation. Consequently, their involvement in payment, clearing and settlement has changed.

There is a strong rationale for central bank involvement in payment, clearing and settlement issues. Modern economies are dependent on the safe and efficient flow of transactions. The smooth functioning of payment, clearing and settlement systems is a precondition for users' confidence in those systems and, ultimately, public confidence in the currency. The functioning of these systems also has an impact on the stability of financial institutions and markets, and may affect systemic stability. Moreover, such systems are essential for the implementation of monetary policy. Payment, clearing and settlement systems are important for financial markets and the functioning of the economy as a whole, and are thus important for the welfare of society.

Central banks are involved in payment, clearing and settlement in many different ways: as operators and providers of settlement services in central bank money; as participants in or users of such systems; as oversight authorities; and as promoters of efficiency in the payment system as a whole (i.e. all of the payment, clearing and settlement arrangements within the central bank's jurisdiction). As a result, central banks have, on the basis of historical developments and their current level of involvement, gained considerable expertise regarding the functioning of payment, clearing and settlement systems and the risks involved. The continuous evolution of the handling of payments, securities and other financial instruments poses a number of challenges to central banks. As a result, their role and involvement in this area may change further over time.

### 2 RATIONALE FOR CENTRAL BANK INVOLVEMENT

#### 2.1 HISTORICAL REASONS

Historically, central banks' payment systems function was rooted in the need to strengthen a means of payment which established itself in the course of the 19th century: the banknote. While a commodity currency (e.g. gold or silver coins) was supported by its intrinsic value, the value of paper money depended on *confidence* in the issuer's ability to exchange paper money for commodity money. Thus, the increased use of banknotes had a formative effect on the role of central banks in the area of payment and settlement systems.

During the “free banking” period, banks were able to issue their own banknotes (or bearer debt certificates). However, from the point of view of the general public, such banknotes entailed some uncertainties and risks. Their authenticity was difficult to verify, as there were a large number of issuers, and their value could diminish or disappear altogether with the declining creditworthiness of the issuer (or even the mere rumour of such a decline). To ensure the safety of paper currency systems, public authorities gradually entrusted one single bank with the task of issuing banknotes. Indeed, central banks were initially called “issuing institutions” and were typically established with a mandate to organise the orderly issuance of banknotes. A central bank issues its own liabilities for use as money (i.e. central bank money).

In the second half of the 19th century, commercial banks, too, began increasingly to issue liabilities (i.e. commercial bank money), which existed by means of entries in the books of those banks.<sup>13</sup> A layered structure was created, whereby private individuals held their savings (i.e. deposits) in banks, and banks in turn held theirs in accounts at the central bank. Individuals’ confidence in commercial bank money lay in the ability of banks to convert their liabilities into liabilities of other banks or central bank money when demanded by their clients. The central banks were, in particular, responsible for ensuring that central bank and commercial bank money could coexist and be “interchangeable at par”.

To meet the demands of their customers, banks obtained banknotes from the central bank, either in return for a payment in foreign currency or as credit. Thus, the central bank became the “bank of banks”. To control the creditworthiness of those seeking to obtain credit, central banks established a function which was to become known as “banking supervision”. The central bank’s task of maintaining the value of the currency gradually evolved into the steering of monetary conditions and what is now its most prominent role – the conduct of monetary policy.

Given this layered architecture, central bank money played an increasingly pivotal role in the economy as the ultimate settlement asset in the payment system. Banks would typically use their accounts at the central bank to settle transactions with other banks, particularly when transferring large values. The central bank became the “settlement institution”, offering safe, efficient, neutral and final settlement of transactions between banks. Central banks first offered very basic systems which would typically settle at the end of the day, but later more sophisticated systems with intraday finality were provided. With central banks acting as the anchor of the monetary system, the use of central bank money as a settlement asset has remained essential for the soundness and efficiency of the payment system as a whole (see also Box 5 in Chapter 1 on the role of central bank and commercial bank money).

Central bank money is of broad relevance for the payment, clearing and settlement industry. To settle transactions, financial institutions hold central

<sup>13</sup>See *The role of central bank money in payment systems*, CPSS, BIS, Basel, August 2003. The coexistence of central bank money and commercial bank money is explained in this report. The report also notes that neither mono-bank regimes (where either central banks or commercial banks act as the sole issuer of money) nor free banking regimes were able to serve the economy efficiently in the long term.

bank money in accounts with the central bank. Access to such accounts with the central bank is often accompanied by additional services, such as overdraft facilities or other forms of credit granted by the central bank. Thus, being part of a payment and settlement system typically implies having access to related services, rather than just being the holder of central bank money in the form of a deposit. Consequently, as the “bank of banks” and the ultimate settlement institution, the central bank plays a pivotal role in the payment, clearing and settlement systems of modern economies.

## 2.2 LINKS WITH MONETARY POLICY AND FINANCIAL STABILITY

Central banks’ functions in the area of payment, clearing and settlement systems are very closely related to their functions in the areas of monetary policy and financial stability. In general, monetary stability supports sound investment and sustainable growth, which in turn are conducive to financial stability and support the smooth operation of payment systems.

In particular, there is a strong link between payment, clearing and settlement systems and the monetary policy function of central banks. Well-functioning payment and settlement systems are an essential precondition for the implementation of a market-based monetary policy, as they ensure the efficient and safe execution of monetary policy operations and support the functioning of money markets, thereby facilitating the smooth and homogeneous transmission of monetary impulses.

These days, monetary policy is typically perceived in terms of the control of interest rates, which are directed through the central bank’s injection or withdrawal of liquidity. The central bank typically conducts its monetary policy operations with only a limited number of institutions, rather than with the entire banking sector. Other institutions, which form a “second tier”, may not want (or be able) to invest in the operational facilities necessary in order to act as a counterparty in market operations conducted by the central bank. As a result, they rely on those institutions that have a direct relationship with the central bank. Monetary policy impulses are transmitted to other institutions and the rest of the economy through the money market. The functioning of transactions in money markets relies on the smooth functioning of payment infrastructures. Furthermore, since monetary policy operations typically take the form of central bank loans, which are collateralised by securities, the appropriate functioning of securities infrastructures is absolutely essential for the implementation of monetary policy decisions.

Disruptions in payment, clearing and settlement systems can affect trading activity and asset prices. Were banks to experience uncertainty as to whether expected incoming payments would actually be received through the payment system, those banks would have to look for alternative sources of funding if they had no buffers. Banks typically turn to the interbank market for funds, and if a large number of banks experience disruptions, they will be prepared to pay a premium and will thus bid up rates. Information about disturbances in critical settlement systems spreads quickly among major participants in the money market and may lead such institutions to stop their trading activities and, for precautionary reasons, begin hoarding liquidity. Such hoarding further exacerbates the situation by contributing to the imbalance in the demand and supply of funds, affecting interest rates accordingly.

Central banks typically draw a clear line between providing *intraday* liquidity for payment system purposes and providing *overnight* (or longer-term) credit for the implementation of monetary policy. Intraday liquidity is typically provided with no quantitative restrictions in order to ensure a smooth flow of payments, although this must be secured by means of eligible collateral.

There is also a strong link between payment, clearing and settlement systems and the financial stability function of central banks. Financial stability allows the financial system to withstand shocks without giving way to cumulative processes which impair the allocation of savings to investment opportunities and the processing of payments in the economy. It is essential for financial institutions and markets that market infrastructures be robust, efficient and resilient. Financial stability is, in turn, vital for the smooth functioning of payment, clearing and settlement systems, and ultimately also for the successful conduct of monetary policy, as it is an essential prerequisite for sound investment and sustainable economic growth.

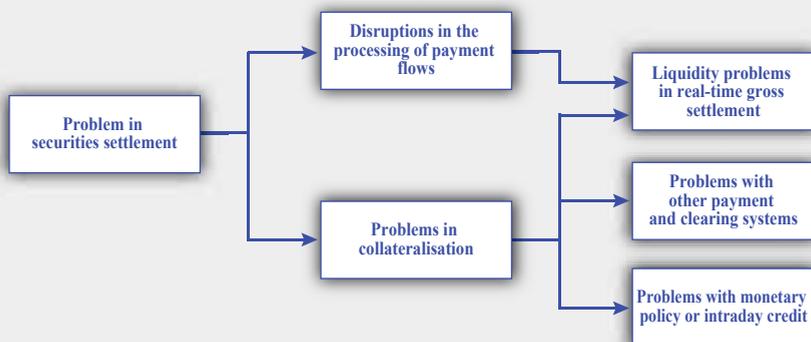
Systemic disturbances in payment, clearing and settlement systems can arise, for example, as a result of problems with a participant in a system or technical difficulties on the part of a system operator. These can affect other banks' liquidity positions, demand for money and the ability to clear and settle financial instruments. This may ultimately affect market interest rates, which could, in turn, affect trading activity and eventually the market's price-setting mechanism. There is also a risk of contagion, as banks typically hold positions across many participants and payment, clearing and settlement systems. Moreover, there may be interdependencies between market infrastructures. Financial institutions' actual or perceived inability to settle their obligations in distressed market conditions could contribute to a loss of confidence and could also have a negative effect on the stability of financial markets and the economy as a whole.

Securities clearing and settlement systems also constitute a critical component of the financial system, with any malfunctioning of such a system potentially giving rise to disruptions and instability in financial markets. In securities markets, market liquidity is critically dependent on there being confidence in the safety and reliability of settlement arrangements. As traders would be reluctant to trade if they had doubts as to whether the trade would in fact settle, inefficiencies in this infrastructure will ultimately be reflected in higher costs for issuers and lower returns for investors, which will impede capital formation.

Where systemic risk impedes the functioning of markets or threatens the existence of solvent critical players, the central bank may need to step in. Assistance could be granted to the market as a whole or just to individual institutions. Central banks decide on a case-by-case basis whether or not to inject liquidity into the market by means of extraordinary and/or non-conventional market operations, and whether and how to provide funding to individual banks that are illiquid but solvent. This is often referred to as "emergency liquidity assistance" or "acting as the lender of last resort".

## Chart 2 | Some potential effects of a disturbance in an important securities settlement system

The ECB/Eurosystem mandate to promote “the smooth functioning of payment systems” inevitably extends to securities settlement systems.



Source: ECB.

### 2.3 ADDRESSING POTENTIAL FAILURES BY INFRASTRUCTURES

Situations may arise in which the market is unable or unwilling to develop adequate solutions to ensure the smooth functioning of payment, clearing and settlement systems. The main sources of such market failures in the area of payment, clearing and settlement systems relate to insufficient competition, negative externalities and moral hazard.

Well-functioning markets depend on there being a sufficient degree of competition or contestability in the underlying infrastructures and services. As payment, clearing and settlement systems involve considerable economies of scale, there is typically a strong tendency towards a high degree of concentration in the industry. Modern payment and securities infrastructures require substantial fixed investment in information and communication technology, while the marginal cost of processing additional transactions is typically very low. Hence, efficiency gains can generally be achieved by increasing the number of transactions in order to lower the average cost per transaction. The combination of significant economies of scale and substantial positive network effects typically leads to what economic theory calls “natural monopolies”. Natural monopolies automatically imply the presence of imperfect markets and could have repercussions for competition and innovation in the long term.

Another type of market imperfection is the presence of negative externalities. In payment, clearing and settlement systems, participants are dependent on each other as regards the liquidity (and collateral) needed to process their transactions. Liquidity problems can arise where flows of funds differ from those expected, or where a number of participants delay settlement. As a result, disruption caused by one participant in the infrastructure can cause disruptions for other participants. These externalities can spread across the network, resulting in systemic risk, a process also referred to as “financial contagion”.

Similarly, operators of payment, clearing and settlement systems have to safeguard their systems against financial and non-financial risks. When developing tools to mitigate risks, operators acting in a competitive market have to strike a balance between costs and efficiency. To reduce costs and stay competitive, operators could decide to pay less attention to safety measures in order to attract business. However, if all operators behaved like this, there would be a “race to the bottom”, which could be highly detrimental to financial stability.<sup>14</sup>

A further issue facing systemically important payment and securities infrastructures and important participants in such infrastructures is the question of moral hazard. In some cases, markets may be convinced that some entities are “too big to fail”, which could lead to public intervention being expected in the event of any crisis (see also Chapter 5).

To address such market failures and prevent them from occurring, central banks are involved in payment, clearing and settlement activities in a variety of capacities, as set out below.

### **3 POTENTIAL ROLES OF CENTRAL BANKS**

#### **3.1 OBJECTIVES AND ROLES OF A CENTRAL BANK**

The overarching public policy objective of the central bank is to maintain the value of, and public confidence in, its currency. In general, money needs to circulate safely, swiftly and without excessive cost through effective payment, clearing and settlement systems. That public policy objective therefore includes the safe and efficient use of the currency as a medium of exchange in payment transactions, a process which forms the basis for citizens’ confidence in their currency.

In payment, clearing and settlement systems, central banks aim mainly to: (i) prevent systemic risk, thereby maintaining financial stability; (ii) promote the efficiency of payment systems and instruments; (iii) ensure the security of and public trust in the currency as the settlement asset; and (iv) safeguard the transmission channel for monetary policy.

To fulfil these objectives, the central bank typically acts in a variety of capacities (see Box 16). In its operational role, the central bank owns and operates facilities providing payment, clearing and/or settlement services. This typically involves the provision of account and settlement-related services. In its oversight role, the central bank initiates change with a view to ensuring that systems are safe and efficient. This typically involves the careful monitoring and assessment of existing and planned systems on the basis of oversight standards. In its catalyst role, the central bank plays an important role in private sector initiatives as a partner or facilitator, both for the development of payment, clearing and settlement systems

<sup>14</sup>For example, where a large-value net settlement system seeks to increase its market share by increasing limits for risk exposures in the system, or where central counterparties compete by lowering margining requirements.

and for the establishment of market standards and practices that facilitate the overall efficiency of payment, clearing and settlement arrangements.

Finally, the central bank may also be a user of or a participant in systems which are owned and operated by external parties. For example, central banks often use securities settlement systems for the delivery of collateral in their credit and market operations, as well as making and receiving payments on their own behalf or on behalf of their customers (e.g. government, public administrations or foreign central banks). The central bank's role as a user is not elaborated upon further in this chapter.

#### **Box 16 Roles played by central banks in the development of payment systems**

As the *operator* or *provider* of a payment service, the central bank could provide and develop payment and credit services by:

- issuing cash as a direct payment instrument and issuing deposit claims as the settlement asset for interbank payments;
- operating systemically important settlement networks or participating directly in private sector arrangements that operate clearing and settlement networks, potentially participating in their governance arrangements;
- operating non-systemically important payment clearing and settlement arrangements (and potentially participating in their governance arrangements), or participating directly in retail payment transaction networks;
- managing settlement accounts and providing settlement credit for participants in the payment settlement network, both intraday and at the end of the day.

As a *catalyst*, the central bank could contribute to payment system reform or development by:

- initiating or coordinating work, conducting research or acting as a consultant on the design or operation of payment systems or related policy issues;
- advising on – or occasionally even drafting – proposed legislation in the area of payment systems.

As the *oversight authority* for the payment system, the central bank could:

- publish its oversight principles, policies or guidelines;
- monitor existing or planned systems or assess them against safety or efficiency objectives;
- act as a consultant, provide advice or, if necessary, promote changes to the payment system's organisation or operations.

As a *user* of payment services in its operational activities, the central bank could:

- participate in or use systems owned or operated by external parties to make or receive payments on behalf of its own customers (such as the government or government agencies);
- participate in or use securities settlement or depository systems for its own operations;
- use correspondent banking services for other central banks or financial institutions.

Source: *General guidance for national payment system development*, CPSS, BIS, Basel, January 2006.

## 3.2 THE CENTRAL BANK AS OPERATOR

As the *operator* of a payment system, a central bank offers settlement in central bank money by allowing financial institutions to transfer among themselves funds held in accounts with that central bank. Central banks' payment systems are usually employed for the final settlement of claims originating from interbank operations and ancillary systems, such as systems for the clearing of retail payments, foreign exchange transactions or securities transactions. Moreover, it is not uncommon for central banks to have an operational role in the processing of retail payments. In some countries, the central bank also operates securities settlement infrastructure. Acting in an operational capacity is one way for the central bank to ensure that the system or service in question meets the safety and efficiency standards it has set. A central bank will usually cooperate closely with the banking system when developing the facilities it operates.

The extent of central banks' operational involvement in payment and settlement systems varies from country to country. It may also vary from system to system. Within a system, a central bank's involvement could extend to full ownership of both the settlement infrastructure and the networks connected to it. In many cases, however, central banks do not operate their own network and instead procure network services from external providers. In some cases, the system is owned by its participants, with or without an explicit governance role for the central bank.

As a minimum, central banks typically provide the ultimate settlement asset – i.e. central bank money. In the large majority of countries around the world, the central bank also owns and operates the system that provides settlement in central bank money. Depending on the needs of the economy, these systems can vary from the very sophisticated (e.g. RTGS systems with complex liquidity-saving features) to more basic – possibly even paper-based – schemes.<sup>15</sup>

<sup>15</sup>By 2008 a total of 98 central banks had set up an RTGS system. See *Payment Systems Worldwide: a Snapshot. Outcomes of the Global Payment Systems Survey 2008*, World Bank, Washington DC, June 2008.

There is less uniformity in central banks' approaches when it comes to operating securities clearing and settlement systems and securities depositories. In many countries, central banks see no reason to operate such systems. However, even if the central bank does not itself directly take part in the operation of securities clearing and settlement infrastructure, the central bank – or market participants – may require, for safety reasons, that the cash leg of a securities transaction be settled in central bank money. This automatically leads to some involvement on the part of the central bank. Via this process, the central bank could, either implicitly or explicitly, “export” its own security standards to the infrastructure requesting access to settlement in central bank money. Where central banks operate securities clearing and settlement systems, those systems are typically used for the settlement of transactions involving government bonds, treasury bills or similar instruments issued by the public sector.

A central bank may also become operationally active for efficiency reasons – e.g. in order to eliminate segregation in the market for the clearing and settlement of securities. Often the market is segregated on the basis of the exchanges on which particular securities are traded, on the basis of geographical borders or on the basis of types of instrument. A central bank may therefore decide to provide an integrated platform for the settlement of securities transactions in central bank money.

The extent of the central bank's operational involvement may change over time – for example as the private sector's ability to accept responsibility for operational matters or governance develops, as innovation gives rise to changes in the design or characteristics of payment, clearing and settlement services, or as new approaches to the handling of risk are developed.

Demand for central bank money as a settlement asset may also change over time, which could have an impact, for example, on the access criteria and operational features of a central bank's settlement services. For example, an increase in the time criticality of financial transactions or an increased need for DvP settlement of securities with intraday finality will increase demand for RTGS settlement in central bank money. It is important for the central bank to have a good understanding of the functioning of different markets and services in order to be able to provide facilities that meet the needs of market participants. This also includes issues such as operating hours, service levels and the range of assets eligible as collateral.

Whenever central banks are operationally involved in the provision of clearing and settlement services for payments or securities, a cost recovery policy is of crucial importance. Many central banks adopt a policy of “full cost recovery”. In a free market economy, it is important that central banks do not provide services in conditions that represent unfair competition with regard to the private sector. However, in some circumstances it may be justified for the central bank to *subsidise* the costs of payment or settlement services in order to develop financial markets where no other possibilities exist or in order to promote financial stability by encouraging market participants to migrate to services with a higher level of safety.

### 3.3 THE CENTRAL BANK AS OVERSIGHT AUTHORITY

The oversight of payment, clearing and settlement systems is a central bank function in which safety and efficiency are promoted by monitoring existing and planned systems, assessing them against these objectives and, where necessary, fostering change.

Central banks have a unique responsibility in this respect, particularly given: (i) their strong interest in financial stability; (ii) their role in providing settlement accounts for payment system participants; and (iii) their need for smooth functioning money markets with a view to the implementation of monetary policy and the maintenance of confidence in the currency, both in normal circumstances and in crisis situations. Although many central banks have regulatory powers, experience shows that moral suasion is, in most cases, sufficient in order to ensure compliance with oversight standards.

An oversight authority's primary focus is on systemic risk. Were a system to be insufficiently protected against risk, disruption within it could lead to its participants being disrupted or give rise to systemic disruptions in the wider financial system. Systemic importance is determined mainly by the size or nature of individual transactions or their aggregate value. Payment, clearing and settlement systems specifically handling large-value transactions are normally considered to be systemically important.

The oversight function aims to preserve the safety and efficiency of individual payment, clearing and settlement systems or arrangements and the safety of the market as a whole (i.e. looking at all infrastructures together).

At the micro level, attention is paid to the safety, reliability and availability of individual systems. For systemically important systems, oversight also covers business continuity arrangements, in order to ensure that such systems can operate even when the markets around them are in crisis. At the macro level, oversight considers threats to safety originating from both: (i) interaction between the various systems; and (ii) aspects of the market as a whole that affect or influence more than one individual infrastructure.

<b>Addressee</b>	<b>Objective</b>	Safety	Efficiency
		Micro level (i.e. individual systems and arrangements)	<i>Oversight</i>
Macro level (i.e. the market as a whole, looking at the complete set of infrastructures and rules)		<i>Oversight</i>	<i>Catalyst</i>

Source: *Central bank oversight of payment and settlement systems*, CPSS, BIS, Basel, May 2005.

In addition to being safe, individual systems must also be efficient. Central banks need to ensure that a sound long-term balance is struck between safety and efficiency. It is not desirable for a system to become so complex that it is impractical to use, giving its users incentives to divert transactions to arrangements which are less safe. On the other hand, a system which is very efficient and user-friendly should take safety aspects sufficiently into consideration. Efficiency considerations at a macro level form part of central banks' catalyst function.

Oversight activities are based on the definition and implementation of standards. The most prominent of these are the CPSS's "Core Principles for Systemically Important Payment Systems", which were published in January 2001. These were developed by the central banks of the G10 countries for global use and have been adopted by the central banking community as its official oversight standards.

### **Box 17 Principles for effective oversight**

The CPSS has set out a number of principles to help central banks organise and conduct effective oversight. Part A of this box lists general principles applicable to all oversight arrangements, which central banks may find useful when reviewing their own oversight arrangements. Part B supplements these with principles for international cooperative oversight with other central banks and, where applicable, other authorities.

#### **A. General principles for oversight**

##### **General oversight principle A: *Transparency***

Central banks should publicly set out their oversight policies, including the policy requirements or standards for systems and the criteria for determining which systems these apply to.

##### **General oversight principle B: *International standards***

Central banks should adopt, where relevant, internationally recognised standards for payment and settlement systems.

##### **General oversight principle C: *Effective powers and capacity***

Central banks should have the power and capacity to carry out their oversight responsibilities effectively.

##### **General oversight principle D: *Consistency***

Oversight standards should be applied consistently to comparable payment and settlement systems, including systems operated by the central bank.

##### **General oversight principle E: *Cooperation with other authorities***

Central banks, in promoting the safety and efficiency of payment and settlement systems, should cooperate with other relevant central banks and authorities.

## B. Principles for international cooperative oversight

### **Cooperative oversight principle 1: Notification**

A central bank that has identified the actual or proposed operation of a cross-border or multi-currency payment or settlement system should inform other central banks that may have an interest in the prudent design and management of the system.

### **Cooperative oversight principle 2: Primary responsibility**

Cross-border and multi-currency payment and settlement systems should be subject to oversight by a central bank which accepts primary responsibility for such oversight, and there should be a presumption that the central bank where the system is located will have this primary responsibility.

### **Cooperative oversight principle 3: Assessment of the system as a whole**

In its oversight of a system, the authority with primary responsibility should periodically assess the design and operation of the system as a whole. In doing so, it should consult with other relevant authorities.

### **Cooperative oversight principle 4: Settlement arrangements**

The determination of the adequacy of a system's settlement and failure-to-settle procedures in a currency should be the joint responsibility of the central bank of issue and the authority with primary responsibility for oversight of the system.

### **Cooperative oversight principle 5: Unsound systems**

In the absence of confidence in the soundness of the design or management of any cross-border or multi-currency payment or settlement system, a central bank should, if necessary, discourage use of the system or the provision of services to the system, for example by identifying these activities as unsafe and unsound practices.

Source: *Central bank oversight of payment and settlement systems*, CPSS, BIS, Basel, May 2005.

In the field of securities clearing and settlement, the central banks of the G10 countries worked with IOSCO to define “Recommendations for Securities Settlement Systems” in 2001 and “Recommendations for Central Counterparties” in 2004. In 2010, as a result of the financial crisis that began in 2007 and on the basis of the lessons learned from those events, the CPSS and IOSCO jointly initiated a review of these three sets of standards with a view to refining them and facilitating their consistent application by the relevant authorities.

Central banks' oversight function comprises three main activities: monitoring, assessment and the fostering of change. Central banks *monitor* developments in payment, clearing and settlement systems in order to acquire a good understanding of how these services and infrastructures function and how they are linked to the rest of the financial system. Their information may come from publicly available documentation or interaction with the various actors involved (e.g. from information reported by the systems in question, from on-site

inspections, from exchanges of information on regulatory findings, or from information on innovations and new business models).

The information obtained by the central bank is used for its oversight *assessment*. An assessment is carried out against the relevant oversight objectives and standards, possibly with the aid of a predefined assessment methodology. Where a number of different systems are being assessed, potentially with the involvement of various responsible authorities, it is important to ensure a level playing field and consistency across the various assessments.

Where necessary, the central bank will use the information obtained and assessed in order to *foster changes* in the operation or design of the system. This could take the form of moral suasion, public statements, voluntary agreements, cooperation with other authorities, regulatory enforcement or sanctions.

The central bank, in promoting the safety and efficiency of payment, clearing and settlement systems, cooperates with other central banks and other relevant authorities, such as prudential supervisors and securities regulators.

#### **Box 18 Distinction between banking supervision and oversight**

<b>Prudential supervision</b>	<b>Payment systems oversight</b>
– Looks at institutions both individually and at the macro level	– Looks at systems (including instruments and arrangements)
– Prudent management/risk control	– Smooth functioning of systems (including soundness and safety)
– Extensive regulatory control	– Mix of moral suasion and regulation
– Entails a detailed examination of individual institutions	– Entails an examination of the design of systems and the operation of arrangements
– Carried out by the central bank or a dedicated authority	– Carried out by the central bank

Source: ECB.

The scope of central bank oversight depends on national specificities and could include large-value and retail payment systems, payment instruments, clearing and settlement systems for financial instruments, and central counterparties.

In recent years the scope of central banks' oversight activities has evolved in response to various development factors, such as globalisation, innovation and regulation. Globalisation and consolidation has increased interdependencies between systems and participants, for example through the creation of banking groups and financial conglomerates that operate in a number of countries. Operational risks have also become more and more relevant – for instance owing to (i) the increased criticality of some infrastructure as a result of increased financial market activity, (ii) increased interdependencies between systems or participants, and (iii) the outsourcing of services to (common) third parties.

### **3.4 THE CENTRAL BANK AS CATALYST**

Financial integration and development is important to a central bank, as it ensures that the financial system is functioning properly – i.e. that actors in the financial system can allocate resources in a safe and efficient manner. The public sector – and the central bank in particular – has an important contribution to make in terms of reducing policy-related obstacles to financial integration. The central bank should lead by example, adopting commonly agreed standards and migrating towards best practices.

Well-functioning cooperation between stakeholders in the financial system is important for the proper establishment of relevant services and infrastructures, the successful operation of such services and systems, and the development of the necessary institutional, legal and contractual support. Financial integration and development is first and foremost a market-driven process. However, sometimes coordination problems among market participants hamper effective collective action.

Given its unique institutional position as a public authority, a neutral party and an active market participant with numerous relationships with other market participants, and owing to the performance of its many central banking tasks, the central bank can act as a catalyst with a view to overcoming coordination problems and vested interests. For example, the central bank can facilitate the formation of industry groups and fora that propose and develop standards for payment instruments and payment, clearing and settlement services that are consistent with accepted international standards.

The catalyst function aims to promote efficiency in payment, clearing and settlement infrastructures from the perspective of the economy as a whole. In this area, central banks see their role as supporting the industry with a view to finding swift and effective solutions.

The catalyst function is characterised by the absence of explicit regulatory standards and requirements. It relies much more on the analysis of particular market conditions, which forms the basis for the definition of policies. These

policies are then pursued, inter alia, through discussions with market participants, speeches and reports. Central banks rely more on moral suasion than on regulation in their catalyst role.

Moral suasion requires central banks to be able to exert pressure on market participants, encouraging them to evolve in a certain direction. The effectiveness of this tool will depend largely on the expertise and reputations that those central banks develop (and whether or not they lead by example). It will also depend on their ability to intervene when an outcome is not regarded as appropriate. The ability to convince others is clearly essential in order for a central bank to perform its catalyst function.

The central bank's choice of tool generally depends on the situation in the given country, including the level of development in the financial system. Experience in developing countries indicates that the central bank may sometimes need to take the lead in proposing, planning and implementing fundamental changes to market infrastructure, using all of its roles to move the development programme forward. In other cases, where privately led reform initiatives are in line with central bank development objectives, the central bank's main role could be to advise on and facilitate change through its catalyst functions.

Central banks are engaged in several catalyst activities with a view to creating a supportive framework for system development. In particular, they facilitate coordination between financial institutions and the removal of obstacles to industry initiatives. As regards the latter, central banks typically aim to remove obstacles in three situations: (i) when market practices diverge or even conflict; (ii) when there is an absence of fair and open market conditions; and (iii) when complexity and diverging views prevent market practices from developing towards the highest standards of efficiency and safety.

In keeping with the principle that the financial development process should be market-led, the central bank may prefer that its role be strictly supportive. In particular, policy measures do not involve the promotion of a specific type of activity or technology, as only the market participants themselves are in a position to develop the underlying business strategies, take the relevant investment decisions and assume responsibility for the economic consequences.

In many countries, the catalyst role of the central bank has evolved over time in response to various development factors. The providers and users of services can often experience coordination problems, especially in the early stages of the development of a national payment system. At later stages, too, competing financial institutions may be reluctant to cooperate in the development of common standards, infrastructures, or innovative products and services.

#### **4 TRENDS AFFECTING THE ROLE OF THE CENTRAL BANK**

National and international payment and settlement systems are influenced by various external factors and changes in the market environment. In particular, regional integration, globalisation, innovation and regulation have prompted

significant changes in the area of payment, clearing and settlement systems, and these changes, together with amended or new legislation on market infrastructure services, may also affect the role and involvement of the central bank. It is reasonable to expect that these major drivers of change will, in many respects, continue to have a profound impact on the design and functioning of the systems in the various markets for the foreseeable future.

The following section focuses on four future trends that are expected to have an impact on markets for payment, clearing and settlement services: (i) innovation and technological progress; (ii) increased interdependencies; (iii) delocation; and (iv) concentration.

#### **4.1 INNOVATION AND TECHNOLOGICAL PROGRESS**

Innovation and technological progress allow improvements to be made in existing payment, clearing and settlement arrangements and allow new products, services and processes to be introduced. This is especially true as regards increases in computing power and advances in communication technologies, which allow transactions to be handled more quickly and allow the improvement of services offered, but may also increase the complexity of systems. For example, large-value payment systems increasingly use offsetting algorithms on a continuous basis and allow online monitoring and management of liquidity and payment flows. In the field of securities, auto-collateralisation procedures facilitate the funding of settlement. And in the field of derivatives, portfolio compression services can reduce gross counterparty risk exposures. Technological progress also allows the improvement of business continuity arrangements, enabling the real-time transmission of data between operational sites located some distance from each other.

In the field of retail payment services, new methods of making payments are being developed and new services are being introduced, with non-bank parties increasingly becoming involved at various stages of the payment chain. The internet, mobile phones and other portable devices are increasingly being used to access payment services electronically on a remote basis and make payments by means of innovative payment schemes. The exponential growth observed in online commerce has created strong demand for fast and easy to use electronic payment solutions. Electronic invoicing, electronic reconciliation of payments with invoices, and online account statements all represent innovative services offering great potential in terms of cost savings.

In acting as operators, overseers and facilitators of change, central banks need to monitor and analyse innovations and technological developments in the markets for payment, clearing and settlement services and assess them against their safety and efficiency objectives. The more complex new systems and services become, the more difficult it is to analyse the risks and implications for the market.

## 4.2 INTERDEPENDENCIES

Regional integration, globalisation and rapid technological and business model changes in the payment, clearing and settlement landscape have led to a number of growing interdependencies in the market. Payment, clearing and settlement systems, and the markets they support, are becoming increasingly connected. Moreover, large international banks are participating in systems in various countries. This has led to an increase in efficiency (e.g. through interoperability and economies of scale). Interaction between systems has also allowed a reduction in settlement risk for some activities. In particular, interaction between CLS and central bank RTGS systems for eligible currencies allows risks in foreign exchange transactions to be effectively addressed by applying PvP settlement. Moreover, interaction between securities settlement systems and payment systems allows DvP settlement, thereby reducing risks in securities settlement.

However, interdependencies between systems and between institutions also change the nature of risks and could be a source of additional vulnerabilities, allowing disruptions to spread from one system to another and, more broadly, from one market to another. In addition, operational risks are becoming more and more important, as increased interdependencies and concentration lead to risks relating to “single points of failure”. More stringent measures for the analysis and assessment of interdependencies are needed. In recent years, the issue of resilience has also assumed greater prominence. The risks posed by interdependencies between markets may be further exacerbated by moves towards new standards and processes, as well as innovations in the design of infrastructures.

Finally, the combination of interdependencies and increased complexity in financial products and infrastructures could pose a challenge for central banks seeking to align their interests. International cooperation and consensus building – both with other central banks and with domestic and foreign banking supervisors and securities regulators – are gaining in importance for central banks, which therefore need to develop the tools and fora necessary for such activities. Central banks also have to remain in step with the market and keep abreast of new developments in the industry. Consequently, regular dialogue with the market will remain necessary.

## 4.3 DELOCATION

Another key development concerns “delocation” – i.e. changes in the location of systems. Regional integration, globalisation and innovation have allowed many banks and markets to expand their operations across borders, with the result that markets have become international and services are increasingly being offered by international players. This may encourage the setting-up of market infrastructure outside the country of the currency used in transactions. Moreover, national markets are increasingly being contested by international players, which have the scale effects necessary to compete with national incumbents, with correspondent banking and custody services increasingly being provided through leading international players.

Systems (or related services) could increasingly be located outside the jurisdiction of the central bank of issue. Sometimes this is unavoidable – i.e. in the case of systems providing PvP settlement, as such systems are, by definition, offshore to all but one currency. In other cases, it may be more difficult to accommodate a situation where the system handling a currency lies offshore. In such a scenario, the central bank's ability to fulfil its role in the fields of oversight, monetary policy and crisis management may be impaired.

The delocation of market infrastructures should not allow for regulatory arbitrage or result in risks unacceptable to the central bank of issue. A cooperative oversight framework is required in order to link the central bank issuing the currency used in the offshore system with the central bank responsible for the oversight of that system. Delocation raises a number of liquidity management issues and could also pose challenges as regards the conduct of monetary policy and the handling of crisis situations by the issuing central bank, especially if the values settled in the offshore system are of a considerable size. In such circumstances, it will be more difficult for the issuing central bank to obtain timely information and activate effective communication channels (e.g. owing to time zone differences). This will limit its ability to act and impede its decision-making, and could even undermine its control over reserve balances and monetary and financial stability more generally.

Payment, clearing and settlement activities exhibit considerable economies of scale and there is a natural tendency towards consolidation. Thus, in this globalised world, when financial innovation results in new services or products, their markets may be global. Demand for global market infrastructure services may therefore increase with a view to serving these global markets. Market participants may wish to see a certain activity concentrated on a single multi-currency platform. This represents a break with previous practices (where infrastructures were segmented on the basis of currency) and raises policy issues combining the various challenges related to delocation, concentration and interdependencies.

In general, central banks will need to look at whether offshore or more international infrastructures strike the right balance between safety and efficiency. The cooperative oversight framework successfully applied for a number of arrangements will have to be developed and tested further over time in the light of market developments.

#### **4.4 CONCENTRATION**

The consolidation of financial institutions and market infrastructures may give rise to certain specific challenges for central banks. Particularly in the case of payment and securities infrastructures, consolidation and integration in the banking industry may lead to significant volumes being shifted from interbank systems to intrabank processes, with banks increasingly internalising payments and securities transfers. When two institutions merge, their combined ability to offer in-house processing for transactions increases. However, they will also

internalise an increased amount of risk. And as an institution, they will become more critical for the financial system. This type of development can be seen both in correspondent banking and in custody services. The consolidation of institutions and systems within and across jurisdictions and currencies creates further complexities. This increases the need for central banks to cooperate both with banking supervisors and securities regulators and with other central banks.



## **PART 2**

# **THE EURO AREA LANDSCAPE FOR PAYMENTS, SECURITIES AND DERIVATIVES**



## CHAPTER 8

# THE PAYMENT MARKET LANDSCAPE IN THE EURO AREA

### I INTRODUCTION<sup>16</sup>

Payment and securities clearing and settlement systems in the euro area were originally created with the aim of meeting domestic requirements. They were relatively diverse in nature and not necessarily suited to the needs of a single currency area, which requires infrastructure which will enable payments and securities to flow quickly and smoothly throughout that area at low cost. Against this background, the market infrastructure for the handling of payments and securities in the euro area has undergone fundamental changes at great speed both in the run-up to and following the introduction of the euro. The launch of the euro, technological developments, financial innovation and globalisation have all contributed to the reshaping of the infrastructure for the effecting of payments and the trading, clearing and settlement of securities. This has also intensified efforts to harmonise, integrate and consolidate activities.

The reshaping of the payment market landscape has, in terms of the harmonisation, integration and consolidation of payment systems and procedures, been particularly pronounced in the area of large-value payments and large-value payment systems. In January 1999 the Eurosystem launched the Trans-European Automated Real-time Gross settlement Express Transfer system (TARGET), thereby establishing a euro area-wide RTGS system for the settlement of euro payments in central bank money. Subsequently, in response to growing demand from financial institutions for more advanced and harmonised payment and settlement services across Europe, the Eurosystem developed a second-generation system – TARGET2. In the new system, the decentralised structure of the original TARGET system was replaced by a single technical platform, the Single Shared Platform (SSP). Migration to TARGET2 was successfully completed in May 2008. Another large-value payment system covering the whole of the euro area is the privately owned and operated EURO1 system.

The harmonisation, integration and consolidation of retail payments and retail payment systems has not progressed as rapidly as that of the large-value segment and is therefore still at an early stage. Payment habits (i.e. preferences in the use of cash and cashless payment instruments) vary widely across the euro area, with retail clearing and settlement organised in different ways in the various countries, reflecting traditions and business preferences. However, this situation is expected to change significantly in the years to come. With a view to achieving

<sup>16</sup>This chapter provides a high-level overview of the payment market landscape in the euro area. A corresponding overview of the securities market landscape is provided in Chapter 9. More detailed complementary information on a number of the issues, instruments and systems referred to here can be found in *Payment and securities settlement systems in the European Union, Volume 1: euro area countries*, ECB, Frankfurt am Main, August 2007.

a fully integrated market for retail payment services in the euro area, with no distinction between cross-border and national payments in euro, the banking industry decided in 2002 to establish the Single Euro Payments Area (SEPA). The first stage of the SEPA initiative was officially launched in January 2008.

In analysing the landscape for the handling of euro-denominated payment and securities transactions, there are two important observations. First, it follows from the logic of the single currency that all euro-denominated payment and securities transactions within the euro area (i.e. within the borders of the currency area) are “domestic”. Thus, all euro-denominated transactions in the euro area should be handled in the same way, whether the two parties are located in the same country or in different countries. A country with its own currency does not, as a rule, have different payment and settlement systems and arrangements for different regions of the country. Second, within the European Union, on the basis of Internal Market legislation, institutions licensed in one Member State can provide services in any Member State (the “single passport” principle). Those institutions can also participate in payment and settlement systems in any Member State, on a remote basis if necessary (i.e. without having a physical presence in the jurisdiction in which the system in question is located). The Internal Market even extends beyond the borders of the EU. Through the Agreement on the European Economic Area, the Internal Market also extends to Norway, Iceland and Liechtenstein. Thus, the euro area and the European Economic Area (EEA) have a common legal basis for financial and other activities. This means that institutions within the EEA have the same access to payment and settlement services in euro as institutions within the euro area.

## 2 PAYMENT INSTRUMENTS

### 2.1 CASH

The euro was introduced as a currency in its own right on 1 January 1999. Euro banknotes and coins were introduced on 1 January 2002. Since then, citizens of the euro area have been able to make cash payments in all euro area countries using one single currency.

Cash is still the most important instrument for retail transactions in the euro area, although transaction volumes vary considerably from country to country. As a payment instrument, cash has several unique features: it is the cheapest payment instrument for very small retail payments; it is the most important emergency payment instrument in the current payment infrastructure; it is “inclusive”, as it ensures that people who have no bank accounts or are unable to use electronic forms of payment can still make payments; it enables consumers to closely monitor their spending; and it has proved to be secure in terms of tackling fraud and counterfeiting.

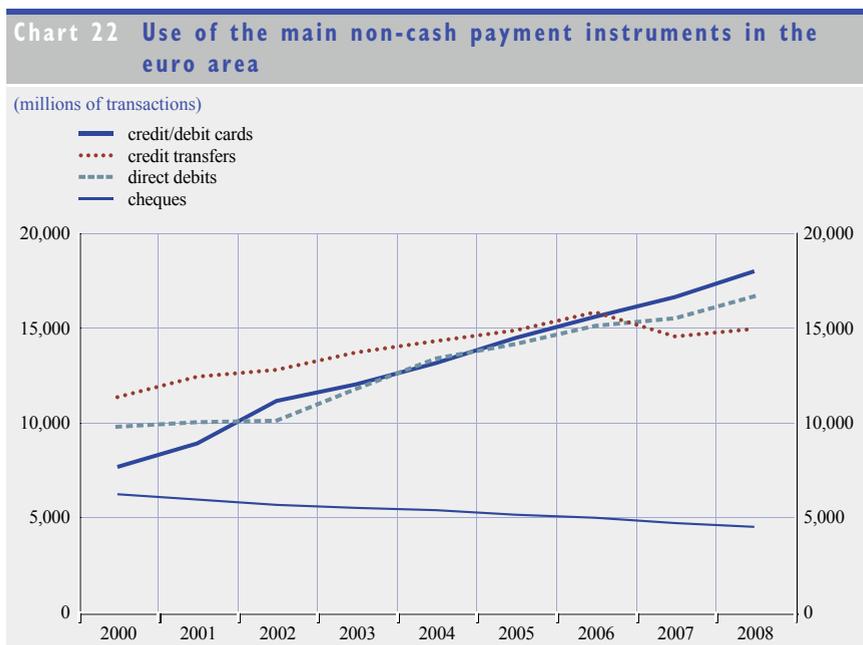
Banks in the euro area report that the costs related to their customers’ use of cash outweigh the revenue derived from their cash services. The “war on cash” has therefore become a key element of the debate concerning cash and cashless instruments. Efforts are being made to develop a cash displacement strategy

and promote the use of cashless instruments. At the same time, measures implemented by the Eurosystem in order to improve efficiency in the cash cycle could potentially give rise to considerable cost savings. It should be noted, however, that while the relative importance of cash payments is decreasing, the absolute value of the outstanding stock of cash is expected to continue growing.

A number of studies have been carried out analysing different aspects of the cost of cash, resulting in different findings and conclusions. However, while there are studies that provide a full and fair picture of the costs in individual countries, including comparisons with the costs of other payment instruments, there are, as yet, no studies that provide a full picture of the costs of cash for the euro area as a whole.

## 2.2 NON-CASH PAYMENT INSTRUMENTS

Payment cards, credit transfers, direct debits and cheques are the main non-cash payment instruments in the euro area. Over the last ten years payment cards have displayed the strongest growth, with transaction volumes for this instrument more than doubling. Consequently, payment cards have overtaken credit transfers as the most widely used non-cash payment instrument in the euro area. Direct debits have also seen steady growth, while the use of cheques has been declining. In some countries, cheques have been abolished altogether. E-money payments have remained of marginal importance. Trends in the use of the various payment instruments in the euro area from 1998 to 2008 are shown in Chart 22 below.



Source: ECB.

National preferences vary widely as regards the use of the various instruments in cashless retail payments, as can be seen in Table 11 (see also Chart 3 in Chapter 1). It should be noted that, with the launch of the Single Euro Payments Area project, the euro area will begin to use common SEPA instruments, which is likely, over time, to have an impact on the use of the various payment instruments. SEPA-related issues are explained in more detail in Section 4.

*Credit transfers* have traditionally been the most widely used non-cash payment instrument in the euro area, accounting, in volume terms, for one-third of all non-cash transactions effected by non-banks in the euro area. However, in 2007 they were overtaken by card payments. In value terms, credit transfers are by far the most important payment instrument, since they are typically the payment instrument of choice for transactions with a relatively large value, such as one-off durable goods purchases by consumers or payments between firms and corporations. This is also supported by the average value of credit transfers, which stands at some €12,400 for the euro area as a whole and ranges between around €1,000 in Ireland and Slovenia and more than €40,000 in Greece.

*Direct debits* have become more important in the euro area in recent years on account of an increased tendency for utility and retail companies to offer this service. Direct debits account, in volume terms, for around one-third of all non-cash transactions effected by non-banks in the euro area.

Over the past few years payment cards have overtaken more traditional payment instruments such as credit transfers and direct debits in terms of the volume of payments. *Payment cards* are used almost exclusively for consumer purchases of relatively low value, which explains the fact that the average value of payment

**Table 11 Relative importance of the main non-cash payment instruments in the euro area**

(2008 data; percentages of total volume of non-cash transactions)

	<b>Credit transfers</b>	<b>Direct debits</b>	<b>Cards</b>	<b>Cheques</b>
Belgium	42.22	11.26	42.42	0.40
Germany	35.23	50.00	14.06	0.41
Ireland	23.77	14.71	44.95	16.57
Greece	21.79	9.48	50.49	17.17
Spain	14.49	42.87	38.96	2.53
France	16.97	19.02	41.16	21.94
Italy	27.85	14.52	36.58	10.09
Cyprus	19.55	14.37	35.02	31.06
Luxembourg	48.57	10.86	38.73	0.16
Malta	17.58	3.74	36.11	42.57
Netherlands	31.12	25.77	39.41	-
Austria	44.92	37.11	16.09	0.14
Portugal	9.77	13.67	64.07	12.42
Slovenia	53.19	12.91	33.80	0.10
Slovakia	52.86	25.36	21.76	0.02
Finland	40.62	4.45	54.90	0.03

Source: ECB.

Note: “-” indicates “not applicable”.

card transactions for the euro area as a whole is some €56. Debit cards are more widely held than credit or delayed debit cards in most euro area countries, with almost twice as many cards in circulation in 2007 across the euro area as a whole. They are even more dominant in terms of use, since debit cards are, on average, used more than three times as often as credit or delayed debit cards.

In 2007 3.9 billion *cheques* were used in France, some two-thirds of all cheques used in the euro area, while in the rest of the euro area approximately 2.1 billion cheques were used. The use of cheques has been declining steadily over the years. Although less significant than other payment instruments in terms of the volume of transactions, cheques tend to be used for large-value transactions, with the result that the average value of cheque transactions across the euro area is more than €1,000. The cross-border use of cheques is decreasing and is expected ultimately to be phased out. The euro area banking industry has defined a strategy to promote the use of alternative electronic instruments for retail payments in Europe.

*E-money* payments are used only to a very limited extent, and several e-money schemes have ceased operating. The main users of e-money are Belgium and the Netherlands, which together account for some 70% of the volume of such transactions.

### 3 LARGE-VALUE PAYMENT SYSTEMS OPERATING IN EURO

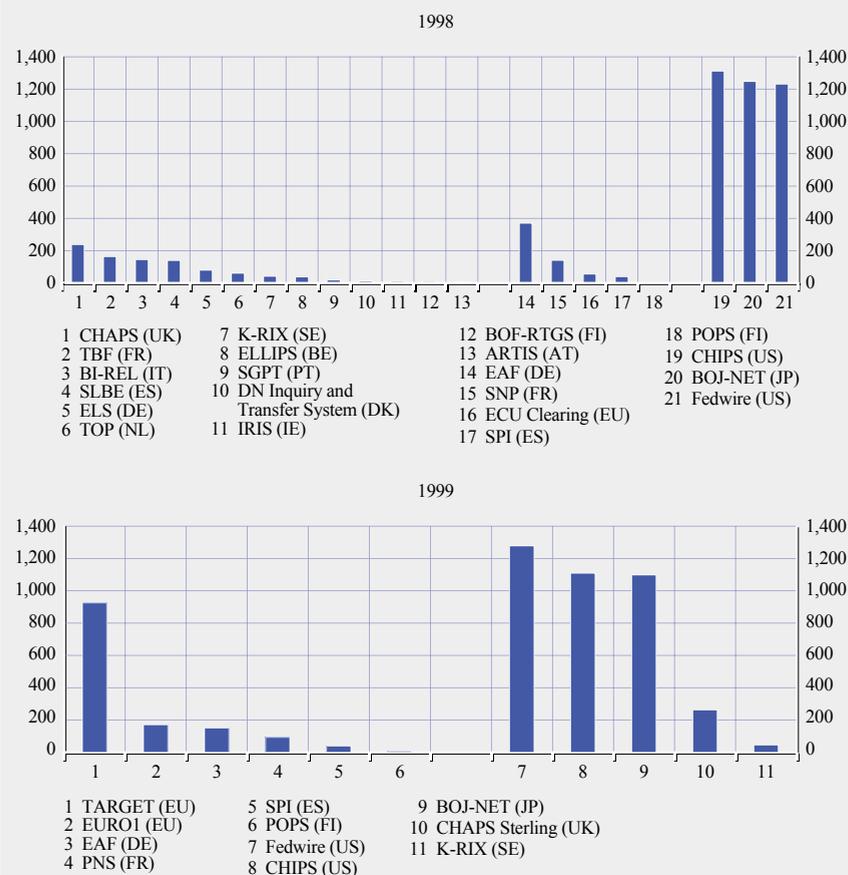
Before the introduction of the euro in January 1999, large-value payment systems in what was to become the euro area operated only in their respective domestic currencies. The main way of making cross-border payments within the EU was via correspondent banking. In addition, a group of EU-based banks had formed the ECU Banking Association, which operated the ECU Clearing System. The ECU Clearing System, which was launched in 1985, processed financial and commercial transactions denominated in ECU, a virtual basket of currencies. Settlement took place at the Bank for International Settlements. With the introduction of the euro, this system was replaced by the EURO1 system.

With the introduction of the euro on 1 January 1999, the principles governing the provision of payment services within the euro area changed. The existence of a single currency meant that cross-border payments within the euro area were in principle no different from payments within an individual country. The conduct of a single monetary policy required the establishment of a single money market covering all euro area countries. That single money market was greatly facilitated by the Eurosystem's creation of an area-wide RTGS system – TARGET – for the settlement in central bank money of urgent large-value payments in euro.

At the time of the introduction of the euro, there were a total of six large-value payment systems operating in euro in the euro area. Two of them, TARGET and EURO1, operated on an area-wide basis. The other four were more localised (although with some foreign participation): EAF in Germany, PNS in France, SPI in Spain and POPS in Finland. Of these four, the largest at that time was EAF, which attracted an average of around 50,000 transactions per day in 1999,

**Chart 23 Large-value payment systems in 1998 and 1999**

(EUR billions; average daily transaction values)



Source: *Monthly Bulletin*, ECB, Frankfurt am Main, August 2006.

with an average daily transaction value of €150 billion. It was followed by PNS, which in 1999 had an average daily turnover of 20,000 transactions, with an average daily transaction value of €90 billion. The average daily transaction values of SPI and POPS were around €4 billion and €1 billion respectively. These were different types of system, with SPI being a multilateral net settlement system, POPS being a bilateral net settlement system, and EAF and PNS being hybrid systems, combining elements of both gross and net settlement systems. Three of these systems have since ceased operating: EAF (in November 2001), SPI (in December 2004) and PNS (in February 2008). With its average transaction value having decreased, POPS has been reclassified and has, since end-2008, been considered a retail payment system rather than a large-value payment system.

### 3.1 TARGET2

TARGET2 is a real-time gross settlement system operated in central bank money by the Eurosystem. Payment transactions are settled one by one on a continuous

basis in central bank money with immediate finality. Since the account of the receiving institution is never credited before the account of the sending institution has been debited, the receiving institution is always certain that funds received are unconditional and irrevocable. The receiving institution is therefore not exposed to credit or liquidity risk as a result of such payments.

TARGET2 can be used for all credit transfers in euro. It processes both interbank and customer payments and there is no upper or lower limit on the value of payments. TARGET2 has to be used for all payments involving the Eurosystem, as well as for the settlement operations of all large-value net settlement systems handling the euro. For other payments, such as interbank and commercial payments in euro, market participants are free to use TARGET2 or any other payment arrangement of their choice.

The first generation of TARGET was a decentralised system. It was set up by linking the national RTGS systems of the then 15 EU Member States and the ECB Payment Mechanism to form a single system enabling the processing of payments throughout the euro area. In order to better meet users' needs by providing a harmonised service level, ensuring cost-efficiency and preparing for future developments (including the enlargement of the euro area), the Eurosystem developed a second-generation system, TARGET2. In that new system, the decentralised platform structure of TARGET was replaced by the Single Shared Platform.

TARGET2 is the backbone for all payment and settlement arrangements in euro. It represents the core system for banks' liquidity management, since the fact that it operates in central bank money allows access to central bank credit and means that funds received through incoming payments can be reused immediately. It is also the system used for the settlement operations of a large number of ancillary systems, such as retail payment systems and securities clearing and settlement systems.

To meet the needs of its customers and the financial market in general, TARGET2 offers long daily operating hours for its RTGS services, opening at 7 a.m. and closing at 6 p.m. Central European Time (CET). To allow participants to better manage their end-of-day liquidity, customer payments are subject to a cut-off time set at 5 p.m. CET. In addition, a night-time window is available in TARGET2 from 7.30 p.m. to 6.45 a.m. CET the following day, with a technical SSP maintenance period between 10 p.m. and 1 a.m. CET. This facilitates the night-time settlement of the various ancillary systems in central bank money. Besides Saturdays and Sundays, TARGET2 is closed only six days per year. TARGET2 closing days are, de facto, non-settlement days for the euro money and capital markets, as well as for foreign exchange transactions involving the euro.

Under TARGET2's access rules, only supervised credit institutions can operate as direct participants in the system. Certain other entities, such as the treasury departments of central or regional governments, public sector bodies, authorised and supervised investment firms and overseen clearing and settlement organisations, may also participate in the system. It is also possible for an eligible participant to access TARGET2 on a remote basis – i.e. without having established a branch or subsidiary in the country of the national central bank (NCB)

through which it connects to the system. In 2006 TARGET had 1,058 direct participants and 9,317 indirect participants. Migration to TARGET2 led to a reduction in the number of participants, with 800 direct participants and 3,687 indirect participants at the end of 2009.

A unique feature of TARGET2 is the fact that its payment services in euro are available across a geographical area that extends beyond the euro area (for further details, see Chapter 11). The NCBs and banking communities of EU Member States outside the euro area have the opportunity, on a “no compulsion, no prohibition” basis and subject to some conditions, to connect to TARGET2 and adhere to the rules and procedures of the system by entering into a TARGET2 agreement with the Eurosystem. Participation in TARGET2 becomes mandatory when a Member State joins the euro area.

Since its launch in 1999, TARGET has been the biggest of the various large-value payment systems operating in euro. In 1999 TARGET had a market share of 70% in terms of value and 52% in terms of volume, processing a daily average of around 239,500 payments, with an average daily value of €925 billion. By 2009 TARGET2’s market share had increased to 89.4% in terms of value and 60.3% in terms of volume. It processed a daily average of 345,768 payments in that year, with an average daily value of €2,153 billion.

For further information on TARGET2 and its properties, see Chapter 11.

## 3.2 EURO1

The EBA CLEARING Company’s EURO1 system is a euro-denominated net settlement system owned by private banks. It is the second-biggest large-value payment system operating in euro. The system settles the final positions of its participants via TARGET2 at the end of the day.

EURO1 evolved from the ECU Clearing System. With the introduction of the euro, the system was transformed in order to operate on the basis of a “single obligation structure”, a legal construction subject to German law whereby participants enter into a contractual agreement stipulating that on any given settlement day, at any given time, each participant will have only one single payment obligation or claim in respect of the other EURO1 participants as joint creditors/debtors. The single obligation structure does not allow for any unwinding, even in the event of a participant being unable to honour its single obligation when the system is scheduled to settle through TARGET2 at the end of the day.

The EURO1 system is managed and operated by the EBA CLEARING Company, which was, in turn, set up by the Euro Banking Association (EBA). The EBA is a cooperative undertaking comprising over 190 member banks from EU Member States, Norway, Switzerland, the United States, Australia, Japan, China, India, the Philippines and the United Arab Emirates. The EBA CLEARING Company is the administrator of the EURO1, STEP1 and STEP2 systems (for information on STEP1 and STEP2, see Section 4), and its shareholders are the participants in EURO1. At the end of 2009 there were 66 banks clearing in EURO1. Participation

in EURO1 as a clearing member is subject to legal, financial and operational criteria. The legal criteria stipulate that a bank must have its registered office in a country which belongs to the Organisation for Economic Co-operation and Development or the EU, and the single obligation structure must be recognised and enforceable in that jurisdiction. The financial criteria specify that a bank must have at least €1,250 million in own funds (within the meaning of Directive 2000/12/EC), as well as setting a minimum short-term credit rating. The main operational criteria relate to the need for a registered office in the EU and a connection to TARGET2, as well as adequate technical and operational facilities with sufficient operational reliability and robustness.

Two additional participation profiles exist. Sub-participation status enables EURO1 participants to connect to the EURO1 system any branches, subsidiaries and entities which are included in the same consolidated accounts and located in EEA countries. Responsibility for the activities of those branches, subsidiaries and entities rests solely with the clearing member. The “pre-fund” participation status was introduced for banks that do not meet the financial criteria of EURO1 or do not wish to participate in the loss-sharing arrangements, so that such banks may also use EURO1 for the settlement of their STEP2 obligations. The financial criteria do not, therefore, apply to pre-fund participants.

The EURO1 system operates from 7.30 a.m. to 4 p.m. CET. SWIFT provides the messaging infrastructure for EURO1 and acts as a processing agent. EURO1 processes credit and debit transfers. It processes individual transactions submitted by its participants, as well as the balances of the EBA CLEARING Company’s STEP1 service for individual cross-border retail credit transfers and the gross values of the STEP2 system. Payment orders are processed on an individual basis. Processing consists of checking the sending and receiving participants’ positions and, if possible, adjusting those positions. In the event that the adjustment leads to a breach of the sending participant’s debit cap or the receiving participant’s credit cap, the payment message is placed in the central queue and is released on a bypass FIFO basis. Multilateral optimisation methods are also used. The continuous calculation of each EURO1 participant’s single obligation or claim is carried out by the processing system operated by SWIFT. At the end of the operating day (i.e. shortly after 4 p.m. CET) EURO1 positions are settled in central bank money in TARGET2, with the ECB acting as the settlement agent.

As a tool for managing the risks arising from payment operations, the EURO1 system applies a system of debit and credit limits. Every participant is required to establish bilateral limits vis-à-vis every other participant. These range from a mandatory minimum of €5 million to a maximum of €30 million per participant. On the basis of these bilateral limits, the system determines each participant’s multilateral debit cap (i.e. the sum of the limits assigned by other participants) and multilateral credit cap (i.e. the sum of the limits assigned to other participants), which are each capped at €1 billion. Every payment is checked against the relevant multilateral debit and credit caps, being placed in the central queue if it would breach a participant’s credit or debit limit.

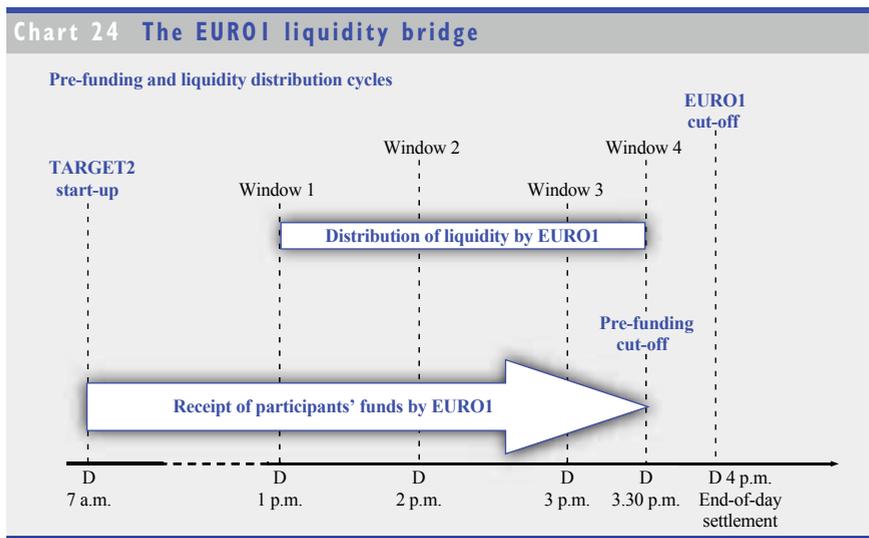
Other risk management tools used in the EURO1 system are the stand-by liquidity pool and the loss-sharing agreement, which are based on the “survivors pay” principle.

The liquidity pool covers the maximum possible debit position of a participant – i.e. €1 billion. It is held at the ECB and funded by cash submitted in equal shares by all participants. The liquidity pool enables the system to complete settlement in the event that one or more participants fail to settle their single obligation at the end of the operating day, up to the balance held in the liquidity pool. In the event that failures to settle lead to an amount being required which exceeds the balance of the liquidity pool, surviving participants will be obliged to provide additional funds in order to complete settlement for that day. In the event of all or part of the pool being used to complete settlement at the end of the operating day, the surviving participants are required to replenish it before processing begins the following day.

With the aim of smoothing out the payment flows in the EURO1 system, in June 2006 the EBA CLEARING Company implemented a new liquidity management functionality (the “liquidity bridge”), which is designed to enable all EURO1 participants to move processing capacity between TARGET2 and EURO1 on an intraday basis (see Chart 24). The liquidity bridge consists of two phases, notably a pre-funding phase (which allows payment capacity to be shifted from TARGET2 to EURO1 between 7 a.m. and 3.30 p.m. CET) and a distribution phase (which allows payment capacity to be moved from EURO1 to TARGET2 at 1 p.m., 2 p.m., 3 p.m. and 3.30 p.m. CET).

The transaction fee for a EURO1 payment is based on the number of payments submitted by the relevant participant in accordance with an incremental scale. The annual operating charge levied by the processing agent (SWIFT) and the operating costs of the EBA CLEARING Company are shared among EURO1 participants on a quarterly basis in accordance with a special distribution key.

The turnover figures for EURO1 have steadily increased since January 1999. In 1999 the average daily volume in EURO1 was 67,883 transactions, with an average daily value of €170.7 billion. In 2009 the average daily volume reached some 205,000 payments, with an average daily value of €253.8 billion. These figures represent annual increases of 20.2% in volume terms and 4.8%



Source: EBA CLEARING.

in terms of value, pointing to a decline in the average value of transactions. This indicates a tendency for EURO1 to specialise in the processing of smaller-value payments, typically commercial payments.

### 3.3 CONTINUOUS LINKED SETTLEMENT SYSTEM

Throughout the 1990s the G10 central banks conducted important analysis looking at the risks related to the settlement of the fast-growing volumes and values of foreign exchange trades, calling for action to reduce these risks. The launch of the Continuous Linked Settlement system on 9 September 2002 was a landmark in the global payment system landscape in terms of reducing foreign exchange settlement risk. CLS is a clearing and settlement system for the simultaneous settlement of both currency legs of foreign exchange trades on a PvP basis.

Traditionally, foreign exchange trades have been settled through correspondent banking relationships, with no direct link between the two currency legs. The payments in the two currencies would not normally be effected simultaneously, thereby generating exposures. The results of a recent survey by the Committee on Payment and Settlement Systems show that where the debiting and crediting of the two legs of a foreign exchange trade are not synchronised, banks' exposures to foreign exchange settlement risk and the associated systemic risks are still huge. Those exposures can last for up to two business days, and it can be another one or two days before banks know with certainty that they have received the currency that they have bought. In some cases, such exposures exceed the relevant banks' capital.

CLS operations are carried out by two companies: CLS Bank International (a New York-based special-purpose bank in the books of which settlement takes place); and CLS Services Ltd (a London-based entity providing CLS Bank International with technical and operational services). Both companies are owned by CLS UK Intermediate Holdings Ltd, which, in turn, is wholly owned by CLS Group Holdings AG. At the end of 2009 the parent company's shareholders comprised 69 of the world's largest banking and financial institutions, which together account for a substantial majority of the world's cross-currency transactions. CLS Bank is supervised and regulated by the US Federal Reserve System, which also acts as lead overseer in a cooperative oversight arrangement with the central banks whose currencies are settled by CLS Bank. A system such as CLS which offers the PvP settlement of foreign exchange transactions will, by definition, be "offshore" for all currencies but one.

There are several parties involved in the CLS system, all performing different functions.

- *Settlement members* can submit instructions directly to CLS Bank International for the settlement of foreign exchange trades. They hold an account with CLS Bank International, with sub-accounts in all currencies eligible in CLS. They must be a CLS shareholder, must operate under an appropriate supervisory regime and must fulfil strict financial and operational requirements.
- *User members* are also required to be CLS shareholders and can submit instructions directly to CLS. However, they do not hold accounts with CLS

Bank International and therefore settle their transactions via a settlement member subject to a bilateral agreement.

- *Third parties* are customers of settlement members or user members. These could be other banks, fund managers, non-banking financial institutions or corporations. A third party does not have a direct relationship with CLS Bank International, and instead has a contractual relationship with a settlement member or a user member, which handles all of its instructions and financial flows.
- *Nostro agents* are employed by settlement members for currencies in which they do not have a central bank account or cannot provide sufficient liquidity, with those agents effecting and receiving CLS payments on the relevant settlement members' behalf. Nostro agents are not required to be CLS shareholders (but in practice most are) and often provide services to many different settlement members.
- *Liquidity providers* are committed to providing liquidity in a certain currency up to a certain amount. They play a crucial role in the event that a settlement member fails to honour its obligation to pay money into the system to cover its short positions. In such a case, in order to complete the necessary pay-outs, CLS Bank International will ask liquidity providers to swap the currency required for the currencies that the failing member has a positive balance in, thereby enabling settlement to be completed.

Having initially started with seven major currencies, CLS Bank International has progressively broadened its range in response to users' needs and now offers services in 17 currencies. These currencies cover almost 95% of the estimated total worldwide turnover in foreign exchange. Estimates from early 2010 indicate that some 70% of all foreign exchange trades in these currencies are settled in CLS.

In addition to settling foreign exchange trades, CLS also settles certain types of non-PvP transaction, including transactions denominated in euro (i.e. credit derivatives transactions and non-deliverable forward foreign exchange transactions). A non-deliverable forward foreign exchange transaction is a cash-settled forward contract on a thinly traded or non-convertible foreign currency. The currencies are not delivered physically, with the contract instead being settled by calculating the difference between the agreed exchange rate and the spot rate at the time of settlement. One party to the agreement will make a payment to the other party on the basis of the profit or loss on the contract. Non-deliverable forward foreign exchange transactions are typically – but not always – quoted and settled in US dollars. As regards credit derivatives transactions, CLS is working with the Depository Trust & Clearing Corporation in the United States to provide automated processing and settlement for OTC credit derivatives contracts. Non-PvP transactions are characterised by the fact that they consist of a single “one-way” payment, instead of the two payments involved in a PvP transaction.

At the beginning of 2010 these transactions accounted for around 0.5% of all transactions settled in CLS in value terms. For details of the Eurosystem's policy on the location of systems settling in euro, see Chapter 12 on the Eurosystem's oversight role.

A key distinction is made between the settlement of foreign exchange trades on the books of CLS Bank International and the funding of the accounts of the settlement members. The settlement of foreign exchange trades is executed by CLS individually (gross – i.e. without any netting) on a PvP basis on the books of CLS Bank International, which consists of the one currency being debited and the other simultaneously credited on the currency-specific sub-accounts held by the relevant settlement members for the currencies in question. CLS Bank International does not at any point become a party to the foreign exchange trade.

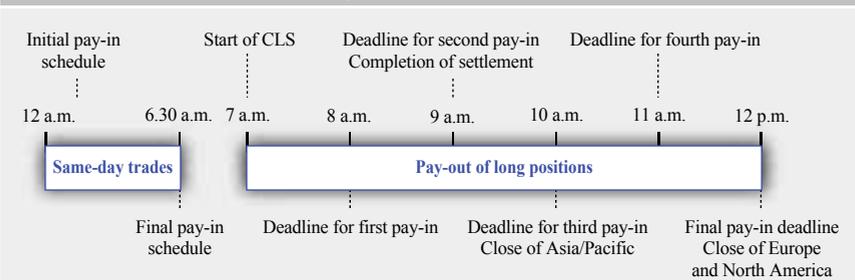
For each eligible currency, CLS Bank International holds an account with the relevant central bank. The funding and defunding of settlement members' positions in CLS is effected via the RTGS systems of the eligible currencies – i.e. in central bank money. Thus, CLS participants benefit from a netting effect, since CLS calculates only one net short position per eligible currency per settlement member. Those net short positions are typically 1-2% of the total amount settled.

The CLS system applies a strict risk management regime. A participant may incur a debit balance in a given currency up to a certain level (the “short position limit”). Furthermore, there is a maximum total debit balance per settlement member across all currencies (the “aggregate short position limit”). In addition, as CLS is not allowed to extend credit to its settlement members, a settlement member's overall account value (i.e. the equivalent value in US dollars) has to remain positive. CLS uses a settlement member's credit position in one currency to collateralise its debit position in another, using appropriate haircuts. Another risk control measure is the appointment of liquidity providers to enable settlement in the event that a settlement member fails to honour its obligation to pay money into the system to cover its short positions.

Settlement members and user members submit their foreign exchange settlement instructions directly to CLS for processing before CLS Bank International's settlement day begins. CLS matches the instructions submitted by the two parties to the foreign exchange trade and calculates the overall long/short positions of the settlement members in each eligible currency. At midnight CET CLS issues an initial pay-in schedule for each settlement member, listing the preliminary positions and required pay-ins for each currency. The pay-in can be made either by a single payment to CLS Bank International for the full amount by 8 a.m. CET or in instalments. However, these instalments are not divided equally, as the CLS risk management procedures have to be respected. At 6.30 a.m. CET CLS issues the final pay-in schedule (see Chart 25).

At 7 a.m. CET the CLS system begins its daily settlement operations. Settlement members begin making their pay-ins in the currencies in which they have a short position overall. Once the first pay-ins have been received, CLS starts the settlement process in its own books. Trades that cannot settle immediately are put in a central queue and continually revisited until they settle. By contrast with the pay-ins, CLS does not effect its pay-outs in accordance with a specific schedule. Long balances are paid out as soon as possible, but only if CLS's central bank account in the relevant currency has sufficient funds and settlement members maintain a positive account balance overall after the pay-out has been made.

**Chart 25 CLS settlement cycle**



Source: *Payment and securities settlement systems in the European Union, Volume 1: euro area countries*, ECB, Frankfurt am Main, August 2007.

Note: All times indicated are CET.

In March 2010 CLS settled an average of 375,061 instructions each day, with an average equivalent gross value in excess of €3.1 trillion per day. The euro is the second most settled currency in CLS, being involved in 20% of all foreign exchange trades in value terms. The equivalent US dollar share is 43%. CLS is a non-profit-making system and covers its costs largely through a transaction fee applied to all instructions settled, amended or rescinded.

### 3.4 OTHER LARGE-VALUE SYSTEMS OPERATING IN EURO

Since the introduction of the euro, several systems have been set up outside the euro area for the processing of euro-denominated payments. The largest of these is the Continuous Linked Settlement system, which, as explained above, was established for the PvP settlement of foreign exchange transactions. Other systems were established with the aim of giving local banks access to payment services in euro. These systems process and settle payments in commercial bank money. Offshore large-value payment systems operating in euro are subject to cooperative oversight, as set out in Chapter 12.

Euro Swiss Interbank Clearing (euroSIC) began operating in 1999. It is operated by SIX Interbank Clearing AG Zurich, which also manages the SIC system, which operates in Swiss francs. Transactions in euroSIC are settled in accounts held with Swiss Euro Clearing Bank GmbH (SECB), which was incorporated in Germany in 1998 and is a participant in TARGET2 via the Deutsche Bundesbank. This offers a direct link to all major payment systems in the euro area, such as TARGET2, EURO1, STEP1, STEP2 and the German retail payment system Elektronischer Massenzahlungsverkehr (EMZ).

Customer payments are the largest type of transaction in euroSIC, which also processes interbank payments and the cash leg of securities transactions effected in euro on Swiss exchanges. Payments can be either national or cross-border. For outbound cross-border payments, SECB converts the payments and channels them to the appropriate euro payment system. In the case of inbound cross-border payments, SECB converts the payments and sends them on to the relevant euroSIC participant.

At the end of 2009 euroSIC had some 185 participants inside and outside Switzerland. In 2009 it processed around 4.4 million payments, with a total value of some €2,900 billion.

The Euro CHATS system is an RTGS system operating in euro which was launched in Hong Kong in April 2003. It is operated by Hong Kong Interbank Clearing Limited, a private company established in 1995 and jointly owned by the Hong Kong Monetary Authority (HKMA) and the Hong Kong Association of Banks. It functions in parallel with RTGS systems operating in Hong Kong dollars and US dollars.

Euro CHATS offers real-time gross settlement for euro-denominated payments, a DvP mechanism for euro-denominated debt securities and links to the two local US dollar and Hong Kong dollar RTGS systems to allow for the (local) PVP settlement of foreign exchange transactions linked to trades in these currencies.

Transactions are settled on the books of the settlement institution. The HKMA appointed Standard Chartered Bank (Hong Kong) Limited as the settlement institution for Euro CHATS for an initial franchise period of five years and renewed this contract at the end of 2007. All transactions in euro are settled in real time on a gross basis. Settled payments are final and irrevocable. Direct participants can obtain interest-free intraday liquidity through (i) an overdraft facility provided by the settlement institution, or (ii) an intraday repo arrangement by pledging eligible debt securities to the settlement institution as collateral.

Banks in Hong Kong may join Euro CHATS, and other institutions may also be permitted to join the system. In 2009 Euro CHATS had 30 direct participants and 20 indirect participants, processing an average of some 200 transactions per day, with an average daily value of €0.6 billion.

Finally, RAPID, an RTGS system for euro (and US dollar) payments, is in the process of being tested and implemented in the Dubai International Financial Centre in the United Arab Emirates.

## **4 RETAIL PAYMENT ARRANGEMENTS IN EURO**

The market for retail payments in euro is far less integrated than the large-value payment segment. Retail payments are still based largely on national payment instruments and systems. While national payment systems may be cheap and very efficient and offer their users high levels of service when it comes to domestic payments, this is not yet the case for cross-border retail payments in the euro area, where processing procedures are more complex and levels of service are lower. However, fundamental changes will progressively occur in this area.

### **4.1 THE SINGLE EURO PAYMENTS AREA PROJECT**

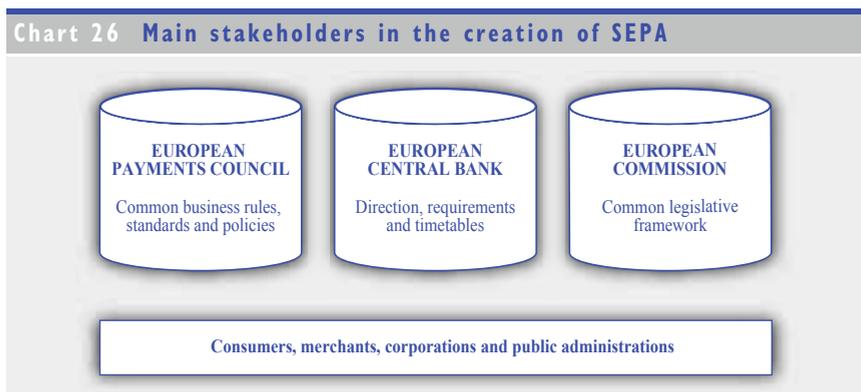
The European banking industry has set up the Single Euro Payments Area project, which consists of a series of initiatives aimed at the introduction of common instruments, standards and infrastructures for retail payments in euro. This should

allow users to make payments in euro throughout Europe from a single bank account, using a single set of payment instruments, as easily and securely as in the national context today. Citizens, companies and financial institutions will benefit from the streamlined handling of payments throughout Europe.

Before the project was set up, both the Eurosystem and the European Commission pointed to the need for banks to improve their cross-border services. However, this did not produce any tangible improvements. Consequently, in 2001 the European Parliament and the Council of the European Union adopted a regulation on equal charges for cross-border payments in euro – Regulation (EC) No 2560/2001 of the European Parliament and of the Council of 19 December 2001 on cross-border payments in euro. The Regulation eliminated differences in price between cross-border and domestic payments in euro. It was gradually implemented and eventually applied to credit transfers, cash withdrawals at cash dispensers and payments using debit and credit cards. The Regulation has forced banks to charge less for cross-border euro payments, but the costs incurred by banks when processing these payments have remained high.

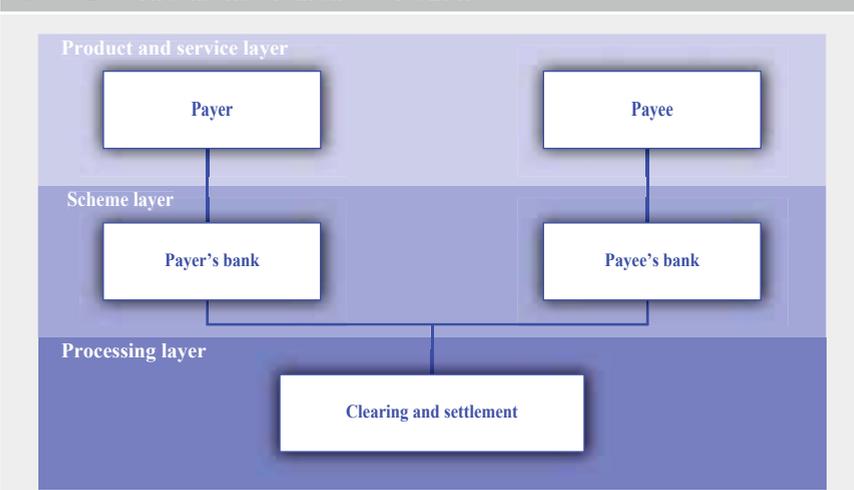
The banking sector responded in May 2002 with a roadmap entitled “Euroland: Our Single Payments Area!”, which envisaged the implementation of SEPA by 2010. In June 2002 the banking industry then established the European Payments Council, which consists of some 65 banks, including different types of European bank, the three European credit sector associations and the Euro Banking Association. The EPC includes stakeholders from the 27 countries of the European Union, Iceland, Liechtenstein, Norway and Switzerland and is governed by the EPC Plenary, its decision-making and coordinating body. Its focus is on payments in euro, and so SEPA is primarily a euro area project. However, the non-euro area countries represented in the EPC have chosen to adopt the SEPA standards and practices for their payments in euro. In order to design a SEPA framework which is acceptable to the industry, various working groups have been set up, involving a wide range of experts.

The objective was to overcome the fragmentation in the retail payment market by turning the various national markets into one SEPA market. All euro payments



Source: ECB.

Chart 27 The main elements of SEPA



Source: ECB.

in the euro area would thereby become domestic payments. The EPC's main challenge was to define the basis on which SEPA would evolve. The first step was to align the interbank procedures for the scheme's new common payment instruments. The EPC focused on the three most used non-cash payment instruments – credit transfers, direct debits and payment cards.

The SEPA project is organised in three layers (see Chart 27). The first layer consists of the processing infrastructures, which provide operational services. The EPC has established a framework which clarifies the roles and procedures of the processing infrastructures that provide clearing and settlement services. This forms the basis for cooperation between schemes and infrastructures. National payment schemes have often comprised both the scheme's management and the processing infrastructures, typically as part of the same company (e.g. in the case of the Automated Clearing House). In the new SEPA environment, the schemes will be separated from the infrastructures in order to ensure that providers of processing services can compete with one another and offer their services to schemes throughout SEPA.

The second layer comprises common SEPA schemes (e.g. direct debit or credit transfer schemes). These schemes will be governed by a new set of interbank rules, practices and standards for the execution of payments in euro. The current national schemes for credit transfers and direct debits, which have their own specific rules and agreements, will cease to exist and will be replaced by the common schemes. On the basis of these new SEPA schemes, banks will be able to offer tailored products to their clients throughout the euro area. The EPC has also established frameworks for card and cash payments. The card framework is a policy document which details the way in which card schemes, together with their issuers, acquirers and operators, should adapt their current operations in order to comply with the SEPA principles for card payments. Ultimately, the card framework seeks to achieve euro area-wide acceptance for the various

card schemes. The cash payment framework was set up in order to improve cash handling services in the euro area.

The third layer consists of the new SEPA products and services offered to customers by banks and other service providers on the basis of the core schemes. The EPC has not defined common standards for this layer. Banks and service providers can develop new banking products and services that suit their customers on the basis of the new instruments and processing functionalities and can compete with each other in terms of price, the level of service or any of the other features of those products.

### **Box 19 The SEPA building blocks**

The building blocks for a fully integrated European market for retail payment services are the euro, the Payment Services Directive or “PSD” (which provides a common legal basis) and the elements of SEPA referred to below.

#### **SEPA instruments**

The EPC has developed a set of rulebooks and frameworks which will govern the SEPA instruments.

#### **SEPA credit transfer rulebook**

The EPC has established common rules and obligations to be observed by participants in the credit transfer scheme. The rulebook details the functioning of the scheme and governs the scheme’s relationship with processing infrastructures. It stipulates a maximum execution time, guarantees that the full amount will be credited to the recipient’s account and places no limit on the value of payments.

The SEPA credit transfer (SCT) scheme is built on well-known international standards: IBAN (International Bank Account Number), BIC and UNIFI (ISO 20022) XML (i.e. Extensible Markup Language) message standards. Under the scheme, the latest possible settlement time for credit transfers is D+3 – i.e. the payee’s account should be credited three business days after the payment is initiated by the payer at the latest. The Payment Services Directive stipulates that this should be reduced to one business day (i.e. accounts should be credited by D+1) by 2012 at the latest. The SEPA credit transfer scheme was rolled out on 28 January 2008.

#### **SEPA direct debit rulebook**

The SEPA direct debit (SDD) rulebook lays down a set of interbank rules, practices and standards to allow the banking industry to provide direct debit services on the basis of uniform conditions throughout SEPA. The SEPA direct debit scheme is based on the “creditor mandate flow” (where the mandate is given to the creditor, as opposed to the payer’s bank).

The success of the SEPA direct debit scheme can only be ensured if all banks participate, thereby making all debtors reachable for direct debit transactions. The EPC has established a process to ensure full participation with a view to having all stakeholders commit to the scheme and ensuring that debtors are reachable.

The roll-out of SEPA direct debits took place on 1 November 2009.

### **SEPA card framework**

For card payments, by contrast with credit transfers and direct debits, the EPC has not established a “scheme”, but rather a framework – i.e. a set of high-level principles and rules. The SEPA card framework (SCF) will be implemented by individual card schemes, following a decision by their participants – i.e. the banks. The principles defined in the SEPA card framework concern those schemes’ rules, requirements, interchange fees, fraud prevention, transaction authorisation, interoperability and market statistics. The objective of these principles is the establishment of an integrated SEPA market where holders of general-purpose cards can make payments and cash withdrawals in euro abroad with the same ease and convenience as they do in their home countries. It should make no difference whether they use their cards in their home countries or elsewhere within SEPA. This contrasts sharply with the current fragmented situation, where national schemes serve national markets in fairly different ways and cross-border transactions within the euro area are carried out by international card schemes.

With the aim of creating an integrated market, the SEPA card framework sets out three options for banks, as participants in and users of the various national and international card schemes: replacement of the various national schemes with an international scheme; evolution towards compliance with the SEPA card framework through, for example, alliances or expansion with a view to covering the entire euro area; and co-branding of cards using both a national and an international card scheme.

### **Framework for the evolution of the clearing and settlement of payments in SEPA**

This framework establishes principles setting out the way in which providers of clearing and settlement mechanisms could support the SEPA credit transfer and direct debit schemes. It clearly delineates the roles and responsibilities of the scheme layer and the infrastructure layer. It also classifies the various infrastructure types, which range from pan-European ACHs and intra-bank or inter-group arrangements to purely bilateral arrangements such as correspondent banking.

The European Automated Clearing House Association (EACHA) has also developed a “Technical Interoperability Framework for SEPA-Compliant Giro Payments Processing”, which may be used as the basis for interoperability agreements between banks and ACHs. The aim of both frameworks is to ensure that infrastructures will be able to process SEPA payments and all debtors will be reachable.

### **Single euro cash area**

The smooth operation of payment systems requires a whole range of different instruments, including cash. Since 2002 euro banknotes and coins have – from the general public’s perspective – been a fully functioning pan-European payment instrument. Cash is by far the most widely used payment instrument in the euro area. In order to create a single euro

cash area for professional cash handlers, the ECB has agreed on a number of measures aimed at contributing to a fair competitive environment as regards the cash services provided by the Eurosystem to the banking industry, which is the Eurosystem's main counterpart for cash services and an intermediary in the provision of cash to the general public. Further steps will be implemented in order to achieve, in the medium term, greater convergence as regards the cash services provided by NCBs.

The timetable for the SEPA project has three main phases: the design of the framework; the implementation of the framework; and migration. The first phase – the design and preparation phase – began in 2004. This phase involved the design of the new credit transfer and direct debit schemes and the frameworks for cards, cash and processing infrastructures. It also included the development of the necessary standards. The second phase – the implementation phase – spanned 2007 and 2008. Finally, the migration period, which began in 2008, will be a transitional period in which national schemes coexist with SEPA schemes, with gradual migration to the latter. While it was initially expected that a critical mass of payments would migrate to the SEPA payment instruments by the end of 2010, it has become increasingly clear that this goal that the banking industry has set itself cannot be achieved. Thus, the financial sector and the European institutions have reached the conclusion that the most viable option for ensuring mass migration to SEPA payment instruments is the establishment of one or more end dates for migration by means of legislation at EU level. The European Commission is expected to come forward with a legislative proposal regarding the scope, timing and terms of such end dates by autumn 2010.

Following the launch of SEPA in January 2008 the EPC broadened its focus, looking at the governance of schemes in the bank-to-bank domain in addition to the design of such schemes. It also started to address inefficiencies in the customer-to-bank and bank-to-customer domains.

#### **Box 20 Main benefits of SEPA for the various stakeholders**

Consumers will benefit from the fact that payment services in SEPA will cover the whole of the euro area (presupposing, of course, that all banks participate). From a single account, it will be possible to reach all other accounts SEPA-wide. Citizens who are particularly mobile or would like to conduct transactions abroad will find it easier to do so. In addition, payment cards with chips will displace cash for many purchases, which will improve customer safety and security. Services will also become more comparable, with the most efficient solutions being chosen. Greater uniformity for payment services and instruments could also enhance price transparency.

For merchants and corporations, faster settlement and simplified processing will improve cash flows and reduce costs, enabling payments to be received SEPA-wide. The adoption of common formats and standards for payments in euro will result in efficient processes and procurement. Of particular importance for corporations are value-added services provided alongside payment services. Electronic invoicing services, for example,

would allow invoices to be distributed in a more efficient way. In addition, electronic reconciliation would allow companies to verify customer payments automatically after settlement. For business-to-business trade, electronic authentication would allow further automation of payments.

For banks, new and innovative products, new markets and new relationships could bring new sources of revenue, at the same time ultimately allowing efficiency gains to be passed on to customers. Common processing platforms for payments in euro could concentrate payment flows, and increased choice regarding providers of payment solutions will decrease costs. Banks may therefore be able to exploit economies of both scale and scope.

## 4.2 EURO AREA-WIDE RETAIL PAYMENT SYSTEMS

The list of euro area-wide retail payment systems is very short at present, but is expected to lengthen in the years to come. The only two systems currently available, STEP1 and STEP2, were set up to complement the EURO1 system operated by EBA CLEARING.

The STEP1 system complements the EURO1 large-value payment system by providing a solution for the handling of retail and commercial payments. STEP1 began operating on 20 November 2000 and is managed and operated by the EBA CLEARING Company. Participation in STEP1 is open to EURO1 participants, as well as other banks (“STEP1 banks”) which are not EURO1 participants themselves but use EURO1 participants as their settlement banks. In December 2009 there were 99 STEP1 banks.

STEP1 processes individual credit transfers and direct debits. Transaction values are typically below €50,000, but there is no actual limit other than the sending/receiving capacity of the STEP1 bank(s) involved.

STEP1 uses the infrastructure of the EURO1 system without being subject to the risk management requirements of the large-value segment. As a result, a STEP1 bank is not allowed to incur a debit position in the system and must instead obtain from its settlement bank a sending/receiving capacity in the form of a credit cap of between €1 million and €25 million. The balance calculated for a STEP1 bank for a given value date is settled by its settlement bank within the EURO1 system.

The turnover figures for STEP1 have increased steadily since its inception. The average daily transaction volume in STEP1 in 2001 (i.e. its first full year of operations) was 4,374, with those transactions having an average daily value of €44 million. In 2009 there were an average of 21,871 transactions per day, and those transactions had an average daily value of €897 million. The average payment in STEP1 had a value of approximately €41,000 in that year.

The STEP2 system began operating in April 2003 and is managed and operated by the EBA CLEARING Company. It was developed as the first pan-European automated clearing house for bulk payments in euro, with a view to allowing the execution of cross-border payments in euro at low cost in compliance with Regulation (EC) No 2560/2001 on cross-border payments in euro.

STEP2 participation is open to all financial institutions having a branch or registered office in the EEA. Banks can connect to STEP2 as direct or indirect participants. Direct participants are entitled to send and receive STEP2 files and are known to STEP2 via their BICs. Only participants or sub-participants in EURO1 or STEP1 can be direct participants in STEP2. Indirect participants are recognised by the STEP2 system as addressees of payment instructions. The relationship between a direct participant and an indirect participant is governed exclusively by those participants' bilateral arrangements. Debtors are reachable through the links between direct and indirect participants and through the interoperability between STEP2 and local technical facilitators. In December 2009 STEP2 XCT had 105 direct participants and 1,722 indirect participants, and STEP2 SCT had 117 direct participants and 5,220 indirect participants.

STEP2 processes both SEPA credit transfers (through its STEP2 SCT service) and credit transfers that comply with the European banking industry's convention on credit transfers in euro (through STEP2 XCT). It has also developed a service for SEPA direct debits (STEP2 SDD). STEP2 has already been enhanced by means of the addition of a domestic service (STEP2 ICT), which allows domestic payment traffic to be migrated to the STEP2 system as part of SEPA's concentric model.

The turnover figures for STEP2 have steadily increased since the inception of the system. In January 2004 its average daily payment volume was 57,324, with an average daily value of €129,845 million. In December 2009 there were an average of 203,086 STEP2 XCT payments per day, and these had an average daily value of €18.5 billion, while the corresponding figures for the STEP2 SCT service were 471,192 and €64.3 billion respectively.

### **4.3 NATIONAL RETAIL PAYMENT SYSTEMS**

The retail payment systems of the various countries have developed in line with the needs of those countries. Banks have focused on making domestic payment systems as reliable and efficient as possible. As a result, national systems have been developed using national standards and work well and efficiently within national borders. In the euro area countries, retail clearing and settlement is organised differently in the various countries, reflecting those countries' traditions and business preferences. In some cases, the national clearing and settlement models are specific to the various payment instruments, while in others (e.g. in France or Greece) all transactions are centralised in a single infrastructure. Most multilateral netting systems settle their balances in TARGET2.

In many countries, banking groups have developed their own networks for the exchange of payments between the banks concerned. For example, the savings banks of some countries have set up their own payment clearing networks, into which all (or a large part) of the payments effected between those savings banks

**Table 12 Retail payment systems in the euro area**

<b>Retail payment system</b>	<b>Country of location</b>	<b>Volume of transactions processed (2008; millions)</b>
CORE	France	12,491.28
Equens	Netherlands	4,039.81
RPS (SEPA Clearer and EMZ) <sup>1)</sup>	Germany	2,465.40
BI-COMP (SIA-SSB and ICBPI) <sup>2)</sup>	Italy	2,024.86
SICOI	Portugal	1,750.44
SNCE	Spain	1,510.60
CEC <sup>3)</sup>	Belgium	1,063.40
PMJ	Finland	586.38
STEP2	France	383.35
Retail clearing (IPCC and IRECC) <sup>4)</sup>	Ireland	227.53
DIAS	Greece	75.53
Giro Clearing *	Slovenia	55.91
Cyprus Clearing House	Cyprus	17.36
Malta Clearing House	Malta	5.82
ACO	Greece	2.75
JCC Transfer	Cyprus	0.81
POPS <sup>5)</sup>	Finland	0.64
STEP.AT <sup>6)</sup>	Austria	0.57
SLOD	Portugal	0.09
ACH Finland **	Finland	-
SEPA IKP **	Slovenia	-

Source: ECB.

1) Comprises the retail payment systems run by the Deutsche Bundesbank: SEPA Clearer and EMZ.

2) BI-COMP is run by the Banca d'Italia.

3) The Centre for Exchange and Clearing (CEC) is a retail payment system run by the Nationale Bank van België/Banque Nationale de Belgique.

4) Systems run by the Irish Paper Clearing Company (IPCC) and the Irish Retail Electronic Payments Clearing Company Limited (IRECC).

5) POPS began its operations as an LVPS, but has been reclassified as a retail payment system.

6) Retail payment system run by the Oesterreichische Nationalbank.

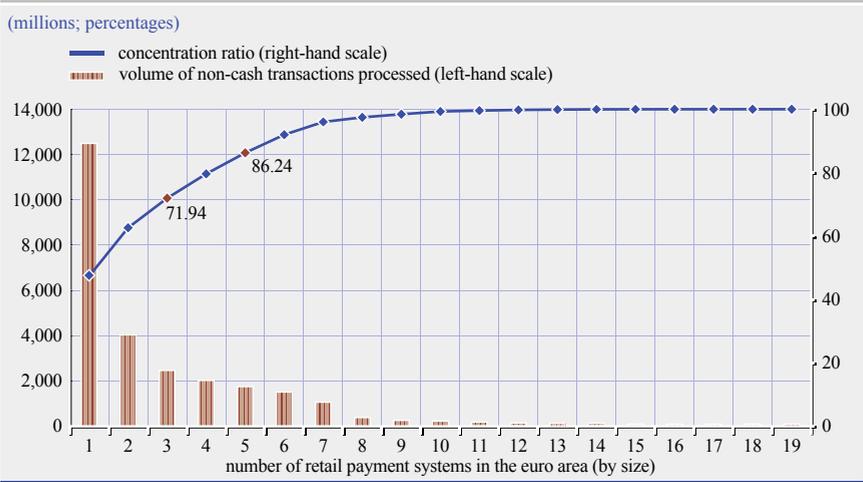
\*) Ceased operations at the end of 2009.

\*\*\*) Established after 2008.

are routed. The operation of such a network may be the responsibility of a central institution in the savings bank sector or may be outsourced to a service provider. The settlement of claims and liabilities between savings banks is then effected via the central bank or a central institution, or is organised in some other way. This section does not cover these types of group-specific network, looking only at systems with a wide reach. At the end of 2009, not including group-specific networks and card systems, there were 20 retail payment systems in the euro area.

The move from national currencies to the euro, and in particular the creation of SEPA, has triggered a process of innovation and consolidation affecting several infrastructures for retail payments. For instance, in 2006 Interpay Nederland and the German Transaktionsinstitut für Zahlungsverkehrsdienstleistungen AG

**Chart 28 Concentration ratio of retail payment systems in the euro area in 2008**



Source: ECB.

merged to form Equens, a full service processor within the SEPA market. In Italy, SIA and SSB merged to form SIA-SSB. In 2007 the French automated clearing house SIT was replaced by STET, which was created by seven credit institutions (and operates the payment system CORE). In addition, Equens, Seceti, STET and VocaLink have agreed to establish interoperability for the exchange of SEPA payments. This process is expected to continue as SEPA migration proceeds.

The Eurosystem’s involvement in the market for retail payment services is currently based first and foremost on its role as a facilitator (see Chapter 13). However, in line with the Treaty on the Functioning of the European Union (“the Treaty”), individual national central banks of the Eurosystem may provide credit institutions with processing facilities for retail payments in euro, either by participating in private retail payment systems or by operating their own retail payment systems. This was clarified in a policy statement on 4 August 2005 on central banks’ provision of retail payment services in euro to credit institutions. Some euro area NCBs have a long tradition of operating retail payment systems. Retail payment services are provided by the Banca d’Italia, the Nationale Bank van België/Banque Nationale de Belgique, the Deutsche Bundesbank, the Oesterreichische Nationalbank and Národná banka Slovenska, which provide neutral and open networks in which banks can participate irrespective of the size of their business.

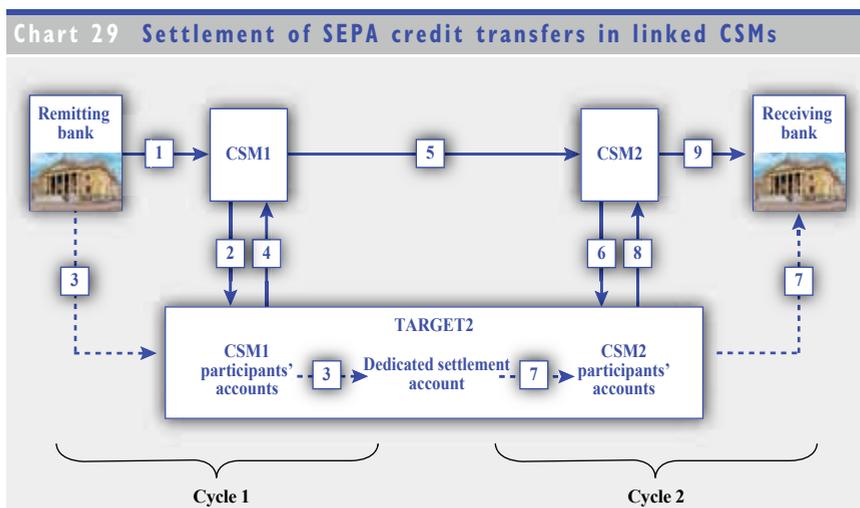
**4.4 INTEROPERABILITY BETWEEN RETAIL PAYMENT SYSTEMS**

The integration of market infrastructures can be achieved in various ways. New area-wide systems could replace existing national systems, separate platforms could be consolidated to form a single platform, or platforms could be made interoperable.

In order for SEPA to be a success, banks which currently receive and send domestic payments must also be able to receive and send payments on a SEPA-wide basis. All banks need to put in place the necessary arrangements, including a link to one or more SEPA-compliant clearing and settlement mechanisms (CSMs). Each CSM needs, in turn, to be in a position to offer its clients euro area-wide reach, which means that it needs to be interoperable with other CSMs.

Interoperability is the ability of an infrastructure – whether directly or indirectly – to process payments between any two banks in the euro area (based on the rulebooks for SEPA credit transfers and direct debits). The European Automated Clearing House Association has established a technical framework to facilitate the interoperability of infrastructures, particularly as regards message formats, message flows, routing provisions, network and connectivity provisions and the mechanism for the settlement of inter-ACH transactions using TARGET2 as a settlement platform. The technical framework forms the basis for all other operational documents, as well as for the bilateral contracts between CSMs.

In the concept developed in the framework, payments flowing between two CSMs go through two clearing and settlement cycles (see Chart 29): one cycle in CSM1 (i.e. the CSM in which the payer’s bank participates) and one in

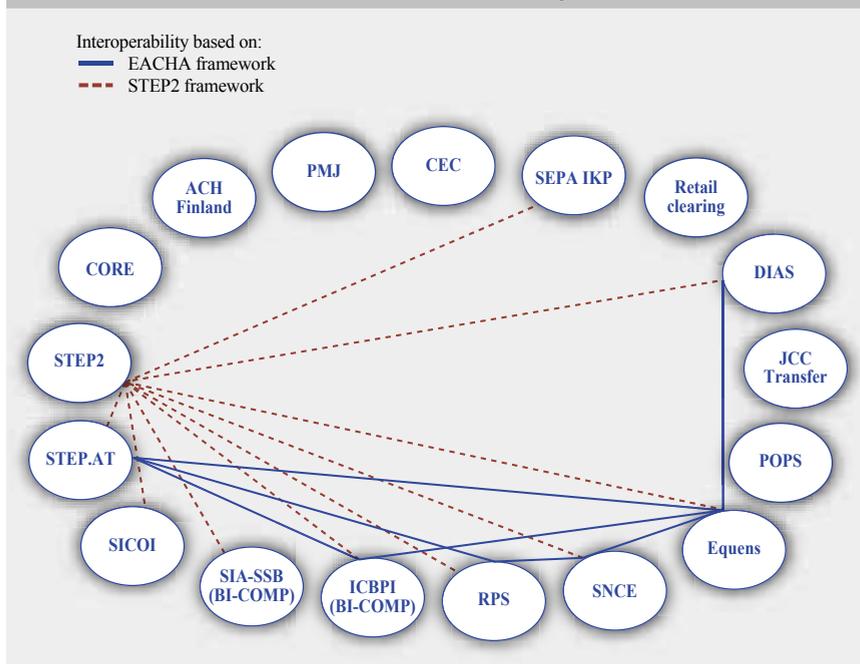


Source: ECB.

Notes:

- 1) The debtor’s bank sends the SEPA credit transfer to CSM1.
- 2) CSM1 processes the SEPA credit transfer in its clearing cycle and calculates the gross sum of the credit positions of the participants in other CSMs. These positions are transmitted to TARGET2 for settlement.
- 3-4) First cycle of TARGET2 settlement: The TARGET2 accounts of CSM1 participants are debited and a dedicated settlement account is credited with the gross credit position of CSM2 participants vis-à-vis CSM1 participants. CSM1 is then informed that the accounts have been successfully debited.
- 5) CSM1 forwards the payment messages related to the settled inter-system transactions to CSM2.
- 6) CSM2 includes the incoming inter-system payment messages in its own clearing cycle, calculates the positions of its participants and generates a debit request for the dedicated settlement account for the gross value of the credit received from CSM1.
- 7-8) Second cycle of TARGET2 settlement: The dedicated settlement account is debited, and the TARGET2 accounts of CSM2 participants are credited.
- 9) CSM2 forwards the inter-system payments to its participants.

**Chart 30 Active links between euro area CSMs for the processing of SEPA credit transfers as at May 2010**



Source: ECB.

Note: Further links are being tested and/or under construction.

CSM2 (i.e. the CSM in which the payee's bank participates). For the inter-CSM settlement, accounts in the Payments Module of TARGET2 will be used. Funds will be held in the inter-CSM Payments Module accounts only intraday, with overnight balances not envisaged.

In addition to the framework established by EACHA for the interoperability of CSMs, another model has been developed for payments processed in STEP2.

#### 4.5 CARD PAYMENT SCHEMES

In the euro area, cards are now the most commonly used payment instrument in terms of transaction volumes. In particular, debit card transactions are now of great importance. This development has been supported by the existence of cheap and efficient national debit card schemes, which are complemented by international credit card schemes.

While those debit card schemes have a very strong market position in their respective countries, their weakness is the fact that they have very little – if any – acceptance outside their home country. Acceptance of a debit card in transactions outside the home country is therefore typically achieved by means of co-branding – i.e. the card bears, in addition to the symbol of the domestic debit card scheme, the symbol of one of the international credit card schemes.

**Table 13 Card schemes operating in the euro area**

Name	Country	Name	Country
<b>National debit card schemes</b>			
Bancontact/Mister Cash	Belgium	Sofinco <sup>1)</sup>	France
EAPS (Euro Alliance of Payment Schemes)	Belgium	CartaSi	Italy
		COGEBAN/PagoBancomat	Italy
Girocard/ATM	Germany	JCC Payment Systems Ltd	Cyprus
LaserCard	Ireland	Bancomat	Luxembourg
4B	Spain	Cashlink	Malta
Euro 6000	Spain	Premier	Malta
ServiRed	Spain	Quickcash	Malta
ACCORD <sup>1)</sup>	France	PIN	Netherlands
Cartes Bancaires	France	SIBS	Portugal
Cetelem <sup>1)</sup>	France	Activa	Slovenia
Cofinoga <sup>1)</sup>	France	BA Scheme	Slovenia
Finaref <sup>1)</sup>	France	Karanta	Slovenia
Franfinance <sup>1)</sup>	France	Pankkikortti	Finland
S2P <sup>1)</sup>	France		
<b>International four-party card schemes</b>		<b>International three-party card schemes</b>	
Visa	United Kingdom	JCB	Japan
MasterCard	EU	American Express	United States
China Union Pay	China	Diners/Discover	United States

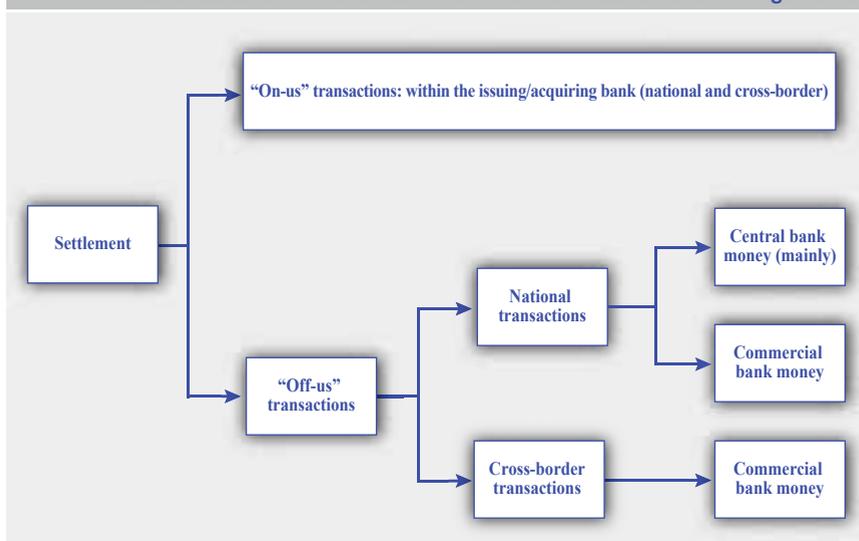
Source: ECB.

1) Three-party scheme.

Following the authorisation of a card transaction, it has to be forwarded to the relevant agents for clearing and settlement. In the euro area, the routing of transactions to clearing and settlement agents is not standard and varies from scheme to scheme. The authorised transaction information may be forwarded by the POS or ATM terminal to a switch (i.e. a routing platform) and then on to the issuer, or it may be sent directly to the clearing agent or the acquirer. Where it is sent to the acquirer, the acquirer extracts the “on-us” transactions and sends the rest of the transaction information, in batch mode, to the issuer or directly to the clearing system, usually at the end of the day.

Clearing can be bilateral or, as in most cases, multilateral. It can take place at the scheme itself or may be carried out by a clearing agent, which will usually also process other payment instruments. For national transactions, card schemes are free to choose any clearing agent they wish. The clearing and settlement of cross-border transactions is predominantly effected through VisaNet (Visa) and ECCSS (MasterCard). VisaNet and ECCSS are also used in some cases for the clearing of national transactions. For American Express and Diners/Discover, inter-franchise clearing takes place on the central servers of the two schemes.

Chart 3 | Overview of card schemes' inter-member settlement arrangements



Source: ECB.

As regards settlement between card scheme members, “on-us” transactions are settled within the acquiring bank (which is then also the issuer). “Off-us” transactions within four-party schemes are settled on an interbank basis. In approximately two-thirds of schemes, the interbank settlement of national card transactions takes place in central bank money, with the rest being settled in commercial bank money.

For cross-border transactions (other than “on-us” transactions), interbank settlement takes place on a daily basis, in commercial bank money, via MasterCard and Visa, in the currency/currencies designated by the relevant members. Each member has a single net position (following multilateral clearing) and can settle in the currency/currencies of its choice as follows.

- For MasterCard intra-European Union cross-border transactions, transfers are effected between creditors’ and debtors’ accounts at a settlement bank (i.e. a non-euro area commercial bank).
- For Visa intra-European Union cross-border transactions, transfers are effected between the members’ settlement banks and the Visa settlement bank (i.e. a non-euro area commercial bank).
- Visa’s members benefit from the National Net Settlement Service within the VisaNet system. This service is used in Greece, Sweden and the United Kingdom and enables members within a given country to settle domestic transactions in domestic currency, while operating under specific domestic rules.

Settlement between Diners franchises takes place at a (non-euro area) commercial bank, on the basis of the Diners World Settlement System. Settlement between

American Express franchises takes place at the bank agreed by the franchise and the scheme.

The way settlement is organised from the point of view of the cardholder varies in accordance with the rules of the scheme in question. Nevertheless, in all schemes cards are linked to a card account. For debit cards, that account is a current or savings account, and for credit cards, it is a credit card (technical) account. For debit and cash cards, the cardholder may not necessarily hold an account directly with the card issuer, instead holding an account with another credit institution, and settlement may take place by means of a credit transfer (possibly a standing order), by direct debit, by cheque, or even, in a limited number of cases, by cash.

The period of time required in order for a cardholder to be debited depends on the issuer and the card product. For debit card transactions, a cardholder is typically notified that the account has been debited within one to three days. Immediate debiting is also possible in the event of online authorisation. Otherwise, the card acceptor sends the transaction information to the processing centre in a batch, usually at the end of the day. For credit and delayed debit card transactions, a cardholder is debited (i.e. charged) in accordance with the terms of the contract (which may refer to specific dates, instalments, etc.).

Euro area citizens and retail merchants have benefited greatly from the availability of efficient and widely accepted debit card schemes. However, since those schemes are national in scope, many of them face great challenges in becoming SEPA-compliant. There is even a danger of schemes being closed down and replaced by card schemes that are more costly for their users. This is one of the reasons why the Eurosystem has recommended that the banking community consider ways of setting up a European card scheme (see Chapter 13).

There are currently three initiatives for the creation of a European card scheme: EAPS is an initiative established by a group of scheme operators with a view to linking a number of existing ATM and POS schemes; PayFair is a bank and merchant-independent initiative to establish a new card scheme from scratch; and Monnet is an initiative established by a group of large European banks in order to set up a new card scheme. All of these initiatives are still at an early stage.

## **5 CORRESPONDENT BANKING ARRANGEMENTS**

As in any currency area, banks in the euro area have correspondent banking relationships with banks in other countries/currency areas. Correspondent banking arrangements represent an important channel for payment flows, even though they are significantly less important than payment systems within the euro area. Correspondent banking services provided in euro by euro area banks to banks located outside the euro area continue to be of great importance, reflecting the significance of the euro as an international currency.

Even in the presence of payment systems operating in euro, use of correspondent banking arrangements remains considerable for transactions in euro, both

within individual countries and for transactions between euro area countries. That being said, the total number of transactions effected through correspondent banking arrangements has decreased over the years. There are a variety of reasons for the continued use of correspondent banking, such as the lack of a payment system solution for some types of transaction, the provision of value-added services for the customer bank, tiering in payment systems (i.e. the use of indirect access), relationship banking and operational risk management (i.e. contingency) considerations.

The level of concentration in this area is continuing to increase in the euro area, with this market being dominated by a few major players. This is the result of a fall in the number of correspondent banking networks within the euro area owing to the existence of the single currency, the specialisation of some banks in the provision of correspondent banking services and the ongoing consolidation of the banking sector in general. In addition, with customer banks' demands for higher service levels resulting in service-providing banks having to invest in better systems, the significant costs of such high-end technological solutions can only be economically justified in the presence of economies of scale.

Where banks provide correspondent banking services in euro (i.e. *loro services*), total transaction values are in some cases very large in absolute terms and can be compared to some smaller payment systems. The largest service providers may process more than 1 million payments per day, with total daily values of €20 billion or more. Overall, correspondent banking arrangements appear to occupy the middle ground between large-value payment systems and retail payment systems, with the average value of correspondent payments in euro estimated to be in the region of €60,000. In large-value payment systems operating in euro, the average value of a payment is some €4.9 million, while it is around €690 for retail payment systems.

There are signs of small-value retail payments moving out of correspondent banking arrangements and into retail payment systems operating in euro. This is expected to continue with the full implementation of SEPA.

*Group networks* represent a special kind of correspondent banking service. As early as the late 1980s and early 1990s several groups of banks established networks in order to facilitate the cross-border payments of their customers, which usually rely on a network of correspondent banks in order to reach local retail payment systems in a large number of countries. The largest of these networks are TIPANET and Eurogiro.

TIPANET, which was established in 1993, is a network comprising 11 cooperative banks from 9 countries which ensures reach for retail payments destined for Europe, Canada, the United States, and northern and sub-Saharan Africa. TIPANET processes credit transfers, direct debits and cheques, with credit transfers accounting for the largest share of transactions processed. The payment size is limited by the reporting threshold for the balance of payments in the beneficiary's country. The local correspondent collects all payment instructions, creates payment batches and sends them to its foreign correspondents, which then process the payments in the relevant local payment

systems. The settlement of payments takes place via existing reciprocal accounts which the correspondents hold with each other. A beneficiary should usually receive TIPANET payments in less than two business days.

Eurogiro was established in 1989 as a partnership between postal and giro organisations and was restructured to form a holding company in 2007. It has entered into strategic partnerships with, inter alia, Visa, Western Union and the Federal Reserve System. Eurogiro processes credit transfers and cash transfer orders without any limit on the size of payments, although the bulk of its business is in the area of small-value payments. In general, transactions are sent directly from member to member in a decentralised way and are settled bilaterally once a day on a gross basis between the members concerned. Since November 2001 it has been possible to settle transactions in euro with a single settlement agent, the Euro Settlement Service Provider. Eurogiro has announced that it has a SEPA-compliant clearing and settlement mechanism which complies, inter alia, with the SEPA credit transfer and direct debit rulebooks and implementation guidelines.



## CHAPTER 9

# THE SECURITIES AND DERIVATIVES MARKET LANDSCAPE IN THE EURO AREA

### I INTRODUCTION

As in the case of payments, in the years prior to the introduction of the single currency, euro area countries developed their own infrastructure for the trading, clearing and settlement of financial instruments (both securities and derivatives) with the aim of meeting domestic needs. Thus, at the outset, the euro area had to cope with a number of frictions and inefficiencies as a result of the relatively diverse and fragmented nature of its infrastructure.

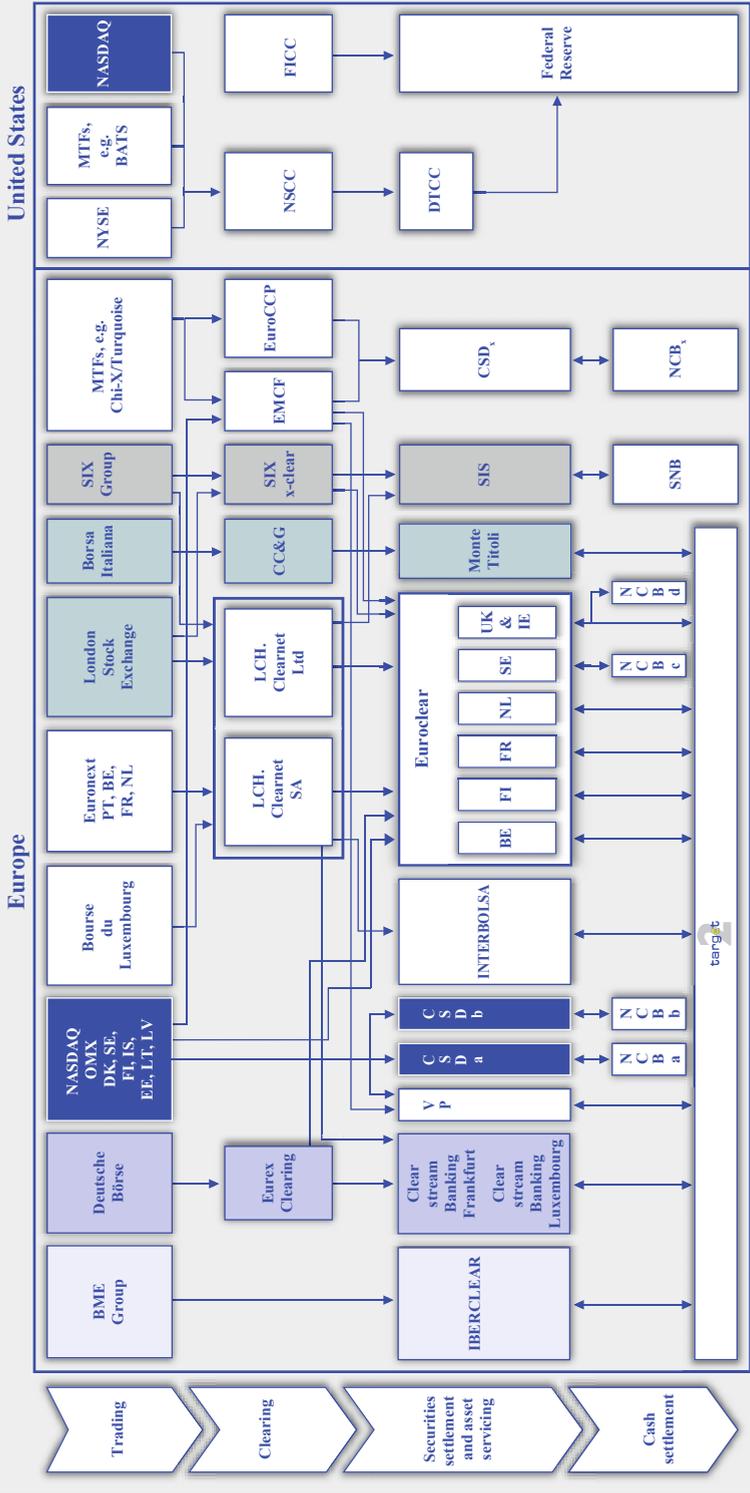
The introduction of the euro has acted as a major catalyst, promoting efforts to reshape, harmonise and integrate the securities infrastructure of the euro area, and a process is now under way to establish coherent and integrated infrastructure for securities market services. The euro has eliminated currency segmentation, which was one of the main reasons for the fragmentation of listing, trading and settlement in the countries of the euro area. The removal of currency risk has allowed increased portfolio diversification within the euro area. In parallel, following an increase in cross-border financial linkages and on account of the globalisation of financial activities, euro area financial markets have undergone significant changes and have seen considerable structural developments.

The euro has resulted in markets becoming far larger and more liquid. The euro unsecured money market was largely integrated within days of the launch of the single currency thanks to the availability of the area-wide large-value payment system TARGET. However, a similarly high degree of integration could not be observed in other market segments, such as the bond and equities segments. One major reason for this lies in the fragmentation of the underlying market infrastructure.

Fragmentation can still be observed in the trading, clearing and settlement layers. This relates not only to the large number of service-providing entities involved, but also, to a large extent, to national differences as regards institutional, legal, tax-related and technical issues, as well as business practices. As many national markets are small, it is difficult for the participants in those markets to achieve significant advantages as a result of economies of scale. Moreover, cross-border activities often rely on the involvement of a variety of intermediaries, which results in complex processes and considerable costs.

Integrating and consolidating securities and derivatives market infrastructure is important if the full benefits of the single currency are to be enjoyed. This would reduce the cost of financial transactions, improve opportunities for further portfolio diversification, facilitate the efficient allocation of capital and provide new investment and business opportunities. Moreover, it is essential for the

Chart 32 The main securities infrastructure in Europe and the United States



Notes: This simplified overview of the securities landscape does not include all existing European infrastructures. Nor does it show the horizontal links between infrastructures.

Eurosystem that the financial market infrastructure be safe and efficient, with this being necessary for the integration of money and capital markets, the sound execution of monetary policy, the smooth operation of payment systems and the maintenance of financial stability.

In response to the demands made by various stakeholders calling for effective economies of scale and scope, the securities and derivatives industry has initiated a process of integration, consolidation and harmonisation. This has been supported by mergers and acquisitions and the formation of strategic alliances. Consolidation refers to the process of concentration in an industry. Not only does it facilitate integration, it may also help to reduce costs by making use of economies of scale and network externalities. Thus, consolidation is an essential element of the integration and rationalisation of market infrastructure in the euro area.

Both horizontal and vertical consolidation have been seen. The former takes place *within* a particular level of activity, be it trading, clearing or settlement, while the latter integrates functions in *different* levels of activity. Examples of horizontal consolidation can be found, in particular, in the area of trading and, to some extent, in the areas of clearing and settlement. In some euro area countries, vertical integration has taken place, with trading, clearing and settlement incorporated in a common holding structure. A simplified overview of European securities infrastructures is shown in Chart 32, with details of US infrastructures included for comparative purposes.

## **2 INITIATIVES TO INCREASE THE EFFICIENCY AND SAFETY OF EURO AREA (AND EU) TRADING AND POST-TRADING SERVICES**

In recent years a number of public and private sector initiatives have been proposed and implemented with a view to fostering integration and competition in euro area securities market infrastructures, particularly with the aim of enhancing the interoperability and efficiency of post-trading infrastructures. These initiatives, which are complementary in nature, will have a lasting influence on the securities landscape in the euro area and the European Union in general. The main initiatives are outlined below.

In April 2004 Directive 2004/39/EC on markets in financial instruments (MiFID) was adopted, replacing the Investment Services Directive. MiFID effectively gives investment firms a “single passport” allowing them to operate across the EU, provides for a high level of investor protection and establishes, for the first time, a comprehensive regulatory framework governing the organised execution of investors’ transactions by exchanges, other trading systems and investment firms. While not directed specifically at the post-trading industry, MiFID’s implementation has some important implications for the clearing and settlement layer, as it gives investment firms trading in infrastructures in one Member State substantial access – subject to certain conditions – to the clearing and settlement infrastructures of other Member States. (For more information on MiFID, see Chapter 10.)

In 2001 the European Commission set up an advisory group comprising private sector experts with a mandate to conduct work on clearing and settlement issues. The first “Giovannini Report” was published in 2001 and identified 15 barriers (“Giovannini barriers”) to integration in EU post-trading systems. These relate to technical standards and market practices, legal uncertainty and differences in tax procedures. The second Giovannini Report, which was published in 2003, set out a strategy for removing these barriers.

#### **Box 21 15 barriers to an efficient EU clearing and settlement environment**

##### **Barriers related to technical requirements/market practice**

1. National differences in information technology and interfaces
2. National clearing and settlement restrictions that require the use of multiple systems
3. Differences in national rules relating to corporate actions, beneficial ownership and custody
4. Absence of intra-day settlement finality
5. Practical impediments to remote access to national clearing and settlement systems
6. National differences in settlement periods
7. National differences in operating hours/settlement deadlines
8. National differences in securities issuance practice
9. National restrictions on the location of securities
10. National restrictions on the activities of primary dealers and market-makers

##### **Barriers related to taxation**

11. Domestic withholding tax regulations serving to disadvantage foreign intermediaries
12. Transaction taxes collected through a functionality integrated into a local settlement system

##### **Barriers relating to legal certainty**

13. The absence of an EU-wide framework for the handling of interests in securities
14. National differences in the legal treatment of bilateral netting for financial transactions
15. Uneven application of national conflict of law rules

Source: *Cross-border clearing and settlement arrangements in the European Union*, The Giovannini Group, Brussels, November 2001.

The barriers relating to technical standards and market practices were addressed in the context of the Clearing and Settlement Advisory Monitoring Expert Group (CESAME). This group, which was replaced by CESAME II in early 2009, was established in order to monitor progress in removing private sector barriers – i.e. barriers relating to technical arrangements and market practices. The fiscal barriers were addressed by the Fiscal Compliance Expert Group (FISCO), while the Legal Certainty Group (LCG) worked on the legal barriers. Work on removing the Giovannini barriers is still ongoing. The Legal Certainty Group presented its second and final report in August 2008, which recommended a harmonised legal framework at European level to remove the remaining legal barriers in relation to intermediated securities. A draft proposal for an EU directive on legal certainty as regards securities holdings and transactions is expected to be published in 2010.

In October 2009, on the basis of FISCO's recommendations, the European Commission adopted a recommendation on withholding tax relief procedures (C(2009)7924 final), which aims to make it easier for investors resident in EU Member States to claim withholding tax relief on dividends, interest and other securities income received from other Member States.

In addition, in November 2006 the European industry associations for exchanges and post-trading infrastructures, together with their members, signed the "Code of Conduct for Clearing and Settlement". The Code of Conduct aims to foster competition and improve the efficiency of clearing and settlement in the EU by ensuring: (i) the transparency of prices and services; (ii) effective access rights and interoperability for exchanges, CCPs and CSDs; (iii) accounting separation for principal activities; and (iv) the unbundling of prices and services for principal activities. The signatories committed themselves to implementing the Code of Conduct by 31 December 2006 as regards the transparency of prices and services, by 30 June 2007 as regards access and interoperability, and by 1 January 2008 as regards the unbundling of prices and services. The Code of Conduct concerns the entire trading and post-trading infrastructure, focusing initially on cash equities. It essentially aims to give users the freedom to choose their preferred service provider at each stage of the transaction chain. A "Monitoring Group of the Code of Conduct on Clearing and Settlement" (MOG) was set up to monitor the implementation of the Code of Conduct.

In 2010 the European Commission announced its intention to set up an Expert Group on Market Infrastructures (EGMI) to advise it on various issues relating to post-trading services and market infrastructures in the EU and issued a call for expressions of interest in the new group. The EGMI will take over and carry forward the work of CESAME II and MOG.

Moreover, in order to encourage national securities clearing and settlement systems to converge towards the highest standards of safety and efficiency, the ESCB and CESR have been working since 2001 on the development of recommendations for securities settlement systems and central counterparties, thereby adapting the CPSS-IOSCO recommendations for SSSs and CCPs to take account of the specific features of the EU. These recommendations, which were finalised in 2009, are intended for use by central bank oversight authorities and securities regulators with a view to ensuring both the soundness and efficiency of securities Clearing and Settlement in the EU and the existence of a level playing field for the relevant infrastructures.

In 2006 the Eurosystem began to explore the possibility of providing settlement services in central bank money for securities transactions. The objective of the new service – TARGET2-Securities (T2S) – is to harmonise the settlement of securities transactions by processing both securities and cash settlement on a single platform with common procedures. Following positive results for feasibility studies and the definition of user requirements, in July 2008 the Governing Council of the ECB decided to implement T2S. T2S, which is expected to become operational in 2014, will be a multi-currency technical platform to be used by central securities depositories for the settlement in central bank money of securities transactions in Europe. It will bring technical

**Table 14 Overview of main post-trading initiatives**

	<b>Main objective</b>	<b>Assets</b>	<b>Scope</b>	<b>Addressees</b>	<b>Tools</b>	<b>Status/ timetable</b>
<b>Code of Conduct</b>	Efficiency	Cash equities	Trading and post-trading	Trading platforms, CCPs and (I)CSDs	Self-regulation	Ongoing
<b>Removal of Giovannini barriers</b>	Efficiency	All cash securities	Trading and post-trading	Member States, trading platforms, CCPs and (I)CSDs	Private and public sector action	EGMI to carry on work of CESAME II, FISCO and LCG
<b>T2S</b>	Efficiency	All cash securities	Settlement	(I)CSDs and CCPs	Central bank services	By 2014
<b>ESCB-CESR recommendations</b>	Safety	All financial instruments	Post-trading and (to a marginal extent) trading	Authorities, CCPs and (I)CSDs	Oversight	Adopted in 2009
<b>Legislative proposal on European market infrastructure</b>	Safety	OTC derivatives	Post-trading (CCP clearing)	CCPs, trade repositories, etc.	Legislation	Draft in 2010
<b>Proposed directive on securities law</b>	Safety and efficiency	All cash securities	Post-trading (settlement, custody)	CSDs, custodians, etc.	Legislation	Draft in 2010

consolidation to the European post-trading landscape by providing a common settlement platform which is resilient, secure and efficient. It will reduce costs through economies of scale and through synergies with other Eurosystem services – with TARGET2 in terms of cash payments in euro and with the Collateral Central Bank Management (CCBM2) project in terms of collateral management for Eurosystem credit operations. (For more information on these Eurosystem services, see Chapter 11.)

Finally, the European Commission is considering putting forward a comprehensive legislative proposal on safety, regulatory and operational standards for market infrastructures, addressing OTC derivatives activities in particular, but also having broader implications for clearing and settlement in the European Union.

Each of these initiatives, both individually and in combination with the other activities in this area, will over time have an effect on the securities infrastructure of the euro area. MiFID and the Code of Conduct have, in the period since 2007, already had a clear impact through the opening-up of activities to new

competition. In particular, new pan-European trading venues have been set up and there has been great interest in setting up links and establishing interoperability for the various activities in the value chain for securities transactions.

### 3 SECURITIES AND DERIVATIVES TRADING IN THE EURO AREA

MiFID harmonised the regulatory environment within the EU for “traditional” regulated markets and new players seeking to compete with those markets in the provision of services. Thus, MiFID distinguishes between three kinds of trading venue: (i) traditional exchanges (called “regulated markets” in MiFID); (ii) multilateral trading facilities (MTFs), a new category of trading platform created by MiFID in order to compete with exchanges; and (iii) “systematic internalisers” – i.e. firms which, on an organised, frequent and systematic basis, deal on their own accounts by executing client orders outside regulated markets and MTFs. In some cases, traditional exchanges hold licences as regulated markets in certain market segments (e.g. equities and derivatives) and in parallel own and/or operate MTFs. At the end of 2009 there were 62 regulated markets in the euro area (as a stock exchange may provide for several regulated markets) and 51 MTFs.

The different kinds of trading venue can be organised as public or private markets. In public markets, price information is offered to any interested parties, while this is not the case in private markets (which explains why these are also called “dark pools”). Trading venues combining elements of the two are called “mixed” markets.

#### Box 22 Consolidation in the stock exchange industry

The consolidation of exchanges has taken two main forms: (i) horizontal consolidation (i.e. mergers and acquisitions among local exchanges), often following the demutualisation and listing of the stock exchanges themselves; and (ii) vertical consolidation involving the trading and post-trading industries (with stock exchanges in some countries acquiring the clearing and settlement infrastructure that serves them in order to increase control over the value chain as a whole and reduce costs). In terms of geographical scope, three types of consolidation can be identified.

##### National level

Initially (and beginning long before the introduction of the euro), consolidation took place at the national level, mainly involving the merging of regional exchanges and equities and derivatives markets.

In Germany, as long ago as 1992 Deutsche Börse was formed as a result of the merging of eight regional stock exchanges. Following subsequent mergers, five regional stock exchanges remain. Italy decided in 1995 to close all regional stock exchanges (which were owned by the government) and concentrate all activities in Milan. In 1997 the national stock exchange was privatised and a listed company, Borsa Italiana, was founded. In Spain, the four regional stock exchanges (Barcelona, Bilbao, Madrid and Valencia) have been cooperating since 1999 under the name “Bolsas y Mercados Españoles” (BME). In Greece, the Athens Stock Exchange and the Athens Derivatives Exchange merged in 2002 to form the Athens Exchange.

### European level

The derivatives exchange Eurex was created by Deutsche Börse AG and the SIX Swiss Exchange in 1998 and continues to be operated jointly by the two European exchange groups.

Euronext was founded in late 2000 as a result of the merging of the Amsterdam, Brussels and Paris exchanges. Euronext then acquired the London-based derivatives market Liffe (the London International Financial Futures and Options Exchange) and in 2002 merged with the Portuguese exchange BVLP (Bolsa de Valores de Lisboa e Porto). This consolidation in terms of governance was followed by a decision to use the same trading platforms and the establishment of a single list for the four cash equity exchanges (“Eurolist”). Euronext members have also adopted a common approach to clearing and settlement, with the four exchanges being served by the same central counterparty clearing house (LCH.Clearnet SA) and the settlement of transactions primarily being handled by the Euroclear Group (and by INTERBOLSA for Portuguese securities).

Another example, involving the stock exchange of a euro area country (Finland) and those of other EU Member States that have not yet adopted the euro, is that of the OMX Group (the owner of the Stockholm Stock Exchange), which in 2003 bought HEX plc, a company owning the stock exchange and CSD in Finland and the exchanges in Tallinn and Riga. The following year, OMX bought a majority share in the Vilnius Stock Exchange. In 2005 OMX acquired the Copenhagen Stock Exchange, and one year later the OMX Group acquired Icelandic EV, the owner of the Iceland Stock Exchange and Icelandic Securities Depository. Consequently, OMX is now the full or majority owner of stock exchanges in seven countries and has introduced a common Nordic list comprising local shares from Stockholm, Helsinki, Copenhagen and Iceland. The Baltic exchanges in Tallinn, Riga and Vilnius also have a common securities list, a common trading system and harmonised market rules.

The merger that took place in October 2007 between Borsa Italiana (which also controls the Italian CCP CC&G and the Italian CSD Monte Titoli) and the London Stock Exchange is yet another notable example of consolidation at the EU level.

### Trans-Atlantic level

The consolidation process took on a trans-Atlantic dimension in April 2007, when the shareholders of Euronext decided to accept the offer of NYSE and created NYSE Euronext, a holding company that combines NYSE Group, Inc. and Euronext NV. Through this merger, NYSE Euronext brought together six equities exchanges in five countries and six derivatives exchanges. (NYSE Group, Inc., a wholly owned subsidiary of NYSE Euronext, operates two securities exchanges: the New York Stock Exchange LLC and NYSE Arca, Inc.)

In February 2008 NASDAQ and the OMX Group merged to form the NASDAQ OMX Group. This was conducted by means of an arrangement in which Borse Dubai Limited first acquired all OMX Group shares, before selling them on to NASDAQ in a transaction which gave Borse Dubai ownership of some of NASDAQ’s common stock, while NASDAQ OMX Group became a shareholder of DIFX, Dubai’s international financial exchange.

### 3.1 EQUITIES

The European trading industry currently includes several major cross-border organisations as a result of consolidation (e.g. involving regional players in the Nordic and Baltic area), as well as a set of national exchanges (see also Box 22). Thus, the euro area financial market industry is still relatively fragmented in terms of the number of participants, although the largest markets do in fact account for most of the turnover. Table 15 provides an overview of the main regulated markets for equities trading in the euro area.

Since MiFID's entry into force in November 2007, a number of MTFs have entered the market and established themselves in the equities trading segment. Examples of such pan-European MTFs for equities include: Chi-X Europe, which has since March 2007 provided trading services for equities in the UK FTSE 100, the French CAC 40, the Dutch AEX 25, the German DAX 30 and the Swiss SMI 20 indices; NASDAQ OMX Europe,<sup>17</sup> a trading and routing platform for the most actively traded European equities; and Turquoise, an MTF which was recently acquired by the London Stock Exchange Group. Despite offering services for euro-denominated securities, all of these MTFs are located outside the euro area.

<sup>17</sup>In April 2010 NASDAQ OMX announced that it was closing NASDAQ OMX Europe after failing to capture sufficient market share.

**Table 15 Main trading venues in the euro area as at 31 December 2008**

(EUR millions)

Regulated market	Market capitalisation of listed companies	Value of executed equities trades
NYSE Euronext Paris	1,056,746	2,216,848
Deutsche Börse	797,063	3,386,072
BME Group	680,632	1,661,496
NASDAQ OMX Nordic <sup>1)</sup>	404,137	965,053
Borsa Italiana	374,702	1,077,481
NYSE Euronext Amsterdam	279,059	771,420
Athens Exchange	65,271	78,183
CEESEG Vienna	54,752	72,216
Bourse du Luxembourg	47,809	1,333
Irish Stock Exchange	35,519	56,333
CEESEG Ljubljana	8,468	1,747
Cyprus Stock Exchange	5,733	1,528
Malta Stock Exchange	2,567	49
NYSE Euronext Lisbon	-	54,894
TLX	-	280
NYSE Euronext Brussels	-	-

Source: ECB.

Note: The figures for equities trades include both electronic order book and negotiated trades.

1) NASDAQ OMX Nordic covers the Danish, Finnish, Swedish and Icelandic markets. Separate figures are not available for Finnish securities.

In conclusion, while the number of traditional exchanges has fallen as a result of consolidation, there are an increasing number of new venues entering into direct competition with traditional euro area stock exchanges.

### 3.2 DEBT INSTRUMENTS

Secondary market trading in debt securities has in the past been dominated by the execution of trades via the telephone or through voice brokerage. Trades are now increasingly being executed electronically. Alongside traditional stock exchanges, there are also a number of MTFs for electronic trade execution (e.g. BrokerTec and EuroMTS), which together account for a significant share of inter-dealer trading in these instruments.

**Table 16 Value of trades in debt securities in the euro area as at 31 December 2008**

(EUR millions)

<b>Regulated market</b>	<b>Value of executed trades in debt securities</b>
BME Group	4,694,164
Mercados de Deuda Publica en Anotaciones	2,474,276
MTI Wholesale Market for Government Securities (MTS)	873,420
Fonds des rentes (Belgium)	596,225
MTI BONDVISION	396,676
Bank of Greece	275,673
Borsa Italiana	177,118
Deutsche Börse	125,115
TLX	62,691
NYSE Euronext Amsterdam	31,895
Irish Stock Exchange	25,180
NYSE Euronext Paris	3,584
MTI Wholesale Market for Corporate and International Organisations' Bonds	1,195
CEESEG Vienna	807
NYSE Euronext Lisbon	595
Malta Stock Exchange	439
CEESEG Ljubljana	257
MTS Portugal	65
Bourse du Luxembourg	58
Athens Exchange	28
Cyprus Stock Exchange	15
NYSE Euronext Brussels	-

Source: ECB.

Note: These figures include both electronic order book and negotiated trades.

Some of these MTFs target specific segments of the government bond markets. For example, the MTS Group includes several companies providing services for debt instruments issued by specific national governments in the euro area. MTFs are also active in specific segments and sub-segments, as in the case of TradeWeb, Bloomberg Bond Trader, BondVision and MarketAxess, platforms which directly link multilateral dealers with their customers (i.e. institutional investors). However, trade execution via the telephone or through voice brokers still dominates both inter-dealer and dealer-to-customer debt securities markets, particularly markets for private sector securities.

Table 16 provides an overview of euro area bond markets. A discussion of the clearing and settlement infrastructures serving these markets is provided in the following sections.

### 3.3 DERIVATIVES

Typically, only standardised derivatives products are traded on public exchanges, whereas less liquid and tailor-made derivatives contracts are negotiated over the counter. The most common exchange-traded derivatives are futures and options (which are based on equities, bonds and commodities). Table 17 lists the most important derivatives exchanges in Europe.<sup>18</sup>

In terms of notional market value, the large majority of derivatives trading takes place on an OTC basis. Many euro-denominated derivatives products are traded on a global scale, and only a limited number of euro area-based institutions act as dealers and market-makers in these markets.

<sup>18</sup>Further information on euro area and pan-European derivatives exchanges is available on the websites of the Federation of European Securities Exchanges (FESE; [www.fese.eu](http://www.fese.eu)) and the World Federation of Exchanges ([www.world-exchanges.org](http://www.world-exchanges.org)).

<b>Table 17 Exchange-traded derivatives turnover</b>			
<i>(year to date; as at 31 May 2010; notional turnover in EUR millions)</i>			
<b>Derivatives exchange</b>	<b>Country</b>	<b>Equity options</b>	<b>Equity futures</b>
ATHEX Derivatives Market	Greece	1,411	8,414
Spanish exchanges (BME)	Spain	33,589	324,473
Austrian Derivatives Market	Austria	981	4,045
Eurex	Germany/Switzerland	4,928,471	7,814,392
OMX Nordic Exchange	Denmark/Sweden/ Finland/Iceland	84,359	142,400
Euronext.liffe	United Kingdom/ France/Netherlands/ Belgium/Portugal	1,479,707	2,535,511
<i>Memorandum item:</i>			
<i>ICE Futures Europe</i>	<i>United Kingdom (global contracts)</i>	<i>n/a</i>	<i>n/a</i>

Overall, voice-based trading continues to dominate, given the nature of the market. However, electronic and multilateral trading venues, such as electronic execution networks, are increasingly being used for some frequently traded and highly standardised OTC contracts.

There are no comprehensive statistics available as regards OTC derivatives activities (i) in the euro area, (ii) in euro, or (iii) with the involvement of counterparties based in the euro area. However, some limited information is available from the BIS biannual derivatives market surveys (see Tables 18, 19 and 20).

<b>Table 18 Total outstanding amounts of OTC derivatives</b>		
<small>(as at 31 December 2009; USD billions)</small>		
<b>Type of OTC derivative</b>	<b>Notional outstanding amounts</b>	<b>Gross market values</b>
<b>Foreign exchange contracts</b>	<b>49,196.37</b>	<b>2,069.13</b>
Forwards and foreign exchange swaps	23,129.29	683.22
Currency swaps	16,509.01	1,042.63
Options	9,558.07	343.29
<b>Interest rate contracts</b>	<b>449,792.69</b>	<b>14,017.59</b>
Forward rate agreements	51,749.26	79.93
Interest rate swaps	349,235.83	12,573.88
Options	48,807.61	1,363.79
<b>Equity-linked contracts</b>	<b>6,591.45</b>	<b>710.06</b>
Forwards and swaps	1,829.87	178.62
Options	4,761.58	531.45
<b>Commodity contracts</b>	<b>2,944.02</b>	<b>545.14</b>
Gold	423.18	48.08
Other commodities	2,520.83	497.06
Forwards and swaps	1,674.91	1,801.29
Options	845.92	1,242.79
<b>Credit default swaps</b>	<b>32,692.69</b>	<b>558.51</b>
Single-name instruments	21,917.06	2,439.91
Multi-name instruments	10,775.64	21,583.12
<b>Unallocated</b>	<b>73,456.38</b>	<b>2,069.13</b>
<b>Total contracts</b>	<b>614,673.60</b>	<b>683.22</b>

Source: BIS.

**Table 19 Shares of euro and US dollar-denominated OTC derivatives**

	Measure	EUR share	USD share	Source(s)
Interest rate swaps	Notional amounts outstanding	36%	34%	BIS
	Gross market value	27%	56%	
OTC equity derivatives <sup>1)</sup>	Notional amounts outstanding	45%	23%	BIS and ECB
	Gross market value	40%	23%	
Credit default swaps	Market turnover	39%	59%	CLS and ECB
OTC foreign exchange derivatives	Notional amounts outstanding	21%	42%	BIS
	Gross market value	20%	40%	
Repo market <sup>2)</sup>	Repo contracts outstanding	47%	45%	Federal Reserve Bank of New York, Bank of England, ICMA and ECB

Source: *OTC derivatives and post-trading infrastructures*, ECB, Frankfurt am Main, September 2009.

1) The share of euro-denominated OTC equity derivatives is based on a very imperfect estimate using the euro area's share of EU stock market capitalisation. In general, derivatives contracts based on European equities can in principle be written in non-European currencies. In the absence of better data, these are the best available estimates. In a 2001 ECB study on the euro equity markets (*The euro equity markets*, ECB, Frankfurt am Main, August 2001), euro-denominated instruments accounted for 80% of EU turnover for exchange-traded equity derivatives. Although it is not directly comparable, this is similar to our estimates for OTC equity-linked derivatives.

2) Only the repo markets for the US dollar, the pound sterling and the euro are included.

**Table 20 Share of EU counterparties in the global OTC derivatives market**

	Market share of counterparties located in the EU
Euro-denominated interest rate swaps	94% (36% euro area)
Global OTC equity derivatives	57%
Global credit default swap market	35%
Global OTC foreign exchange derivatives	54% (11% euro area; 39% United Kingdom)
Global repo market	Not available <sup>1)</sup>

Source: *OTC derivatives and post-trading infrastructures*, ECB, Frankfurt am Main, September 2009.

1) While hard data on the share of counterparties located in Europe are not available, a number of studies point to the fact that the majority of participants in the euro-denominated repo market are located in the euro area.

## 4 CENTRAL COUNTERPARTY CLEARING IN THE EURO AREA

### 4.1 AN EVOLVING LANDSCAPE

Globally, as well as in the euro area, CCPs initially provided services relating to derivatives traded on exchanges. More recently, they have begun to be used more often for equities and bond transactions, as well as for some OTC derivatives transactions. In 2009 the euro area securities and derivatives markets were served by nine officially registered CCPs located in the euro area (according to the official register maintained by CESR; see Table 21). In addition, some other entities not registered as independent CCPs provided central clearing services, sometimes as

**Table 21 Euro area central counterparties as at end-December 2009**

Member State of incorporation	Name	Ownership	Asset focus	Market coverage
Germany	ECC	Exchange-owned <sup>2)</sup>	Commodity/energy derivatives (including OTC derivatives)	Cross-border
Germany	Eurex Clearing	Exchange-owned	Securities and derivatives (including OTC derivatives)	Cross-border
Greece	ADECH (Hellenic Exchanges)	Exchange-owned	Derivatives	Domestic
Spain	MEFFClear <sup>3)</sup>	Exchange-owned	Securities (bonds)	Domestic
France	LCH. Clearnet SA	User-owned	Securities and derivatives (including OTC derivatives)	Cross-border
Italy	CC&G	Exchange-owned	Securities and derivatives	Domestic
Netherlands	EMCF	User-owned	Securities (equities)	Cross-border
Austria	CCP.A	Exchange-owned <sup>1)</sup>	Securities and derivatives	Domestic
Portugal	Omiclear	Exchange-owned	Commodity/energy derivatives	Cross-border

Sources: CESR MiFID database and CCP websites (as at 31 December 2009).

Note: This list of CCPs is based on the CESR MiFID database and does not include clearing houses which are not registered independently of the exchange that operates them.

1) CCP.A is jointly owned by the Vienna Stock Exchange and the Austrian CSD, OeKB (Oesterreichische Kontrollbank).

2) Owned by more than one exchange.

3) Derivatives are cleared by MEFF (a clearing house within the derivatives exchange, which is not registered as a CCP).

part of an exchange (e.g. MEFF in Spain). While there were 13 entities providing CCP services at the time of the introduction of the euro in 1999, as a result of consolidation the number then fell to seven, before increasing again following the establishment of new CCPs as of 2007, partly as a consequence of the emergence of new MTFs competing with exchanges. Of the nine CCPs incorporated in the euro area, four (including the largest three) clear a number of different asset classes (e.g. equities, fixed income products and derivatives), two clear only securities, and the other three CCPs clear only derivatives (i.e. financial derivatives or commodity or energy-based contracts). The newest CCPs for derivatives (such as European Commodity Clearing (ECC) and Omiclear) were created following the liberalisation of the energy sector in Europe and cover a number of geographical markets in the euro area.

MiFID and the Code of Conduct, by opening up various markets and trading and post-trading activities to greater competition, have initiated a market development process that could fundamentally change the landscape for CCP services in the euro area.

Initially, the consolidation was driven by corresponding developments taking place at the trading level. First, at a national level three French entities merged to form Clearnet SA in 1999. Clearnet then took over the CCPs in Belgium and the Netherlands in 2001. An important merger took place in 2003, when Clearnet and the London Clearing House Ltd (LCH) merged to form LCH.Clearnet (with no merging of margining systems, despite the companies being legally merged). In 2004 the group was extended further when LCH.Clearnet SA took over the Portuguese CCP.

The Austrian, Italian and Spanish CCPs are vertically integrated with their respective domestic exchanges and CSDs, clearing products traded on those exchanges. The Spanish and Italian CCPs also accept some OTC products.

LCH.Clearnet SA (formerly Clearnet SA) and LCH.Clearnet Ltd (formerly LCH) are subsidiaries of LCH.Clearnet Group Limited. LCH.Clearnet Group Limited is owned by its users, the Euronext Group and the Euroclear Group.

## **4.2 EQUITIES AND DEBT INSTRUMENTS**

The Paris-based LCH.Clearnet SA provides CCP services for French, Belgian, Dutch and Portuguese debt securities traded on the Euronext exchanges or over the counter (including trades on MTS France). However, euro-denominated products are also cleared and netted by CCPs located outside the euro area. For instance, in addition to clearing trades in equities, derivatives and energy commodities conducted on the London markets, the UK-based LCH.Clearnet Ltd provides (through Repoclear) clearing services for OTC repo and cash trades in European government and international bonds, including trades on some MTS markets (i.e. MTS Netherlands, MTS Austria, MTS Belgium, MTS Germany, MTS Finland, MTS Ireland and EuroMTS) and trades through BrokerTec. Moreover, through Equityclear, LCH.Clearnet Ltd provides services for products (including euro-denominated products) traded on Virt-X.

As regards equities, in 2008 the US-based CCP DTCC set up a London-based company called EuroCCP with the aim of providing CCP services for European equities traded through Turquoise. The Dutch-based EMCF, in turn, provides clearing services for equity trades in a number of exchanges (including NASDAQ OMX Nordic) and MTFs (including the UK-based Chi-X).

In terms of the value of turnover, in the euro area three CCPs dominate the market. These are LCH.Clearnet SA, Eurex Clearing and CC&G (see Table 22).

CCP services have not been set up for every financial instrument in every national segment of the euro area (see Table 21). First, some national segments of the euro area market (e.g. Cyprus and Malta) do not use CCP services. Second, in some countries, some market segments are served by a CCP, while other segments are not. For example, a local CCP clears derivatives but not cash securities in Greece and Spain, and the wholesale bond market is not served by a CCP in Greece or Portugal. Where no CCP exists for cash securities, matching services are traditionally provided by the exchange or the SSS, while netting services (but not novation) are often provided by the SSS.

All in all, the European clearing infrastructure for euro-denominated debt securities is still fragmented (see Chart 32). No true pan-European CCP has emerged. The few successful examples of integration include the consolidation of the CCPs of the Euronext markets to form Clearnet SA, which subsequently merged with LCH to form the LCH.Clearnet Group, and the provision of CCP services

**Table 22 Key statistics for European CCPs in 2008**

(EUR billions)			
Country	CCP	Value of cash (outright) securities transactions cleared	Number of participants
Germany	Eurex Clearing	5,077	109
Greece	ADECH	1	34
Spain	MEFF	n/a	57
	MEFFClear	n/a	14
France	LCH.Clearnet SA	7,392	105
	<i>Of which cleared in:</i>		
	<i>France</i>	4,000	
	<i>Belgium</i>	273	
	<i>United Kingdom</i>	102	
	<i>Italy</i>	1,348	
	<i>Netherlands</i>	1,558	
	<i>Portugal</i>	108	
Italy	CC&G	2,648	75
Austria	CCP.A	146	76
<i>Memorandum items:</i>			
Sweden	OMX	n/a	50
United Kingdom	LCH.Clearnet Ltd	5,869	111

Source: ECB.

for OTC transactions in euro area government bonds by Eurex Clearing and LCH.Clearnet Ltd on the basis of their direct participation in various (I)CSDs.

### 4.3 DERIVATIVES

As shown in Table 21, there are seven CCPs located in the euro area that clear derivatives products. These are CCP.A (Austria), LCH.Clearnet SA (France), ECC (Germany), Eurex Clearing (Germany), ADECH of Hellenic Exchanges (Greece), CC&G (Italy) and Omiclear (Portugal).<sup>19</sup>

As far as OTC derivatives are concerned, and particularly as regards the fast-growing credit derivatives market, the setting-up and use of market infrastructure failed to keep pace with developments in this sector, raising considerable concerns among authorities on account of the significant risks involved. Until recently there was no euro area or EU-based CCP providing services related to OTC derivatives, including credit default swaps.

In 2006 the US-based DTCC announced the launch of its Trade Information Warehouse, creating a new type of global market infrastructure serving as a central registry for information on OTC derivatives contracts, including credit default swaps. (For information on trade repositories, see Section 2.4 of Chapter 3.) As a global infrastructure, the Trade Information Warehouse's services also cover euro-denominated OTC credit derivatives. However, the Trade Information Warehouse is not a CCP, and although it replicates some of the services of a CCP (e.g. performing matching, confirmation and some clearing), it does not perform netting, novation, credit risk mitigation or default management. As discussed in Chapter 3, reporting OTC derivatives trades to trade repositories and making them subject to CCP clearing are two examples of measures that could help to address financial stability concerns related to these markets. Following legislative initiatives in some major economies with the aim of making the reporting of trades to trade repositories mandatory, several projects for the setting-up of new trade repositories are under way, including some in the euro area.

According to BIS figures, the outstanding notional amount of credit default swaps stood at some €57.4 trillion in mid-2008, accounting for around 8% of all derivatives. In the context of the outbreak of the global financial market turmoil in 2007, the authorities of major economies (including global fora such as the G20, the Financial Stability Board (FSB), the CPSS, IOSCO and the Basel Committee on Banking Supervision) have paid considerable attention to issues concerning OTC derivatives and the urgent need for a more robust framework to support their orderly and safe handling. Following initiatives in Europe and the United States encouraging, among other things, the establishment of CCP services for OTC derivatives, several market proposals have been put forward. Stakeholders have underlined the merits of having multiple solutions, including at least one European solution.

<sup>19</sup>MEFF in Spain also clears derivatives transactions, but is part of the MEFF exchange and therefore not registered as an independent CCP in the database maintained by CESR.

The first euro area-based CCP services for OTC credit derivatives became available in late 2008. Such services were introduced by Eurex Clearing and LCH. Clearnet SA in 2008 and 2010 respectively. Until now, however, most euro-denominated OTC credit derivatives contracts submitted to a CCP have been cleared offshore by ICE Clear Europe, a UK-based subsidiary of the US Intercontinental Exchange, which began operations in 2008.

## 5 SECURITIES SETTLEMENT INFRASTRUCTURE

### 5.1 CSDs AND SSSs

In mid-2010 there were 24 CSDs operating securities settlement systems in the euro area, four more than ten years earlier. However, it should be noted that the period in question has seen both consolidation and, following enlargement, the entry into the euro area of new EU Member States and their respective CSDs. For example, in 2008 alone, Cyprus and Malta and their local CSDs joined the euro area, VP LUX (an affiliate of the Danish CSD) was established in Luxembourg and the Irish NTMA ceased operating.

Of these securities settlement systems (including the three regional CSDs in Spain), 23 are eligible for the delivery of securities to the Eurosystem as collateral in central bank credit operations.

<b>Member State of incorporation</b>	<b>Name</b>	<b>Category</b>	<b>Ownership</b>	<b>Asset segment</b>
Belgium	Euroclear Bank	ICSD	User-owned	All financial instruments
Belgium	Euroclear Belgium	CSD	User-owned	Equities, bonds, funds
Belgium	NBB-SSS	NCB SSS	NCB	Debt instruments
Germany	Clearstream Banking Frankfurt	CSD	Exchange-owned	All financial instruments
Greece	BOGS (Bank of Greece)	NCB SSS	NCB	Government debt
Greece	Hellenic Exchanges Central Securities Depository	CSD	Exchange-owned	Equities, bonds, ETFs
Spain	IBERCLEAR	CSD	Exchange-owned	All financial instruments
Spain	SCL Barcelona, SCL Bilbao and SCL Valencia	CSDs of regional exchanges	Exchange-owned	Equities, bonds, money market

<b>Member State of incorporation</b>	<b>Name</b>	<b>Category</b>	<b>Ownership</b>	<b>Asset segment</b>
France	Euroclear France	CSD	User-owned	All financial instruments
Italy	Monte Titoli	CSD	Exchange-owned	All financial instruments
Cyprus	CDCR (Central Depository and Central Registry)	CSD	Government/ exchange-owned	Equities, bonds, money market
Luxembourg	Clearstream Banking Luxembourg	ICSD	Exchange-owned	All financial instruments
Luxembourg	VP LUX	CSD	User-owned	Bonds
Malta	Malta Stock Exchange/ MaltaClear	CSD	Government/ exchange-owned	All financial instruments
Netherlands	Euroclear Nederland	CSD	User-owned	All financial instruments
Austria	OeKB	CSD	User-owned	Equities, bonds, funds
Portugal	INTERBOLSA	CSD	Exchange-owned	All financial instruments
Portugal	SITEME (Banco de Portugal)	NCB SSS	NCB	Short-term public debt
Slovenia	KDD (Klirinško Depotne Družbe)	CSD	User-owned	Equities, bonds, money market, ETFs
Slovakia	CDPC SR (Centrálny depozitár cenných papierov)	CSD	Government/ exchange-owned	All financial instruments
Slovakia	NBS-CR (Central Register of the National Bank of Slovakia)	NCB SSS	NCB	Short-term public debt
Finland	Euroclear Finland (formerly APK)	CSD	User-owned	Equities, bonds, money market, ETFs

Sources: ECB and CSD websites (as at 31 December 2009).

Notes: “Government/exchange-owned” means that the CSD is either (i) owned by an exchange, which is itself owned by the government, or (ii) owned jointly by the exchange and governmental entities (i.e. there is no user ownership). The three regional CSDs in Spain are operated by the regional exchanges, which are themselves part of the BME Group, the owner of IBERCLEAR.

**Table 24 Key statistics for euro area CSDs and SSSs as at end-2008**

Country	CSD	Value of securities held in CSD (EUR millions)	Number of transactions processed in CSDs (thousands)	Value of transactions (delivery instructions; EUR billions)
Belgium	Euroclear Bank	8,841,368	36,993	248,791
	Euroclear Belgium	135,734	1,261	310
	NBB-SSS	339,139	328	8,300
Germany	Clearstream Banking Frankfurt	2,923,196	56,014	62,473
	NTMA <sup>1)</sup>	-	-	-
Greece	BOGS	216,573	378	8,368
	Hellenic Exchanges Securities Depository	69,287	9,602	92
	IBERCLEAR	1,822,324	17,097	75,462
Spain	SCL Barcelona, SCL Bilbao and SCL Valencia	66,203	-	-
	Euroclear France	4,517,284	30,384	134,266
Italy	Monte Titoli	2,732,496	26,032	67,195
Cyprus	CDCR	10,321	442	2
Luxembourg	Clearstream Banking Luxembourg	4,488,782	15,183	54,993
	Malta Stock Exchange/ MaltaClear	6,702	24	2
Netherlands	Euroclear Nederland	818,967	4,399	-
Austria	OeKB (WSB SYSTEM)	424,869	1,433	313
Portugal	INTERBOLSA	408,086	949	149
	SITEME	13,150	1	92
Slovenia	KDD	17,880	444	20
Finland	Euroclear Finland	218,446	18,428	845

Source: ECB.

1) NTMA closed in 2008.

All euro area CSDs offer settlement in central bank money, whereas the ICSDs offer settlement in commercial bank money. Given the large-value securities transactions settled, the related cash flows are, of course, also of a considerable size. In fact, many of the payment systems embedded in SSSs are comparable in size to payment systems processing large-value payments in euro. In 2007, of the ten largest payment systems operating in euro, six were operated by SSSs.

**Table 25 Embedded payment systems operating in euro**

(data for 2007; EUR billions per working day)

<b>1. TARGET</b>	<b>2,419</b>
2. Euroclear Bank	616
<b>3. CLS</b>	<b>564</b>
4. Euroclear France	476
<b>5. EURO1</b>	<b>228</b>
6. IBERCLEAR	205
7. Monte Titoli	199
8. Clearstream Banking Frankfurt	125
9. Clearstream Banking Luxembourg	112
<b>10. PNS<sup>1)</sup></b>	<b>64</b>

1) PNS ceased operations in 2008.

While the post-trading infrastructure for bonds is relatively fragmented, the euro area's securities settlement infrastructure for equities is even less integrated. For instance, while the cross-border settlement of bonds is largely concentrated in the two ICSDs (including all settlement of Eurobonds), the international settlement of equities still relies heavily on national CSDs. In addition, other qualitative barriers – such as differences in settlement cycles or the handling of corporate events and taxation – continue to considerably hinder progress in the integration of equities infrastructures. However, efforts to reduce these barriers are currently under way, as described earlier in Section 2.

The integration of SSSs can take various forms. The main form of integration is consolidation. Some consolidation in the area of clearing and settlement infrastructures has taken the form of purely legal mergers, with the entities involved continuing to operate and serve their own markets on separate technical platforms. At the same time, as set out in Section 2, steps are being taken to integrate the technical processes of the clearing and settlement functions of the various providers. The most significant initiative in this regard is the Eurosystem's pan-European securities settlement platform T2S (see Chapter 11). The Code of Conduct for Clearing and Settlement is expected to complement T2S by significantly increasing the interoperability of the various providers of trading and post-trading platforms.

The most prominent examples of horizontal consolidation in this area concern the ICSDs and CSDs of the Clearstream group (i.e. Clearstream Banking Frankfurt and Clearstream Banking Luxembourg) and the Euroclear Group (which now includes, in addition to the ICSD Euroclear Bank, the CSDs of Belgium, France, the Netherlands, the United Kingdom and Ireland, Finland and Sweden).

The Clearstream group is vertically integrated, with Deutsche Börse controlling Clearstream Banking Frankfurt. Vertical integration of the trading, clearing and settlement layers can also be seen in Italy (where Borsa Italiana owns the CSD Monte Titoli, in addition to the CCP CC&G) and Spain (where the BME Group owns IBERCLEAR).

## Box 23 Consolidation around the two ICSDs

### Euroclear Group

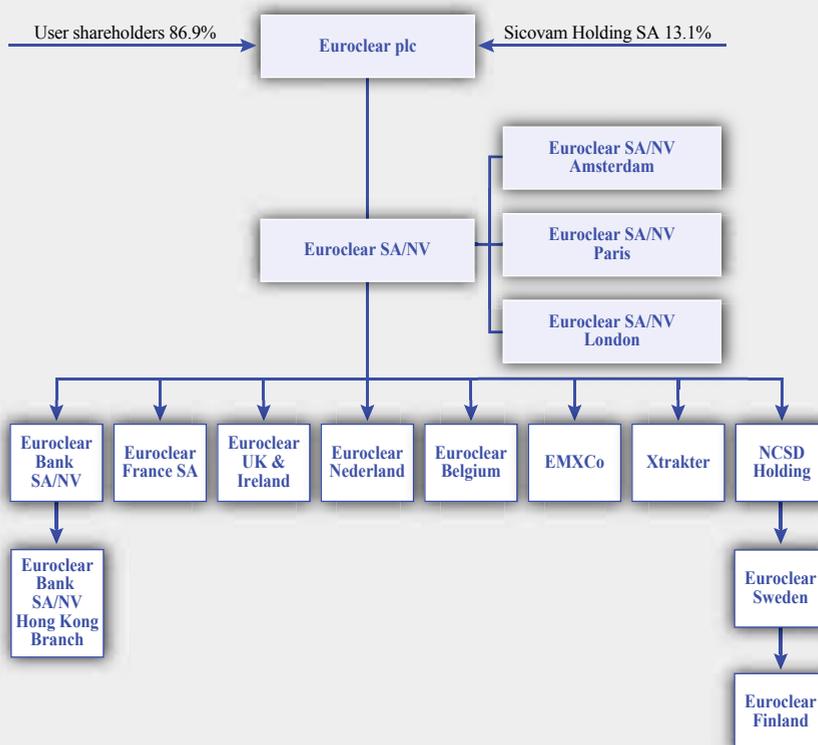
Following major restructuring in January 2005, Euroclear plc has become the holding company for the entire Euroclear Group. It is owned by market participants. The Euroclear Group provides both ICSD and CSD services through its various entities.

Euroclear SA/NV, which is the holding company for the group's national and international central securities depositories, owns the group's shared securities processing platforms and performs a range of services for the group's depositories, including the development of its technology platform.

Euroclear Bank is an ICSD incorporated under Belgian law. It is therefore a primary place of issuance for international securities, including Eurobonds (generally together with Clearstream Banking Luxembourg), and provides cross-border settlement facilities for these instruments, as well as for domestic securities.

Following the merger of the French CSD Sicovam and Euroclear Bank in 2001, the group subsequently absorbed the CSDs of the Netherlands, the United Kingdom and Ireland (2002), Belgium (2006), Finland and Sweden (2008). The CSDs of Finland and Sweden had already merged in 2004 to form NCSD.

### Chart A Consolidation around the two ICSDs: Euroclear



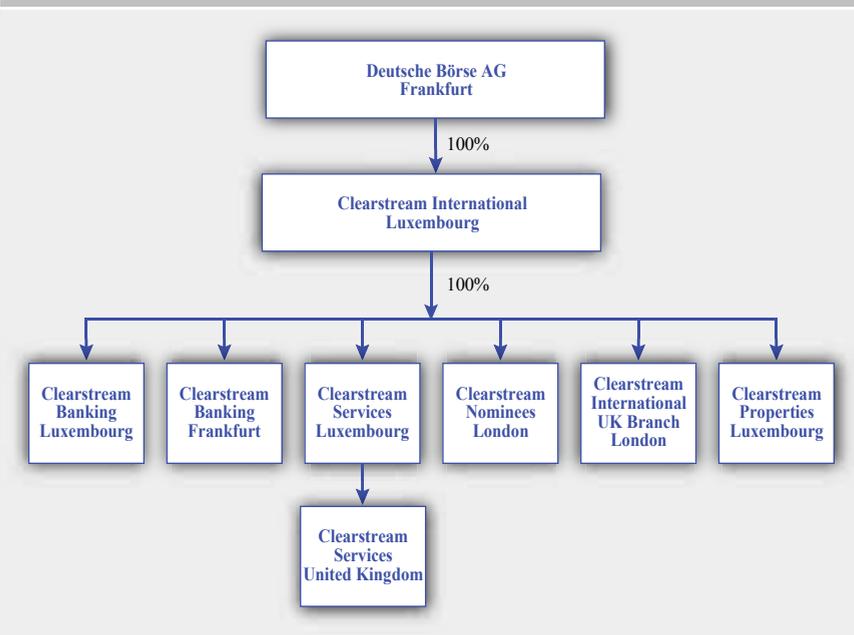
Source: Euroclear Group website.

In order to increase the efficiency of settlement across the entities in the group, Euroclear launched a project to integrate the various platforms. As a first step, Euroclear developed a single IT settlement platform for all Euroclear (I)CSDs: the Single Settlement Engine. This is an IT facility through which all book-entry transfers of securities against cash can be carried out, whether within one (I)CSD or across different (I)CSDs within the Euroclear Group. Launched in 2007, it focuses on the core settlement functionality (i.e. the positioning and booking of liquidity and securities transfers). It is owned and operated by the new company Euroclear SA/NV. The next step in the consolidation of the group was the launch of ESES (Euroclear Settlement of Euronext-zone Securities). Completed in 2009, ESES is a single processing solution for both fixed income and equity securities transactions in the Belgian, Dutch and French markets, which ESES handles as if they formed a single market. It brings together the three CSDs of Belgium, France and the Netherlands on a common IT platform with harmonised business processes, practices and tariffs. The next steps are the launch of Single Platform Custody, which aims to provide more efficient and harmonised corporate action services, as well as a single platform for collateral management. These are expected to be implemented in the coming years.

#### Clearstream International

Clearstream International is a holding company incorporated in Luxembourg. It was formed in January 2000 through the merger of Cedel International (an ICSD established in Luxembourg in 1970 by a group of global financial institutions) and Deutsche Börse Clearing (the German national CSD). The full integration of Clearstream was carried out

**Chart B Consolidation around the two ICSDs: Clearstream**



Source: *Payment and securities settlement systems in the European Union, Volume 1: euro area countries*, ECB, Frankfurt am Main, August 2007.

in two stages and was completed in July 2002, when Clearstream International became a full subsidiary of Deutsche Börse AG.

Clearstream International is an international securities settlement organisation offering extensive services for equities and bonds for both domestic and international business. The holding company has three main subsidiaries: Clearstream Banking Luxembourg, Clearstream Banking Frankfurt and Clearstream Services Luxembourg. Joint regional offices are used for representation in the major financial centres.

Clearstream Banking Frankfurt offers settlement facilities for the German securities markets. Clearstream Banking Luxembourg is an ICSD (i.e. it provides settlement services for global and international securities traded across borders), but also operates LuxClear, which is the national CSD of Luxembourg. Clearstream Services Luxembourg is a technical service provider operating Creation, the single IT platform used for settlement and custody services for international business. Since Clearstream Banking Frankfurt's international business migrated to the Creation platform in February 2001, both Clearstream Banking Luxembourg and Clearstream Banking Frankfurt have been using it for the settlement of international securities in commercial bank money.

Belgium, Greece, Portugal and Slovakia each have a national securities settlement system operated by the central bank. NBB-SSS in Belgium and BOGS in Greece deal with government debt securities, whereas SITEME in Portugal and NBS-CR in Slovakia deal with short-term paper.

Only in Ireland has the rationalisation of the market infrastructure resulted in CSDs from elsewhere in the EU being entrusted with the custody and settlement function for domestic securities. As a result, Irish government bonds are currently held in one of the ICSDs (Euroclear Bank), while Irish corporate debt securities (and equities) are held in Euroclear UK & Ireland. Thus, until it ceased operating in 2008 the Irish CSD NTMA dealt exclusively with Irish treasury notes.

There are also other forms of integration. For example, in April 2008 seven European CSDs launched an initiative ("Link Up Markets") to establish common infrastructure allowing the easy implementation of links between CSD markets. The initiative is expected to give these CSDs' customers a single point of access to participating markets and establish arrangements to support cross-border delivery on a DvP basis.

This will enable each CSD to have access to the services of the other participating CSDs' markets across all cash securities classes. The new common infrastructure was launched in 2009 and is operated through a company established in Madrid. As this is not intended as a common settlement engine, it is regarded as being complementary to T2S.

In April 2010 Link Up members included Clearstream Banking Frankfurt, the Cyprus Stock Exchange, Hellenic Exchanges, IBERCLEAR, MCDR (Egypt), OeKB, SIX SIS (Switzerland), STRATE (South Africa), VP Securities (Denmark) and VPS (Norway).

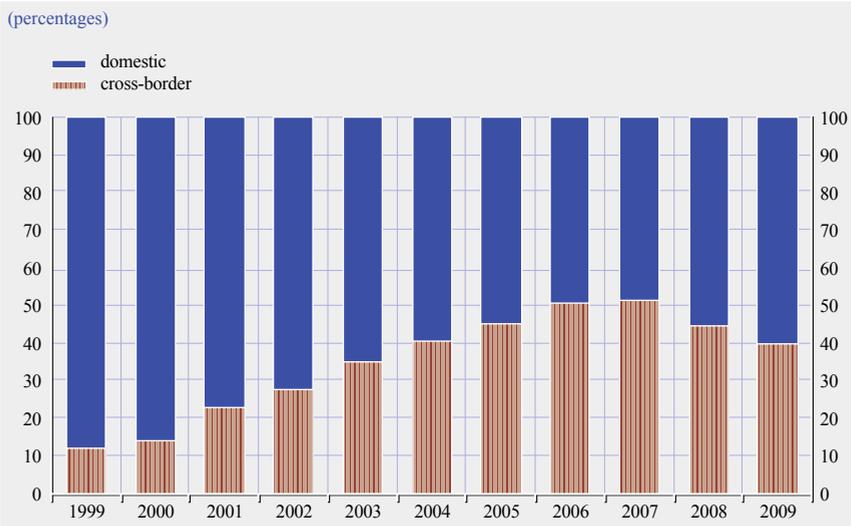
## 5.2 LINKS AND THE CROSS-BORDER SETTLEMENT OF COLLATERAL

The integration of bond and equity markets relies to a large extent on the degree of integration in the underlying infrastructure, particularly the integration of securities settlement systems and central counterparties. SSSs also play a crucial role in the Eurosystem's collateral framework, as they provide the infrastructure that counterparties need in order to transfer collateral to the Eurosystem. In this regard, it should be noted that the share of cross-border collateral held by the Eurosystem has increased significantly, rising from 28% in 2002 to 50.2% in 2006. That being said, it has since declined to stand at 39.4% in 2009 on account of the increased delivery of domestic collateral following the outbreak of the financial turmoil in mid-2007 (see Chart 33).

Euro area CSDs have established a network of 54 eligible bilateral links and 7 eligible relayed links for the purposes of transferring securities between them (including the delivery of eligible collateral in Eurosystem monetary policy and intraday credit operations). The total number of links may in fact be even higher, as CSDs may have established additional links for other instruments that are used for market purposes, but not for delivering collateral to the Eurosystem. However, although there are a large number of direct and relayed links, relatively few are used extensively.

In some cases, a market will not achieve on its own a level of coverage in terms of links that meets all needs as regards the cross-border transfer of securities. In Europe, for instance, not all CSDs are currently connected through links. In fact, the business case may not justify the level of investment needed in order to set up and operate a full automated network of links across systems. In other cases, links may be in place, but their use may be limited owing to inefficient

**Chart 33 Breakdown of collateral transferred by counterparties for Eurosystem credit operations in value terms**



Source: ECB.

procedures or markets' preferences for alternative channels. The use of such links in the delivery of collateral to the Eurosystem has remained modest owing to the highly complex and costly nature of the interaction between the various platforms. Those platforms are often not synchronised, entailing delays and posing a threat to the finality of settlement. As a result, the market has shown a clear preference for the Eurosystem's correspondent central banking model (CCBM) service. (For more information on the CCBM, see Chapter 11.)

## 6 CUSTODY

Custody services basically involve the holding and administering of securities on behalf of third parties. In holding securities on behalf of their customers, custodians provide additional services related to settlement and the servicing of assets. Custody services are offered by a variety of institutions (primarily brokers, commercial banks and investment firms), which have developed specialist services that cater for the needs of the various customer segments. Most custodians also provide banking services to their customers, while some may also provide securities lending services.

The ability of custodians to facilitate communication between issuers and holders of securities and between foreign banks/investors and the domestic CSD (as well as providing local expertise) has greatly contributed to the development of the cross-border trading of securities. The combination of the dominant role played by indirect holding systems and the low level of integration in post-trading infrastructure means that custody services play an important role in the euro area.

Global custodians – i.e. those that have extended their range of services to cover a large number of markets – use a network of sub-custodians, thereby providing institutional investors with a single gateway which allows them to settle their cross-border portfolios in a large number of countries. Although global custodians also offer the internal settlement of securities on their own books, they specialise in the custody function, holding a range of assets on behalf of their customers (including equities, government bonds, corporate bonds, other debt instruments, mutual fund investments, warrants and derivatives). Today, major custodians may access and serve up to 100 markets and are providing an increasingly sophisticated range of services.

Several important custodians are based in the euro area. However, there is a lack of comprehensive publicly available data on custody and related services provided either in the euro area or for euro-denominated instruments. Consequently, it is not currently possible to provide a reliable or comprehensive description of the extent or range of custody services being provided.<sup>20</sup>

<sup>20</sup>For information on custody services in the EU, see Annex 1 in Chan, D. et al., "The custody industry", *Occasional Paper Series*, No 68, ECB, Frankfurt am Main, August 2007.

## CHAPTER 10

# KEY LEGAL ACTS OF THE EUROPEAN UNION

### I TOWARDS GREATER HARMONISATION AND LEGAL CERTAINTY

The safety of any market infrastructure depends on the soundness of the legal framework on which it is built. The relevant areas of law are complex and sometimes obscure, and the approaches adopted by individual EU Member States have, in the past, sometimes been fundamentally different. Until recently, the risks associated with legal certainty were rarely acknowledged or accommodated in financial transactions. However, given the steady rise in the number of cross-border payment and securities transactions, the growing reliance on financial collateral arrangements and the increases seen in the degree of international competition, market participants and public authorities have become increasingly aware of the relevance of legal and operational barriers to the seamless conduct of financial transactions, both cross-border and domestically.

A single market for financial services has been under construction in the European Union since 1973. Initially, the EU focused on the provision of a secure prudential environment for the cross-border activities of financial institutions, whereas the financial markets themselves remained largely fragmented. However, following the introduction of the euro, the pace of development and integration has quickened. A direct result of the changeover to the euro in 1999 was the creation of a single money market in those Member States that adopted the single currency. This marked an important step on the road to a fully integrated single market for financial services in the EU. However, in order to develop and ensure the provision of efficient payment and securities services, fair competition and an appropriate level of protection for the users of such services, it is essential to remove not only technical, but also *legal* barriers. Only a modern and efficient legal framework is capable of guaranteeing the safety, soundness and efficiency of payments, securities transactions and financial collateral arrangements, ensuring that legal certainty exists for all parties involved in the process.

#### Box 24 Regulations and directives

The main legally binding instruments used by the Council and the European Parliament as the European Union's legislature are regulations and directives.

*Regulations* are directly applicable throughout the EU – i.e. without any further action or involvement on the part of national parliaments.

*Directives* must be implemented at the national level – i.e. transposed into national legislation and approved by the respective national parliaments.

These legislative instruments are used to harmonise existing rules at the EU level or to establish new legislation where national rules do not exist but are deemed necessary.

## 2 AREAS AND ISSUES COVERED BY EXISTING LEGISLATION

In the 1980s and 1990s the European Commission issued a number of (non-binding) recommendations: Commission Recommendation 88/590/EEC concerning payment systems, and in particular the relationship between cardholder and card issuer; Commission Recommendation 87/598/EEC on a European Code of Conduct relating to electronic payment; and Commission Recommendation 97/489/EC concerning transactions by electronic payment instruments and in particular the relationship between issuer and holder.

Since the mid-1990s a number of binding legal instruments have been adopted in the EU in the area of payments: Directive 97/5/EC on cross-border credit transfers (the “Cross-Border Credit Transfer Directive”; subsequently repealed by Directive 2007/64/EC on payment services in the internal market (the “Payment Services Directive”)); Regulation (EC) No 924/2009 on cross-border payments in the Community, which repealed Regulation (EC) No 2560/2001; and Regulation (EC) No 1781/2006 on information on the payer accompanying transfers of funds.

Over time, the legislature’s focus has broadened to cover various increasingly comprehensive aspects of market infrastructures, with the adoption of the following legal instruments: Directive 98/26/EC on settlement finality in payment and securities settlement systems (the “Settlement Finality Directive”), as amended by Directive 2009/44/EC; Directive 2009/110/EC on the taking up, pursuit and prudential supervision of the business of electronic money institutions (the “E-Money Directive”), which repealed Directive 2000/46/EC; Directive 2002/47/EC on financial collateral arrangements (the “Financial Collateral Directive”), as amended by Directive 2009/44/EC; and the Payment Services Directive.

From the point of view of the clearing and settlement of financial instruments, further relevant provisions can be found in Directive 2004/39/EC on markets in financial instruments (“MiFID”), which replaced Directive 93/22/EEC on investment services in the securities field (the “Investment Services Directive”). To some extent, specific provisions on solvency ratios in Directive 2006/48/EC relating to the taking up and pursuit of the business of credit institutions (the “Banking Directive”) and Directive 2006/49/EC on the capital adequacy of investment firms and credit institutions (the “Capital Adequacy Directive”) are also relevant. (Together, the Banking Directive and the Capital Adequacy Directive form the “Capital Requirements Directive”.) Finally, some of the provisions of Directive 2001/24/EC on the reorganisation and winding up of credit institutions and Regulation (EC) No 1346/2000 on insolvency proceedings (the “Insolvency Regulation”) have a bearing on collateral arrangements. The main legal acts are described in more detail in Section 3.

Important EU legislation is already in place, as can be seen from the list of legal acts above, with further comprehensive projects under way. The ECB takes a close interest in the relevant legal acts, particularly through its consultative role in the EU’s legislative process. The current provisions do not (yet) form a single all-encompassing framework covering the full range of activities and functions in the financial market infrastructure. Nor do they cover all of the various

types of institution that are involved in such activities – particularly given that many financial market participants have recently begun to expand their range of activities, moving into new sectors. However, the European Commission is in the process of considering further legislative action in some additional areas (see Section 4).

### **3 LEGAL ACTS CONCERNING PAYMENTS, CLEARING AND SETTLEMENT**

#### **3.1 E-MONEY DIRECTIVE**

The original E-Money Directive (i.e. Directive 2000/46/EC) sought to regulate market access for a new type of payment service provider. Under its provisions, issuers of electronic money – i.e. claims against an issuer which are stored on an electronic device capable of being used as a means of payment vis-à-vis third parties – were partially equated with credit institutions. In particular, issuers of electronic money were made subject to authorisation and supervisory requirements with the aim of creating both a level playing field for the issuance of e-money and a “single passport” for the provision of such services. The Directive thereby sought to promote the provision of e-money.

However, the practical effects of that legislation fell a long way short of expectations. Consequently, the European Commission issued a proposal for a review of the Directive, which was adopted in September 2009 as Directive 2009/110/EC on the taking up, pursuit and prudential supervision of the business of electronic money institutions.

The revised E-Money Directive provides for a lighter supervisory regime for e-money institutions, reducing the initial capital requirement from €1 million to €350,000 and introducing new rules on the calculation of e-money institutions’ own funds. The legislator hopes that, in combination with the abolition of the principle of exclusivity, these new rules will make it easier for electronic money institutions (ELMIs) active in other sectors (such as the telecommunications industry) to develop innovative services in the payment market. Thus, the range of activities that e-money institutions are allowed to perform has been broadened, and at the same time the supervisory framework has been relaxed. In addition, e-money institutions are no longer regarded as credit institutions.

#### **3.2 REGULATION ON CROSS-BORDER PAYMENTS IN THE COMMUNITY**

On 1 November 2009 Regulation (EC) No 924/2009 on cross-border payments in the Community entered into force, repealing Regulation (EC) No 2560/2001 on cross-border payments in euro. The Regulation provides that charges applied to cross-border payments in euro up to an amount of €50,000 must be the same as those levied by the payment service provider in question for corresponding national payments of the same value and in the same currency.

The Regulation on cross-border payments in the Community extends the principle of equal charges for national and cross-border payments to cover direct debits (i.e. in addition to credit transfers, electronic payments (including card

transactions) and cash withdrawals at ATMs, which were already covered by the Regulation on cross-border payments in euro). It strengthens the role of the competent national authorities in the areas of supervision and the resolution of complaints and provides for the establishment of out-of-court redress procedures. For transfers of up to €50,000, it also removes the payment-based statistical reporting obligations that used to hinder the smooth flow of cross-border transactions.

In order to facilitate the use of the SEPA direct debit scheme, the Regulation introduces temporary rules on multilateral interchange fees (MIFs) and reachability for direct debit transactions. These temporary rules will give the payment industry enough time to come forward with a long-term business model for direct debits which fully respects the rules on competition. In addition, a payment service provider must, where applicable, inform its customers of their IBAN and the institution's BIC code. If a payment user initiating a transaction fails to inform its payment service provider of the beneficiary's BIC code or IBAN, the bank is entitled to charge additional fees.

Finally, Member States which have not adopted the euro have the option to apply the Regulation to their own currency, provided that the European Commission is informed accordingly.<sup>21</sup>

The adoption of the Regulation on cross-border payments in euro contributed to a noticeable reduction in the charges for cross-border payments in euro. It can therefore be regarded as an important step on the road to a single payments area for cashless payments within the Internal Market. On its own, however, it was incapable of facilitating the establishment of a single price for cross-border payments, since it aimed merely to harmonise at the national level the prices applicable to national and cross-border payments. The Regulation on cross-border payments in the Community provides for further harmonisation in the field of payments, especially as regards direct debit transactions.

### **3.3 REGULATION ON INFORMATION ON THE PAYER ACCOMPANYING TRANSFERS OF FUNDS**

Regulation (EC) No 1781/2006 on information on the payer accompanying transfers of funds provides that payment service providers must, at every stage of the payment process, forward complete information concerning the payer. That information includes the name, address and account number of the payer. This information should be verified by the payer's payment service provider prior to the transfer of funds. Where the payment service providers of both the payer and the payee are located within the European Union, payments could simply be accompanied by the account number of the payer or a unique identifier, which would allow the transaction to be traced back to the payer.

The aim of this measure is to prevent, investigate and detect money laundering and the financing of terrorism. The Regulation transposes Special Recommendation

<sup>21</sup>In 2002 the Swedish authorities informed the Commission of their decision to extend the application of the Regulation to cover the Swedish krona.

VII of the Financial Action Task Force<sup>22</sup> into EU law, as well as forming part of the EU's action plan for the combating of terrorism.

### 3.4 PAYMENT SERVICES DIRECTIVE

In December 2005 the European Commission presented a proposal for a directive on payment services in the Internal Market. In April 2007 the ECB and the European Commission issued a joint communiqué declaring the adoption of the Payment Services Directive by the European Parliament to be a decisive step on the road to the realisation of SEPA. The Payment Services Directive was finally adopted by the European Parliament and the Council in November 2007, and Member States had until 1 November 2009 to transpose the Directive into national law.

The Directive aims to create a harmonised legal framework for payments (seeking in particular to establish a legal basis for SEPA), thereby ensuring that cross-border payments within the European Union (particularly credit transfers, direct debits and card payments) can be carried out just as easily, efficiently and securely as domestic payments within the various Member States. It also establishes the concept of “payment institutions” – licensed payment service providers which are able to provide payment services across the European Union under a lighter supervisory regime than banks. By opening up the market in this way, the European legislator is seeking to allow new service providers to compete with existing participants on a level playing field, thereby facilitating greater competition.

The Directive introduces transparent conditions and a series of harmonised information requirements, and all payment service providers are subject to these requirements, irrespective of whether they offer SEPA payment products or those already in existence at the national level. These rules aim to increase transparency for customers and ensure the complete harmonisation of national rules, which currently differ considerably from Member State to Member State.

Moreover, the Directive aims to establish clarity and certainty with regard to the principal rights and obligations of users and providers of payment services. It seeks, in that regard, to bring about greater efficiency (e.g. by ensuring that payments initiated by the payer are completed a maximum of one day after the payment order is given<sup>23</sup>), increased levels of consumer protection and greater legal certainty (e.g. by means of rules on liability and provisions on the revocability of payments). These measures aim to extend the rights and protection enjoyed by users of payment services (consumers, retailers, large and small undertakings, public institutions, etc.).

<sup>22</sup>The Financial Action Task Force is an intergovernmental body which aims to develop and promote national and international policies to combat money laundering and the financing of terrorism.

<sup>23</sup>Until 1 January 2012, a payer and its payment service provider can agree on a period of no more than three business days. These periods may be extended by a further business day for payment transactions initiated in paper form.

### 3.5 SETTLEMENT FINALITY DIRECTIVE

The Settlement Finality Directive was the European Union's response to the need to minimise systemic risk and ensure the stability of payment and securities settlement systems – especially in the light of the establishment of Monetary Union on 1 January 1999 and, correspondingly, the start of the operations of the euro area-wide TARGET payment system. In response to developments in this field, Directive 2009/44/EC of May 2009 updated the Settlement Finality Directive and the Financial Collateral Directive.

The Settlement Finality Directive applies to all of the payment, clearing and settlement systems in the European Union that are designated as being covered by the Directive, all participants in such systems, and all of the collateral provided in connection with participation in such systems or provided to the central banks of the Member States or the ECB. With a view to avoiding the risks associated with participation in such systems (in particular counterparty, legal and systemic risk), the Settlement Finality Directive stipulates that transfer orders and netting must be legally enforceable and binding on third parties. This applies even in the event of insolvency proceedings being opened against a system participant, provided that the transfer orders were entered into the system prior to the opening of such insolvency proceedings. The Settlement Finality Directive prevents insolvency proceedings from having retroactive effects on the rights and obligations arising from, or in connection with, a participant's participation in a system prior to the opening of insolvency proceedings (e.g. by means of “zero-hour rules”).

Furthermore, it ensures that neither (i) the rights of a participant or system operator in relation to collateral provided in connection with a system or interoperable system, nor (ii) the rights of a central bank in relation to collateral security provided to it are affected by insolvency proceedings opened against a participant, a system operator, a counterparty to a central bank or a third party providing collateral security. For the purposes of the Settlement Finality Directive, the term “collateral security” is defined broadly and considered to cover all realisable assets, including credit claims.

In 2009 the Directive was updated in order to address the legal complexities resulting from ongoing consolidation, cross-border participation and interoperability, as well as the new settlement procedures that had emerged. Among other things, the revised Directive provides for interoperable systems (particularly by reconciling rules on irrevocability and the moment that a transfer order is considered to enter a system in order to support cross-system settlement), provides a definition of “business day” which covers night-time settlement, and harmonises the types of institution which may be direct and indirect participants in payment and securities settlement systems. It also clarifies two issues: (i) the Directive's applicability to clearing systems and central counterparties; and (ii) the protection of collateral provided by third parties on behalf of a participant.

Finally, the Settlement Finality Directive contains rules governing conflicts of law where collateral security which is legally recorded in a register, account or central securities depository located in a Member State is provided to the central bank of an EU Member State, the ECB, a system operator or a system participant.

Under the Directive, the rights of a holder of such collateral security are governed by the law of the Member State in which the relevant register, account or central securities depository is located.

The main achievements of the Settlement Finality Directive are as follows: (i) it eliminates most of the legal risk to which payment and securities settlement systems are exposed; (ii) it ensures that the smooth functioning of a system cannot be compromised by the application of a foreign insolvency law in the event of a foreign participant or interoperable system defaulting; and (iii) it enhances the legal certainty of collateral security (also benefiting the extension of credit by central banks). All in all, it allows systems designated as being covered by the Directive to operate within a safe legal environment in all Member States, thereby also contributing to the establishment of a well-founded, clear and transparent legal basis as required by the CPSS Core Principles for Systemically Important Payment Systems and the CPSS-IOSCO and ESCB-CESR recommendations for SSSs and CCPs.

### **3.6 FINANCIAL COLLATERAL DIRECTIVE**

The Financial Collateral Directive has harmonised the legal rules governing the provision of financial collateral in the European Union. The objectives of the Financial Collateral Directive are: (i) to ensure that financial collateral arrangements can be implemented in accordance with their terms and conditions even in the event of the commencement of winding-up proceedings or reorganisation measures in respect of a provider or taker of collateral; (ii) to remove major obstacles to the cross-border use of collateral; (iii) to limit administrative burdens, formalities and cumbersome procedures; and (iv) to create a clear and simple legal framework for financial collateral which spans the European Union.

Following its revision in 2009, the Financial Collateral Directive now also covers credit claims, in addition to financial instruments and cash. Financial collateral arrangements may involve either the transfer of ownership or the holding of such assets as security (i.e. in the form of a pledge, charge, lien, etc.). It covers collateral providers and collateral takers belonging to one of the categories of institution specified in the Directive, which include public authorities, central banks (i.e. including the ECB), certain international financial institutions, supervised financial institutions, central counterparties, settlement agents and clearing houses. Member States may extend its scope to cover corporations or even private individuals.

The Directive abolishes formalities as regards the creation and perfection of financial collateral arrangements and the enforcement of financial collateral arrangements (including arrangements concerning credit claims), abolishing any prior notice, court authorisations, public auctions and waiting periods. It also simplifies the procedures for the creation and perfection of collateral arrangements based on credit claims, and establishes the right to use pledged securities, if so agreed. Furthermore, the provision of top-up collateral, substitution and close-out netting are all expressly recognised. Finally, it contains a conflict of law rule on book-entry securities held as collateral in an account with an intermediary.

Under the Directive, the legal nature and proprietary effects of such collateral, the requirements for the perfection of arrangements relating to such collateral, priorities relating to conflicting interests in such collateral and the realisation of such collateral are governed by the law of the country in which the relevant account is maintained.

The Directive has greatly facilitated the cross-border use of collateral throughout the European Union, as was confirmed by the European Commission report of December 2006 evaluating the Directive.

### **3.7 MIFID**

In April 2004 the Council of Ministers adopted Directive 2004/39/EC on markets in financial instruments, which replaced the Investment Services Directive. MiFID requires Member States to further harmonise the rules governing investment services and the pursuit of investment activities.

MiFID aims not only to give investment firms an effective “single passport” allowing them to operate across the European Union, but also to provide investors with a high level of protection. MiFID establishes, for the first time, a comprehensive regulatory framework governing the organised execution of investors’ transactions by exchanges, other trading systems and investment firms. MiFID ensures that investment firms execute a client’s orders on the terms that are most favourable to the client. This obligation applies to firms with contractual or agency obligations vis-à-vis clients.

In respect of the clearing and settlement of securities, two aspects of the Directive are of particular interest. First, with regard to the safeguarding of a client’s assets, MiFID states that an investment firm must, when holding financial instruments belonging to a client, make adequate arrangements so as to safeguard the client’s ownership rights. This segregation principle is further specified in an implementing directive. Second, MiFID ensures: (i) that access to local regulated markets is granted to central counterparties, clearing houses and settlement systems from other Member States; (ii) that investment firms from other Member States are granted access to local central counterparties and clearing and settlement systems; and (iii) that local investment firms are granted access to central counterparties, clearing houses and settlement systems in other Member States. Investment firms which wish to participate directly in other Member States’ settlement systems must comply with the relevant operational and commercial requirements governing membership, as well as the prudential measures necessary for the smooth and orderly functioning of the relevant financial markets.

The Directive is currently under review.

### **3.8 DIRECTIVE ON THE REORGANISATION AND WINDING UP OF CREDIT INSTITUTIONS**

Directive 2001/24/EC on the reorganisation and winding up of credit institutions introduces the principle of “home Member State control” for insolvencies of

credit institutions with branches in other Member States. This ensures that there is a clear procedure for dividing up all assets in order to repay all creditors in the event of the insolvency or reorganisation of credit institutions established in the European Union.

If a credit institution with branches in other Member States fails, the winding-up process is the subject of a single bankruptcy procedure initiated in the Member State where the credit institution has its registered office (the “home Member State”). That process is governed by a single bankruptcy law, that of the home Member State. This approach is consistent with the principle of “home country control” for credit institutions as laid down in the Banking Directive.

Only the competent authorities of the home Member State are empowered to take decisions regarding winding-up proceedings (the “principle of unity”). These proceedings and their legal effects are recognised by all Member States. As a general rule, all of the assets and liabilities of the credit institution should be taken into consideration in such proceedings (the “principle of universality”).

The supervisory authorities of both the home Member State and the other Member States must be informed as a matter of urgency when winding-up proceedings are opened (the “principle of coordination”). Furthermore, Directive 2001/24/EC requires the authorities of the host Member State(s) to inform those of the home Member State as regards the need for reorganisation measures for branches in their countries. The opening of winding-up proceedings entails the withdrawal of the credit institution’s authorisation to conduct business.

The Directive also contains provisions concerning conflicts of law relating to collateral arrangements, set-offs, repurchase transactions and netting agreements in an insolvency situation. It provides for the recognition of set-offs in the event of credit institutions becoming insolvent. As regards the enforcement of proprietary rights for collateral security recorded in a register, account or central securities depository, it confirms that the national legislation to be applied is that of the Member State where the relevant register, account or central securities depository is held or located. Furthermore, it stipulates that netting agreements and repurchase agreements are governed solely by the national law indicated in the contract governing the relevant agreement.

The Directive covers individual credit institutions with branches in the European Union and does not deal with cross-border banking groups, collective investment undertakings or investment firms. Consequently, in a public consultation launched in June 2007 and a subsequent report published in November 2008, the European Commission reflected on whether the Directive fulfils its objectives, whether it could be extended to cover cross-border banking groups, and how obstacles related to the transferability of assets within such groups could be addressed.

#### **4 LEGISLATIVE INITIATIVES**

In October 2009 the European Commission issued a communication outlining the future policy action that it envisaged with regard to OTC derivatives markets,

which also has broader implications for the legal framework governing clearing and settlement in the European Union.<sup>24</sup> The European Commission is considering putting forward a comprehensive legislative proposal, possibly in the form of a Regulation on European market infrastructure (EMIR), establishing, among other things, common safety, regulatory and operational standards for CCPs and trade repositories (covering issues such as authorisation, access and governance). As regards OTC derivatives, this legislative proposal is likely to: contain provisions on the regulation, supervision and oversight of CCPs and trade repositories; increase transparency by requiring that market participants record positions and all transactions in trade repositories; and make CCP clearing obligatory for standardised derivatives contracts. MiFID could be amended, *inter alia*, to ensure that standardised derivatives are traded on exchanges and in other organised trading venues. Moreover, the Capital Requirements Directive could be amended so as to: require that financial institutions provide initial and variation margin; clearly differentiate between bilaterally cleared and CCP-cleared transactions in terms of capital charges; and reduce operational risk by promoting the standardisation of both the legal terms of contracts and the processing of contracts. The legislative proposal is expected in the course of 2010.

The European Commission is also considering putting forward a proposal for a regulation on CSDs, complementing EMIR.

Furthermore, in late spring 2009, with a view to removing legal barriers to integrated clearing and settlement services and building on its Legal Certainty Group's final advice of July 2008, the Commission conducted a public consultation on "Legislation on legal certainty of securities holding and dispositions" – i.e. the need to reform and harmonise rights relating to intermediated holdings and transfers of securities. Such legislation would aim to harmonise the legal effects of book-entry securities across the European Union, covering aspects of both substantive law and conflicts of law (including issues such as: the rights of account holders and investors *vis-à-vis* account providers in respect of intermediated securities and book-entry transfers; the recognition of the status of indirect holdings; priority rules; insolvency protection; and corporate actions and voting rights). The Commission has been working on a draft directive on securities law and has announced its intention to issue a legislative proposal in 2010, in parallel with the planned market infrastructure legislation. The ECB considers that an EU-wide framework is necessary for the rights and obligations of providers and holders of accounts for book-entry securities in order to remove legal barriers to integration.

<sup>24</sup> European Commission communication of 20 October 2009 on "Ensuring efficient, safe and sound derivatives markets" (COM(2009) 332 final), staff working paper SEC(2009) 905 final, and consultation document SEC(2009) 914 final.

## **PART 3**

### **THE ROLE OF THE EUROSISTEM**



## CHAPTER 11

# THE EUROSISTEM'S OPERATIONAL ROLE

### 1 INTRODUCTION

As the issuer of the euro and the “bank of banks”, the Eurosystem performs its statutory tasks by providing banking services – including payment and settlement services – to the banks of the euro area. Before the launch of the euro, each country in the euro area had its own currency, central bank, monetary policy, national money markets, and payment and settlement infrastructure. Although those national markets and infrastructures had served those countries well for many decades, from the perspective of the new single currency and the Eurosystem, they were not sufficient to support the area-wide activities necessary for the conduct of the ECB’s monetary policy and the establishment of the euro money market. Thus, the Eurosystem decided to set up new facilities for the settlement of euro payments in central bank money and the cross-border delivery of collateral in Eurosystem monetary policy operations and intraday credit operations. Those new facilities were the Trans-European Automated Real-time Gross settlement Express Transfer system and the correspondent central banking model.

When banks make large-value payments to one another, they prefer to settle those transactions in the books of a central bank in order to avoid exposure to interbank credit risk. In a central bank-operated RTGS system, payments are settled in central bank money with immediate intraday finality, and those funds are immediately available for reuse. With the introduction of TARGET, this service was made available for the euro. TARGET went live in January 1999, forming an integral part of the introduction of the euro and facilitating the rapid integration of the euro area money market.

TARGET has become a benchmark for the processing of euro payments in terms of speed, reliability, opening times and service levels. Payments directly related to operations involving the Eurosystem are settled through TARGET. Thus, the settlement of a monetary policy operation affects the accounts of those counterparties taking part in the operation concerned. Not all credit institutions take part in such operations, and so the liquidity effect of those operations is subsequently redistributed within the banking system through the money market. Money market transactions result in payments that, again, are largely settled through TARGET. The access criteria for the system ensure that all credit institutions have direct access to the same set of settlement facilities in central bank money – i.e. without having to rely on commercial competitors. As a result, counterparties throughout the euro area can transfer central bank funds directly between each other with immediate intraday finality. This service is also available in some EU Member States outside the euro area, as their national central banks are connected to TARGET on a voluntary basis. The first-generation TARGET system was replaced in May 2008 by the second-generation TARGET2 (see Section 2).

Another important Eurosystem service contributing to the integration of the money market is the CCBM, which allows the cross-border transfer of collateral within the euro area in Eurosystem credit operations. The Statute of the ESCB provides that all Eurosystem credit operations must be based on adequate collateral. Moreover, the Eurosystem's operational framework stipulates that all assets eligible for Eurosystem credit operations can be used as collateral by all Eurosystem counterparties, regardless of the location of the asset or counterparty in question. When the euro was introduced, the infrastructures of the European securities markets were highly segmented. In particular, the network of links connecting securities settlement systems was incomplete.

In the absence of adequate market arrangements for the cross-border mobilisation of collateral, the Eurosystem introduced the CCBM in 1999 as an interim solution, expecting that market solutions would develop over time. In the meantime, this service has become the main channel for the use of collateral on a cross-border basis in Eurosystem credit operations. The CCBM service has made an invaluable contribution to the functioning of the Eurosystem's collateral framework and has greatly supported the cross-border use of collateral. Indeed, Eurosystem counterparties have diversified their collateral portfolios by increasing their collateral investment in assets originating from other euro area countries. With a view to further enhancing its collateral management, allowing counterparties to reduce the complexity and cost of back office operations and optimising liquidity management, the Eurosystem is developing a second-generation CCBM2 system, based on a single technical platform, in order to provide a uniform service for both domestic and cross-border collateral operations (see Section 3).

The integration of securities markets relies on the integration of the underlying infrastructure. Progress in the integration of securities infrastructures has not kept pace with that of large-value payment infrastructures. This has given rise to substantial post-trading costs for EU cross-border securities transactions, reduced the potential for economies of scale, hampered competition and prevented the establishment of a level playing field in this area. Although a number of important complementary public and private sector initiatives have been proposed with a view to improving this situation (see Chapter 8), one element missing from such initiatives has been the establishment of a common, neutral settlement platform that would foster effective interoperability and competition between service providers.

Seeking to promote financial integration through the provision of central bank services and drawing on its experience in setting up market infrastructure, in mid-2006 the Eurosystem put forward its TARGET2-Securities initiative in order to close this gap. The Eurosystem proposed that securities platforms outsource their securities accounts to a neutral single platform operated by the Eurosystem with a view to fully integrating all settlement activities and thereby making cross-border settlement as cheap and efficient as domestic settlement. In July 2008 the Eurosystem formally decided to go ahead with the development of T2S, aiming to commence operations in the new system in 2014 (see Section 4).

Together, the new TARGET2 system and the CCBM2 and T2S services will represent a great leap forward in terms of the quality of euro area core infrastructure services and financial integration. In addition to the individual

advantages of these services, the combination of the three is expected to provide significant benefits. For the first time, there will be integrated, safe and efficient core market infrastructure providing harmonised services for large-value payment, securities and collateral transactions. Each type of service will be offered by a single application, allowing economies of scale to be exploited and avoiding the need to maintain multiple liquidity, securities and central bank collateral pools.

In developing its services, the Eurosystem seeks to ensure that all relevant stakeholders are involved and well-informed and have the opportunity to express their needs. To this end, it works closely with market participants, the users of its services and other stakeholders. Policies and projects are, as a rule, submitted for public consultation before final decisions are taken. This way of working is greatly appreciated by market participants.

## **2 TARGET2**

### **2.1 THE BACKBONE FOR THE SETTLEMENT OF PAYMENTS IN EURO**

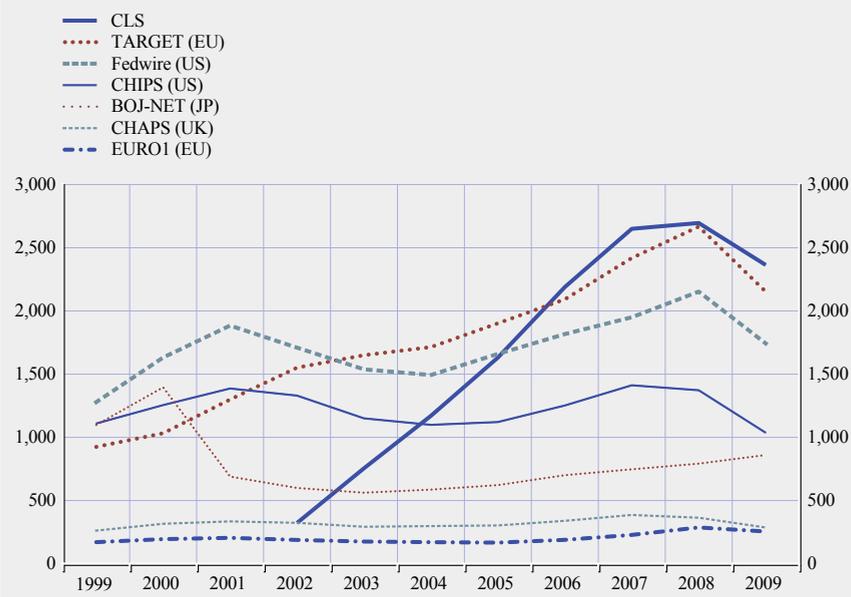
As the issuer of the currency, the Eurosystem owns and operates TARGET2, the RTGS system for the euro. The system can be used for all credit transfers in euro and there is no upper or lower limit on the value of such payments. It processes both interbank and customer payments. Only payments related to Eurosystem operations and the settlement of positions in large-value net settlement systems operating in euro are required to be processed through TARGET2. For all other payments, market participants are free to use alternative systems or arrangements. However, in order to accommodate the desire to ensure maximum safety in the processing of very large payments, the Eurosystem has clearly signalled to the market that it expects payments with very large values, particularly those stemming from the money market, to be processed through its RTGS service.

TARGET2 forms the backbone of the arrangements in place for the settlement of interbank obligations arising from financial and economic activities in euro. It settles individual large-value and urgent payments, as well as positions in a wide variety of ancillary systems (such as retail payment and securities settlement systems), in addition to being used by banks for the management of their core liquidity. In terms of the value of the payments processed, TARGET2 is one of the largest payment systems in the world, alongside the CLS system and Fedwire in the United States.

TARGET2 is an important tool for the Eurosystem, facilitating the implementation of its monetary policy and supporting the functioning of the euro area's money and capital markets. Monetary policy operations are settled in TARGET2, and the system allows its participants to quickly and safely exchange payments throughout the euro area in money market and other operations. Since payments are settled in central bank money with immediate finality, recipients are not exposed to credit risk and funds received can be reused immediately. Liquidity risks are contained by clear procedures, easy access to liquidity and comprehensive liquidity management features. Robust arrangements have been

## Chart 34 Turnover in selected large-value payment systems

(average daily values; EUR billions)



Sources: Bank of Japan, CHIPS, CLS Services Ltd, EBA CLEARING, ECB and Federal Reserve Board.

implemented (and are regularly tested) in order to ensure business continuity and the resilience of the system. This guarantees the continued availability of the settlement service even in abnormal circumstances, thereby ensuring that the Eurosystem is able to influence the amount of liquidity available in the banking system at all times. This, combined with the avoidance of credit risk, supports the maintenance of financial stability. Moreover, financial integration is facilitated by the availability of a uniform RTGS service throughout the euro area.

The fact that the Eurosystem owns and operates TARGET2, and makes it subject to oversight, ensures that the system complies with the Core Principles for Systemically Important Payment Systems (see Chapter 12) and, consequently, that legal, credit, liquidity and operational risks are properly addressed. European Union legislation provides a sound legal basis for its operations, with the Settlement Finality Directive (see Chapter 9) acting as an important cornerstone and the ECB Guideline on TARGET laying down rules governing the operation of the system.

## 2.2 HISTORICAL BACKGROUND

In preparing for the introduction of the single currency, it was concluded that the implementation of the single monetary policy and the integrated functioning of the area-wide money market would require that funds could be moved between central bank accounts area-wide. At the time, the majority of Member States already had their own RTGS systems, but only for the settlement of domestic transactions. As a result, there was an urgent need to develop a payment service

supporting the safe and efficient movement of funds between central bank accounts on an area-wide basis. This led to the establishment of TARGET, the RTGS service for the euro.

TARGET was developed in order to meet three main policy objectives: first and foremost, to facilitate the integration of the euro money market in order to allow the smooth implementation of the single monetary policy; second, to provide a safe and reliable mechanism for the settlement of payments on an RTGS basis in central bank money; and third, to improve the efficiency of payments in euro.

Once the decision to build a new payment mechanism had been taken, the means and time available were not sufficient for a fully fledged area-wide RTGS system to be set up from scratch. Moreover, it had been agreed that banks would continue to hold their central bank accounts with their respective national central banks. Thus, TARGET initially had a decentralised structure – a “system of systems” – consisting of national RTGS systems (one per Member State), the ECB Payment Mechanism (the ECB’s RTGS system) and the Interlinking system, which together formed a technical framework for the processing of cross-border payments. National RTGS systems were subject only to limited harmonisation with a view to ensuring the implementation of the ECB’s monetary policy and the existence of a level playing field. That harmonisation concerned access criteria, operating times and days, the provision of intraday credit, cross-border pricing, security and minimum requirements in terms of performance.

The system clearly met its policy and business objectives. A high percentage of large-value payments – and thus large amounts of payments in both volume and value terms – were settled in TARGET, contributing to the containment of systemic risk. Moreover, the euro area-wide availability of its services supported the single money market and increased the efficiency of cross-border payments. However, despite its achievements, its decentralised structure meant that it had difficulty adapting in a cost-effective manner to the new needs of the market and the enlargement of the euro area. Consequently, in order to address these issues, the Governing Council of the ECB decided in October 2002 to develop a second-generation system. A new Single Shared Platform would replace the old decentralised system. Three Eurosystem central banks – the Banca d’Italia, the Banque de France and the Deutsche Bundesbank – were mandated to develop and operate the SSP on behalf of the Eurosystem. Migration to the new system was arranged in “country groups”, allowing users to migrate in various waves on predefined dates. Each wave consisted of a group of national central banks and their respective user communities. TARGET2 was launched in November 2007 and fully replaced the previous system in May 2008, when the latter ceased operating.

Despite its technical centralisation, TARGET2 remains a decentralised system in legal terms, with each central bank retaining full responsibility for its contractual and business relationships with its own participants. In order to guarantee a level playing field, and in line with the principle of full functional harmonisation, the rules of the various legal components of the system have been harmonised to the greatest possible extent.

A unique feature of TARGET2 is the fact that its payment services in euro are available across a geographical area which is larger than the euro area. There are historical reasons for this. Because it was necessary for all countries adopting the euro to participate in the system, and given the limited time available for the establishment of that system, the then 15 NCBs all had to begin investing in TARGET before knowing whether they would be part of the euro area. For this reason, the Council of the European Monetary Institute (EMI) agreed in 1995 that all EU NCBs would prepare themselves for connection to TARGET in 1999. It was indicated, however, that for those countries which would not adopt the euro from the outset, the connection to TARGET would be subject to conditions to be decided by the Governing Council of the ECB.

Those conditions were set out by the Governing Council of the ECB in July 1998. Non-euro area NCBs were allowed to offer limited amounts of intraday liquidity to their credit institutions in euro on the basis of a deposit in euro held with the Eurosystem. Safeguards were established in order to ensure that non-euro area credit institutions would always be in a position to repay that intraday credit in time, thereby avoiding any need for overnight central bank credit in euro. This was – and remains – a very special arrangement, as it was the first time a central bank had allowed the central banks of other currency areas to provide settlement facilities in its own currency. A “policy statement” issued by the ECB in November 1998 made it clear that central bank money in euro could be provided only by the central banks of the Eurosystem and indicated that the option made available to EU central banks outside the euro area was a specific exception.

Those decisions, which aimed to facilitate the transition to the euro, were initially relevant for four EU Member States: Denmark, Greece (which joined the euro area in 2001), Sweden and the United Kingdom. This option to connect to the system on a “no compulsion, no prohibition” basis was then extended to the 12 countries that subsequently joined the EU. Although they were connected to the first-generation system, Sweden and the United Kingdom decided not to join the second-generation system. At the time of writing, the TARGET2 service is available to the 16 euro area countries and the ECB, as well as to Bulgaria, Denmark, Estonia, Latvia, Lithuania and Poland.

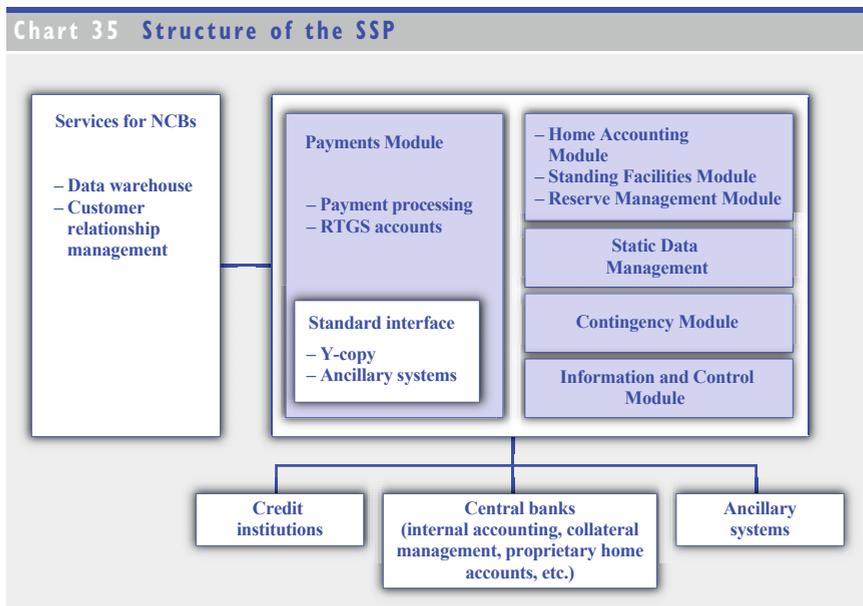
### **2.3 TARGET2 PROPERTIES**

TARGET2 was developed in close cooperation with its future users. One of those users’ main requests was that the new system offer a more harmonised state of the art payment service. This key requirement resulted in the development of a single technical infrastructure. The fact that TARGET2 is a single-platform system allows it to provide an enhanced, harmonised service. And the fact that it benefits from economies of scale allows it to charge much lower fees and offer better cost-efficiency than the first-generation system. All participants – irrespective of where they are located – are offered the same high-quality services, functionalities and interfaces, as well as a single price structure. Some of the advanced liquidity-saving features offered by the system resemble those of a hybrid system.

A modular approach was adopted for the development of the SSP (see Chart 35). Every module in the SSP is closely related to a specific service (e.g. the Payments Module, which is used for the processing of payments). Some of those modules (i.e. the Home Accounting Module, the Standing Facilities Module and the Reserve Management Module) can be used by the individual central banks on an optional basis. Central banks which do not use these modules offer the relevant services via proprietary applications in their own internal technical environments. SWIFT standards and services (i.e. FIN, InterAct, FileAct and Browse) are used to harmonise communication between the system and its participants.

Before the introduction of TARGET2, some central banks held “home accounts” (also called “proprietary home accounting systems”) outside their RTGS systems, primarily in order to manage minimum reserves, standing facilities and cash withdrawals, but also in order to settle ancillary systems’ transactions. It was agreed that, in the context of the new system, these types of transaction should ultimately be settled on the RTGS accounts held on the SSP. However, some countries’ domestic arrangements did not allow these operations to be moved rapidly to the SSP. As a result, the Eurosystem agreed on a maximum transition period of four years for moving the settlement of these payments to the SSP.

TARGET2 provides settlement services for a wide range of ancillary systems – including retail payment systems, large-value payment systems, foreign exchange systems, money market systems, clearing houses and securities settlement systems. While each of these used to have its own settlement procedure, TARGET2 now offers six generic procedures for the settlement of ancillary systems and allows these systems to access any account on the SSP via a standardised interface.



Source: ECB.

**Table 26 Operational day for TARGET2**

	<b>Time</b>	<b>Description</b>
<b>Daytime</b>	6.45 a.m. – 7 a.m. CET	Business window to prepare daylight operations
	7 a.m. – 6 p.m. CET	Daytime trading phase
	5 p.m. CET	Cut-off for customer payments
	6 p.m. CET	Cut-off for bank-to-bank payments
<b>End of day</b>	6 p.m. CET + 15 min.	General cut-off for the use of standing facilities
	6 p.m. CET + 30 min.	Cut-off for the use of standing facilities on the last day of the minimum reserve period
	Shortly after 6.30 p.m. CET <sup>1)</sup>	Data to update the accounting system will be available for central banks
<b>Start of day and night-time window for ancillary systems</b>	6.45 p.m. – 7 p.m. CET <sup>1)</sup>	Start-of-day processing
	7 p.m. – 7.30 p.m. CET <sup>1)</sup>	Provisioning of liquidity until ancillary systems' start-of-cycle message
	7.30 p.m. <sup>1)</sup> – 10 p.m. CET	Start-of-procedure message to set aside liquidity and ancillary systems' night-time processing ( <i>Ancillary System Settlement Procedure 6</i> )
	10 p.m. – 1 a.m. CET	Three-hour technical maintenance period; the system is shut down
	1 a.m. – 6.45 a.m. CET	Night-time processing ( <i>Ancillary System Settlement Procedure 6</i> )

1) 15 minutes later on the last day of the minimum reserve period.

The Information and Control Module (ICM) allows direct users to access information and manage parameters linked to balances and payments online. Via the ICM, users have access to the Payments Module and the Static Data Management function. Users of the ICM are able to choose what information they receive and when. Urgent messages (e.g. system broadcasts from central banks and warnings concerning payments with a debit time indicator) are automatically displayed on the screen.

In order to meet the needs of the financial market in general and its customers in particular, the system has long daily operating hours, opening at 7 a.m. CET and closing at 6 p.m. CET. To allow participants to better manage their end-of-day liquidity, customer payments are subject to a cut-off time of 5 p.m. CET. Furthermore, TARGET2 starts the new business day on the evening of

the previous day, a “night-time window” being available from 7.30 p.m. to 6.45 a.m. CET, with a three-hour technical maintenance period between 10 p.m. and 1 a.m. CET. The night-time window facilitates the night-time settlement of various ancillary systems in central bank money with finality (particularly securities settlement). TARGET2 is open every day, with the exception of: Saturdays; Sundays; New Year’s Day; Protestant and Catholic Good Friday and Easter Monday; 1 May; Christmas Day; and 26 December.

## 2.4 LIQUIDITY AND ITS MANAGEMENT

The availability and cost of liquidity are two crucial issues for the smooth processing of payments in RTGS systems. In TARGET2, liquidity can be managed very flexibly and is available at low cost, since fully remunerated minimum reserves – which credit institutions are required to hold with their central bank – can be used in full for settlement purposes during the day. Moreover, the averaging provisions applied to minimum reserves allow banks to be flexible in their end-of-day liquidity management. The overnight lending and deposit facilities also allow for “last-minute” reactions to unexpected liquidity situations. In addition, the Eurosystem provides intraday credit interest-free. However, all Eurosystem credit must be fully collateralised. The range of eligible collateral is very wide. Assets eligible for monetary policy purposes are also eligible for intraday credit. Collateral substitution provides further flexibility in collateral management. Under Eurosystem rules, credit can only be granted by the national central bank of the Member State where the relevant participant is established (i.e. there is no remote access to credit, irrespective of whether the remote participant is based in the euro area).

Banks’ treasury managers have a keen interest in the use of automated processes for the optimisation of payment and liquidity management. They need tools that will allow them to track activity across accounts and, where possible, make accurate intraday and overnight funding decisions from a single location – e.g. their head office. TARGET2 users have, via the Information and Control Module, access to comprehensive online information and easy-to-use liquidity management features that meet their business needs.

### Box 25 Liquidity management features in TARGET2

TARGET2 has a range of features allowing efficient liquidity management, including payment priorities, timed transactions, liquidity reservation facilities, limits, liquidity pooling and optimisation procedures.

#### Payment priorities

Payments can be assigned one of three priority levels: “normal”, “urgent” and “highly urgent”. Sending participants can influence the processing of queued normal and urgent (but not highly urgent) payments by changing their priority level or position in the relevant queue. They can also cancel queued payments. Normal and urgent payments are not settled in the event that highly urgent payments are also queued. The only situation in which payments with a lower priority level are executed first is if this allows an offsetting transaction to be settled and results, overall, in increased liquidity for the sending participant. Receiving participants have full queue visibility.

### Timed transactions

TARGET2 allows payments to be submitted with a debit time indicator, which indicates the earliest or latest point in time that a payment should be settled. Any payment which cannot be settled by the latest debit time is automatically deleted from the queue. Unless participants have indicated a settlement time, payment orders are settled immediately, or by the end of the business day at the latest, provided that sufficient funds are available and any liquidity limits or liquidity reservations are not breached. TARGET2 payments can be submitted to the central system up to five working days in advance.

### Liquidity reservation

Participants have the option of reserving liquidity for urgent and highly urgent payments. Highly urgent payments can always use all of the liquidity available in an account. Where part of the overall liquidity is reserved for highly urgent payments, that part is no longer available for urgent and normal payments. If, in addition, another part of the liquidity is reserved for urgent payments, this further reduces the liquidity available for normal payments.

It is also possible to reserve liquidity for the settlement of ancillary systems (including the night-time settlement of securities settlement systems). In this case, the liquidity is moved to a dedicated sub-account.

Liquidity reservations can be changed at any time in the course of the day through the ICM.

### Limits

The system allows limits to be placed on outflows of liquidity from an account. Such limits are not credit limits, but rather sender limits. They can be set on a bilateral or multilateral basis and prevent the unbalanced dissipation of liquidity, avoid free-riding on the liquidity of a participant by one or more other participants and help to synchronise payment flows. They are optional and can be changed at any point in time.

### Liquidity pooling

Banking groups have the option of using a liquidity pooling functionality in order to view and/or use the liquidity in all of the accounts belonging to the various entities in the group. (This service is not available to remote participants or participants located in non-euro area countries.)

Liquidity pooling is achieved by grouping together a number of accounts. TARGET offers two options for liquidity pooling: (i) aggregated liquidity; and (ii) consolidated information. In the aggregated liquidity option, a payment order submitted by a participant belonging to a group of accounts is settled if the payment amount is smaller than or equal to the sum of the liquidity available on all of the accounts in the group (including any credit lines). Otherwise, the payment order is queued. The consolidated information option is an information tool: it gives the participant subscribing to the service comprehensive information regarding the liquidity positions of all of the entities in the group at any given moment. Such information is also provided in the aggregated liquidity option. However, payment amounts are checked only against the liquidity

available on the individual RTGS account of the sending participant. The liquidity available on other accounts in the group is not used to settle the payment. Where there is insufficient liquidity on the sending bank's account, money will need to be transferred to that account.

Owing to business and legal constraints, the aggregated liquidity option is available only for accounts held by euro area banks with euro area central banks. This option is not available for remote participants, either.

#### Optimisation procedures

The settlement of queued payments is optimised on a continuous basis by means of several optimisation procedures. Those procedures search queues on a bilateral and multilateral basis to find pairs or groups of payments that can be settled on an "offsetting" basis given the amounts of liquidity available in the accounts of the relevant participants. In economic terms, offsetting has the same result as netting. However, in legal terms, any payments offset in this way are settled one by one on a gross basis in a logical block (i.e. either all of the payments are settled, or none of them are settled).

## 2.5 ACCESS AND PRICING

The access criteria for the Eurosystem's RTGS services aim to allow broad levels of participation by institutions involved in clearing and settlement activities, while at the same time paying attention to the soundness of such institutions by requiring them to be subject to supervision by a competent authority. Supervised credit institutions established within the European Economic Area are thus the primary participants. However, supervised investment firms, clearing and settlement organisations which are subject to oversight, and government treasuries can also be admitted as participants.

Direct participants hold an RTGS account and have (through the ICM) access to real-time information and control tools. Direct participants are responsible for all payments sent from or received on their accounts by themselves or any indirect participants operating through them. Indirect participation means that payment orders are always sent to and received from the system via a direct participant, with only the relevant direct participant having a legal relationship with the Eurosystem.

With the transition from the decentralised first-generation system to the centralised second-generation system, the number of direct participants fell by around a quarter to stand at 800 at end-2009. This reduction can be explained by several factors. For example, banks operating in multiple countries were able to reduce their points of access to the system. Moreover, at the time of their migration, a number of direct participants opted to become indirect participants with a view to minimising the cost of adjusting to the new system and/or benefiting from the lower transaction fees being offered to indirect participants by some direct participants (which, by concentrating traffic, were able to benefit from reductions in volume-dependent fees; see the information on degressive transaction fees

in Table 27). The number of direct participants is expected to increase again in the years to come – owing, for example, to further activities moving to the SSP and euro area enlargement.

Pricing is based on a non-profit-making cost recovery principle. Fees are set with the objective of attracting traffic to the system. Banks generating large traffic volumes are attracted to the system by means of degressive transaction fees. These large users are important for the system with a view to exploiting economies of scale. This, in turn, allows small banks to be charged a favourable fee.

Participants have the possibility of choosing between two pricing options. Low-volume users normally choose the option with a monthly fee of €100 and a flat transaction fee of €0.80, while large-volume users opt for a monthly fee of €1,250 combined with a volume-dependent transaction fee of between €0.60 and €0.125 (see Table 27). Ancillary systems settling in TARGET2 are subject to some additional fees, the size of which is dependent on the average daily gross value of the underlying business.

The liquidity pooling service (i.e. the aggregated liquidity and/or consolidated information services) is optional and priced separately. The liquidity pooling service costs €1,200 per account per annum for the consolidated information option and €2,400 per account per annum for the aggregated liquidity option. Furthermore, group pricing applies within a group of accounts, meaning that the degressive transaction fee applies to all payments sent by the group as if they were all sent from the same account.

Some 85% of direct participants have chosen the flat fee option (i.e. Option A), while some 15% have chosen the degressive fee option (i.e. Option B). The latter category generates around 90% of payment traffic, confirming that payment activity is highly concentrated around key users. The payment volumes of the largest participants (together with the effect of group pricing) mean that around a quarter of all transactions benefit from the lowest fee band of €0.125.

<b>Table 27 Pricing scheme for TARGET2 core services</b>			
<b>Option A</b>			
Monthly fee			€100.00
Flat transaction fee			€0.80
<b>Option B</b>			
Monthly fee			€1,250.00
<b>Volume</b>			
<b>Band</b>	<b>From</b>	<b>To</b>	<b>Price</b>
1	1	10,000	€0.600
2	10,001	25,000	€0.500
3	25,001	50,000	€0.400
4	50,001	100,000	€0.200
5	Above 100,000		€0.125

## 2.6 OPERATIONAL RISK MANAGEMENT

As TARGET2 is a systemically important payment system and a service relevant for the Eurosystem’s statutory tasks of promoting the smooth operation of payment systems, implementing monetary policy and maintaining financial stability, considerable attention was paid to operational risk management aspects in the system’s design and development phase. For this reason, a comprehensive risk management framework was developed for TARGET2. The framework is based on the internationally recognised standard ISO/IEC 27002 and has a hierarchical, three-layer structure which starts with high-level policy and works its way down to operational procedures (see Chart 36).

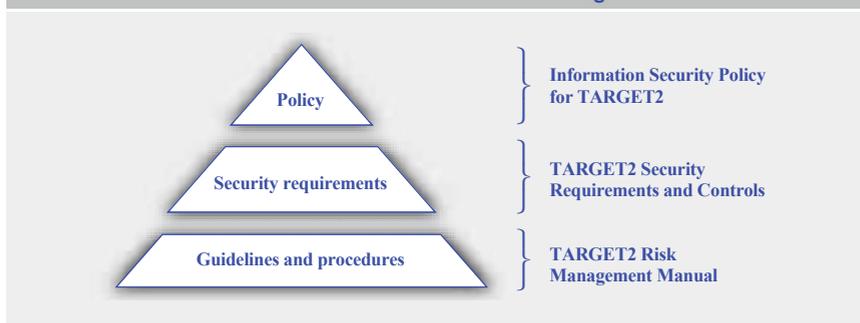
Given its cross-system and cross-participant interdependencies, a failure in TARGET2 could easily spread across financial markets and ultimately have systemic implications beyond the euro area. In order to adequately address this risk, particular emphasis was placed on the implementation of an effective business continuity management programme.

To ensure a high level of resilience and thus the availability of the system in all circumstances, TARGET2 was established on the basis of a “two regions – four sites” principle – i.e. its operational facilities are located in two distinct regions of Europe, and in each region there are two separate operational centres in locations with different risk profiles (see Chart 37). Both regions are permanently staffed, and responsibility for live operations is periodically rotated between the regions.

To cater for situations in which its resilience measures are not sufficient, the Eurosystem has, in close cooperation with the user community, also developed contingency procedures to ensure that systemically important business continues in the event of a TARGET2 entity (a bank, an ancillary system, a central bank or the SSP) suffering an operational problem.

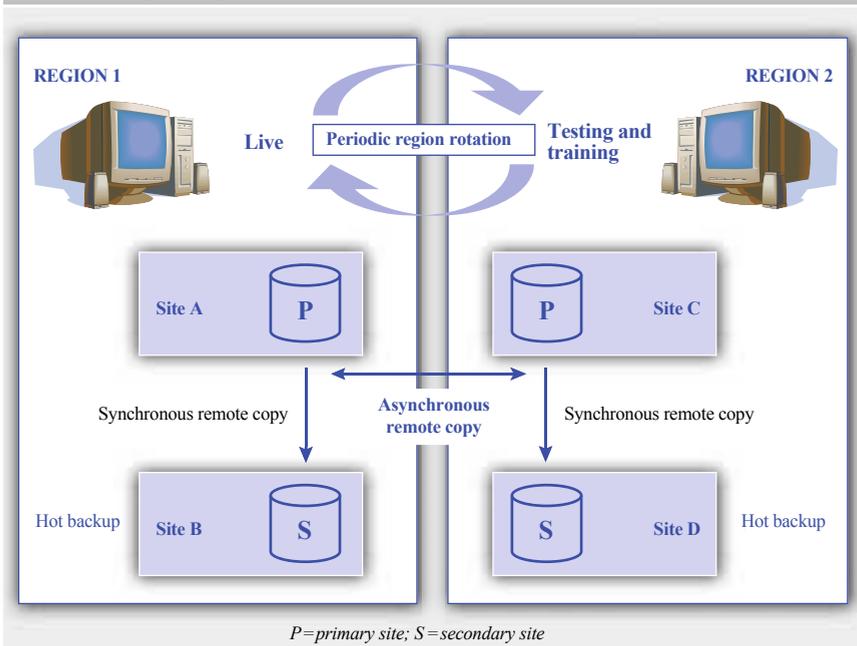
As the system operator, the Eurosystem has set TARGET2 the objective of ensuring: (i) that very critical payments are processed within 30 minutes; (ii) that all other payments are processed by the end of the day; (iii) that, in the event of a failure in the primary region, operations can be resumed in the secondary region

**Chart 36 Structure of the TARGET2 risk management framework**



Source: ECB.

**Chart 37 Resilience based on the “two regions – four sites” principle**



Source: ECB.

within two hours; and (iv) that, in the event of such a failure, the operational day will be completed with a maximum delay of two hours. Business continuity procedures, contingency procedures and crisis management arrangements are all tested at regular intervals.

Finally, given that an operational failure by a participant could potentially have an adverse impact on the smooth functioning of TARGET2, the Eurosystem’s risk management framework also includes measures focusing primarily on the security and operational reliability of critical participants.

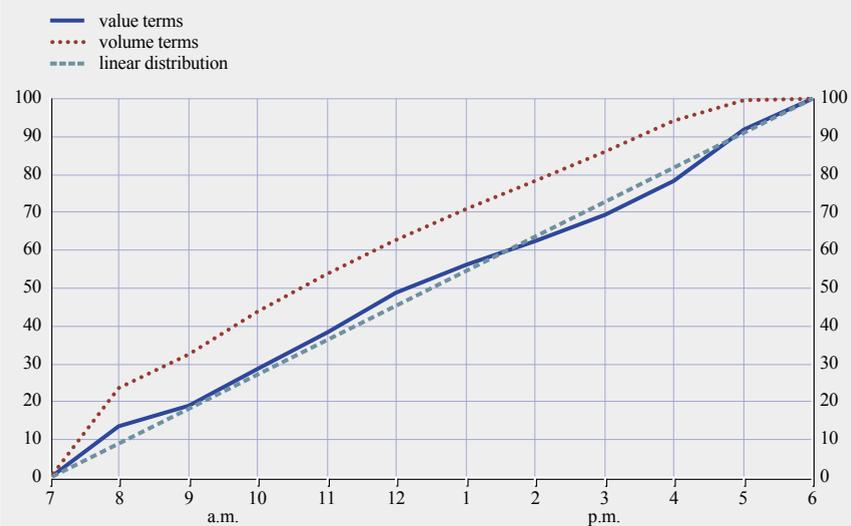
## 2.7 SOME FIGURES

In 2009 TARGET2 processed 88.5 million payments, with a total value of €551,174 billion. This translates into a daily average of some 345,768 payments, with an average daily value of €2,153 billion. Thus, the value of the payments settled in TARGET2 in some three and a half working days corresponds to the total annual gross domestic product of the euro area.

When preparing for the introduction of the euro, the major players in the banking market formulated a gentleman’s agreement on liquidity management in euro whereby banks committed themselves to making payments by 10 a.m. CET on the value date of a transaction, with payments made within two hours of the relevant trade in the case of same-day transactions. This, together with the system’s flexibility in terms of the availability and management of liquidity,

**Chart 38 Cumulative intraday patterns for TARGET2 payments in value and volume terms**

(percentages; data for 2009)



Source: ECB.

supports the early submission of instructions and ensures smooth payment flows in TARGET2 throughout the day.

Interbank transactions accounted for the vast majority (92%) of the payments settled in value terms, with the remainder being made up of customer transactions. However, 65% of the total volume of payments had a value equal to or less than €50,000 (see Table 28).

Although TARGET2 closes at 6 p.m. CET, customer payments are not accepted after 5 p.m. CET in order to allow participants to manage their end-of-day liquidity positions without interference by third parties. Thus, the period between 5 p.m. and 6 p.m. CET is dominated by payments related to treasury operations, which tend to be very large (see Chart 39). While in the course of the day the average value of an interbank payment generally varies between €3 million and €15 million, in the final hour before the system closes at 6 p.m. CET the average value was €147 million in 2009.

While the total number and value of payments settled by the system increased constantly in the period from 1999 to 2008, they declined sharply in 2009,

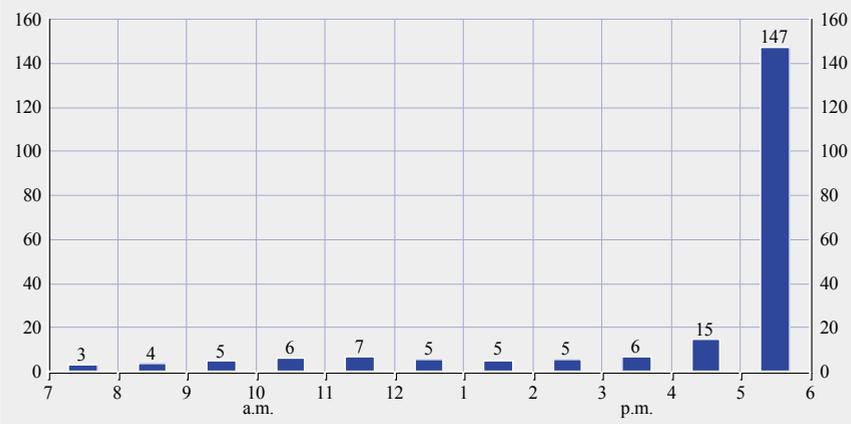
**Table 28 Payment value bands in TARGET in 2009**

Less than €50,000	Between €50,000 and €1 million	Between €1 million and €1 billion	More than €1 billion
65%	24%	11%	<0.1%

Source: ECB.

**Chart 39 Average value of an interbank payment in TARGET2 at different hours of the day**

(EUR millions; data for 2009; intraday pattern)

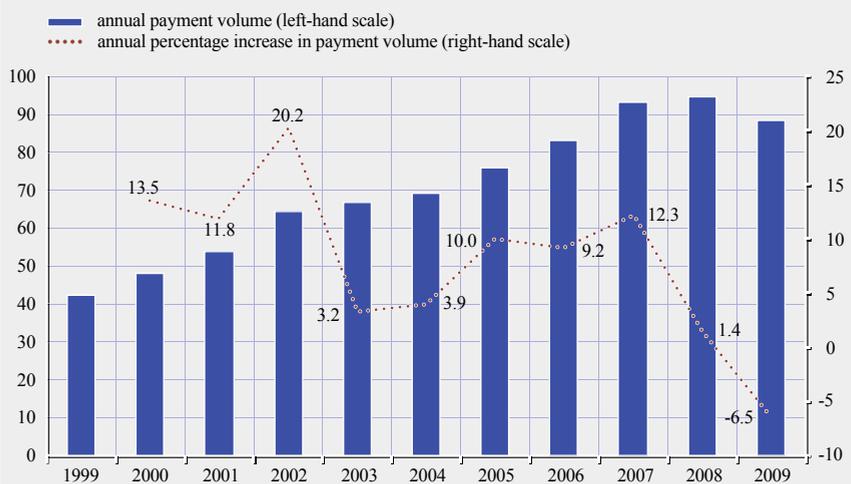


Source: ECB.

falling by 6.5% and 19.3% respectively compared with the previous year. The explanation for this significant decrease is threefold. First, a decrease in the number of transactions in financial markets, attributable to the financial crisis, resulted in a decrease in the turnover of the system. Second, in response to the financial crisis, the ECB introduced measures that, among other things, increased the average maturity of refinancing operations (particularly the introduction of longer-term refinancing operations with a maturity of one year). This resulted in

**Chart 40 Development of payment volumes in TARGET: 1999-2009**

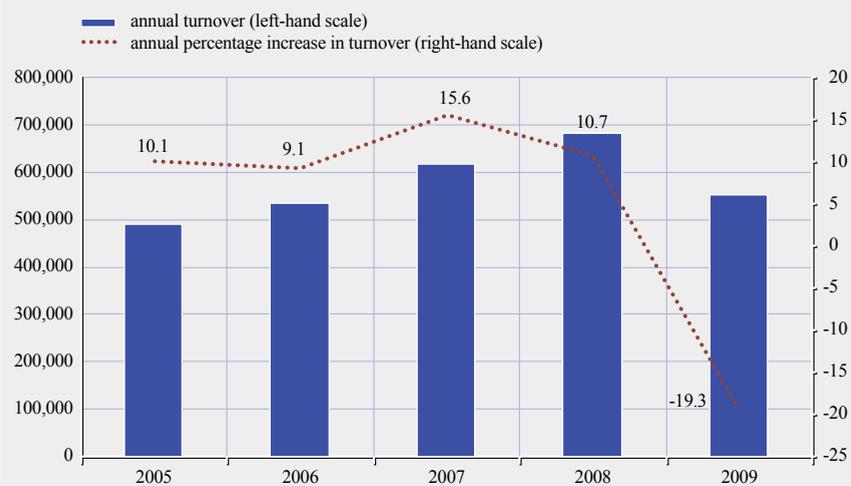
(millions; percentages)



Source: ECB.

## Chart 41 Development of payment values in TARGET: 2005-09

(EUR billions; percentages)



Source: ECB.

fewer refinancing operations being settled in TARGET2. Third, the methodology used for calculating the system's turnover was amended in 2009 and now excludes a number of purely technical transactions that were counted in previous years (such as the moving of balances between proprietary home accounts and TARGET2 accounts, or the reserving of liquidity on sub-accounts). As these factors are of a one-off or temporary nature, the growth of traffic in TARGET2 can be expected to resume in the coming years.

### 3 THE CORRESPONDENT CENTRAL BANKING MODEL

#### 3.1 THE EURO AREA-WIDE USE OF COLLATERAL

The correspondent central banking model was introduced in January 1999 in order to ensure that all assets eligible for Eurosystem credit operations could be used as collateral by all Eurosystem counterparties, regardless of the location of those assets or counterparties.

Indeed, as required by Article 18.1 of the Statute of the ESCB, all Eurosystem credit operations (including monetary policy operations and intraday credit operations) should be based on adequate collateral, namely marketable and non-marketable assets fulfilling certain eligibility criteria. The Eurosystem's eligibility criteria, which are applied in a uniform manner across the euro area, seek to prevent the Eurosystem from incurring losses in its credit operations and ensure the equal treatment of counterparties, as well as safeguarding operational efficiency and transparency.

In particular, those eligibility criteria include the requirement that underlying assets be usable on a cross-border basis throughout the euro area. This means

that Eurosystem counterparties may obtain credit from the NCB of the Member State in which they are established (their “home central bank” or “HCB”) by making use of eligible assets located in another euro area country. For further details regarding the Eurosystem framework for eligible collateral, see Chapter 6 of the ECB publication “The implementation of monetary policy in the euro area – general documentation on Eurosystem monetary policy instruments and procedures”.

At the time of the introduction of the euro, European securities market infrastructures were highly segmented and there were no adequate market arrangements available that could ensure the fulfilment of this criterion. Indeed, the network of links between SSSs was incomplete and thus unable to ensure the use of collateral assets throughout the euro area. This remains the case today. Furthermore, the use of custodian banks was considered not to be appropriate for two reasons: first, in terms of custody risk, while infrastructures are protected under European Union legislation, custodians are not; and second, in terms of a level playing field, where custodians were themselves counterparties in Eurosystem operations, this would have meant that they also had access to information on collateral use by other counterparties.

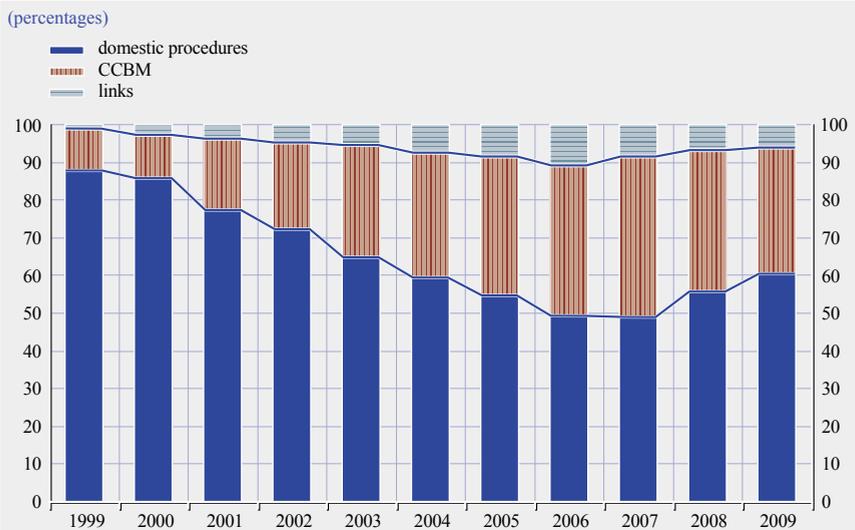
For this reason, the CCBM was introduced in January 1999 as an interim solution designed to facilitate the cross-border use of collateral in Eurosystem credit operations until adequate euro area-wide market solutions became available. The CCBM is used exclusively for the transfer of collateral to and from the Eurosystem—i.e. it does not support collateral transactions between market participants.

Since its introduction, the CCBM has been the main channel used for the cross-border delivery of collateral in Eurosystem credit operations. The value of cross-border collateral transferred via the CCBM has, with some variation, increased over the years, standing at €163 billion in December 1999 and €569 billion in December 2009. In December 2009 the CCBM accounted for 25.1% of all collateral transferred to the Eurosystem in value terms.

Eligible links between SSSs (i.e. links considered to meet the ECB’s standards as regards the use of EU-based SSSs in Eurosystem credit operations) constitute an alternative to the CCBM for the cross-border use of marketable assets. Though the use of links has increased over the years, these have played only a secondary role. Indeed, the value of collateral transferred via eligible links rose from €36 billion in December 1999 to €116 billion in December 2009. In December 2009 collateral transferred via eligible links accounted for 5.1% of all collateral transferred to the Eurosystem.

All in all, the relative use of cross-border collateral increased continuously from 1999 to mid-2007, at which point, in value terms, more than half of all collateral was being delivered cross-border. However, following the onset of the global financial turmoil in mid-2007, this trend was reversed: in December 2009 cross-border collateral accounted for 38.2% of the total value of collateral delivered to the Eurosystem (see Charts 42 and 43). In 2009 collateral transferred via the CCBM accounted for 83.1% of the total value of cross-border collateral transferred to the Eurosystem (with collateral transferred via links accounting for

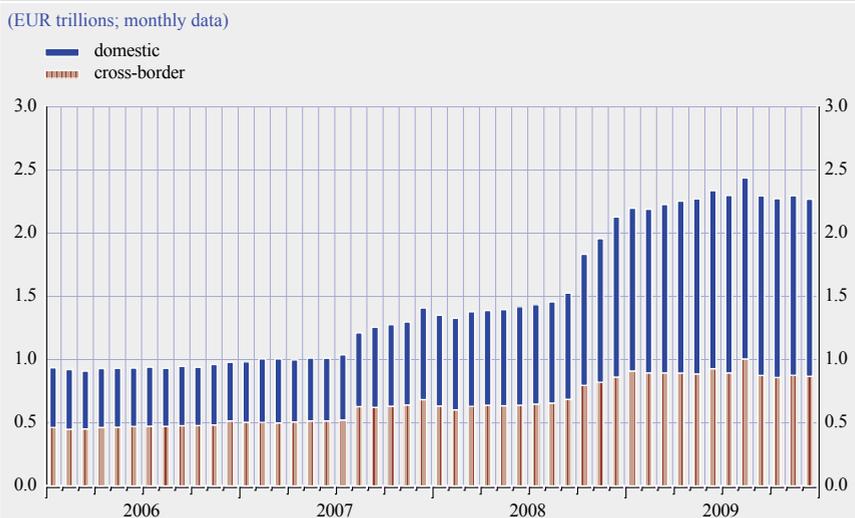
**Chart 42 Collateral held in custody with the Eurosystem via domestic procedures, the CCBM and links**



Source: ECB.

only 16.9%). The CCBM has made a substantial contribution to the increased use of cross-border collateral, which – setting aside the effects of the global financial turmoil – reflects the growing integration of the euro area’s banking and financial markets, with increased diversification in collateral portfolios and the emergence of banking groups operating in multiple countries.

**Chart 43 Collateral held in custody with the Eurosystem via domestic and cross-border procedures: 2006-09**



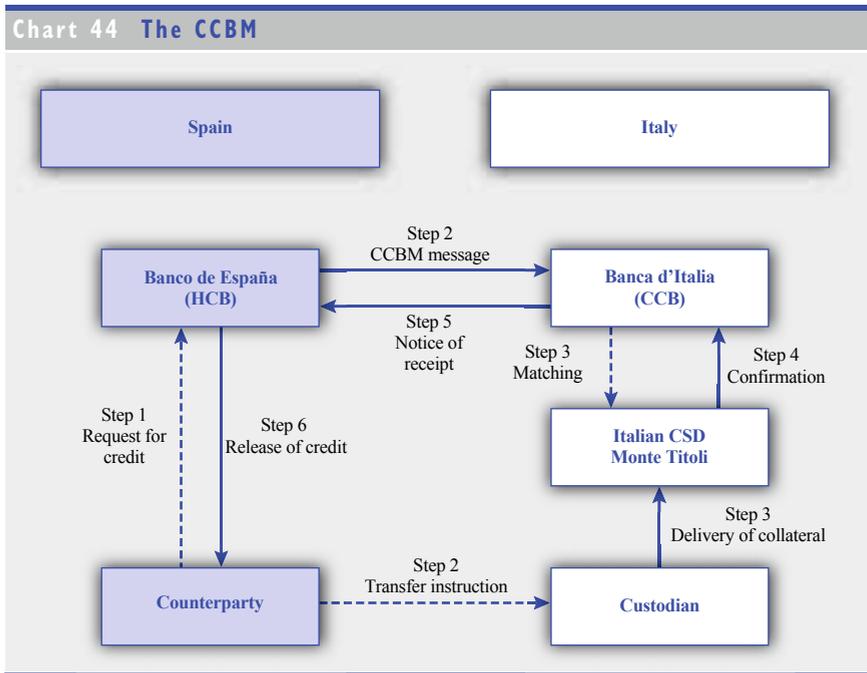
Source: ECB.

### 3.2 THE CURRENT MODEL

In general terms, the CCBM establishes procedures enabling Eurosystem counterparties to receive credit from their home central bank against eligible assets held in another euro area country. They can do so by transferring such assets to a correspondent central bank (CCB), typically the national central bank of the country where the assets are issued. The CCB then holds the collateral on behalf of the HCB (i.e. the CCB acts as a custodian for the HCB). The credit can be extended by the HCB once it has been notified by the CCB that adequate collateral has been received. Under Eurosystem rules, counterparties can obtain credit only from their HCB – i.e. there is no remote access to Eurosystem credit.

CCBM procedures vary depending on the type of eligible asset involved. For marketable assets, Eurosystem counterparties are required to transfer assets issued in other euro area countries (i.e. assets registered or deposited in those countries) to an account maintained by the CCB in the “issuer CSD” (i.e. the CSD in which the securities have been issued and deposited). In general, the CCB will be the national central bank of the country where the issuer CSD is located.

The transfer of those assets to the issuer CSD is generally executed on behalf of the counterparty (through the relevant SSS) by a local custodian participating in the system. In order to optimise the efficiency of the CCBM, the major European credit sector associations (i.e. the European Banking Federation, the European Savings Banks Group and the European Association of Co-operative



Source: ECB.

Banks) have established “best practices” providing guidelines for custodian banks involved in CCBM transactions. These cover, among other things, time benchmarks, input deadlines and communication channels.

For non-marketable assets (i.e. credit claims and Irish mortgage-backed promissory notes), which cannot be transferred through an SSS, separate CCBM procedures have been set up. In particular, in the case of credit claims, when a credit claim is not governed by the legislation of the jurisdiction in which the NCB of the counterparty (i.e. the HCB) is located, the credit claim can be mobilised via the NCB of the jurisdiction whose legislation governs that credit claim (with that NCB then acting as the CCB). Counterparties should observe the handling procedures and legal requirements specified in the terms and conditions stipulated by the NCB acting as the CCB.

The CCBM initially also included the NCBs of non-euro area countries (namely Denmark's Nationalbank, Sveriges Riksbank and the Bank of England). However, in 2003 the “settlement location” criterion for eligible assets was reviewed, resulting in a requirement that the settlement of assets take place in an SSS located in the euro area. Consequently, non-Eurosystem NCBs no longer provide CCB services for assets issued and settled in their local CSDs. The only exception is the Bank of England, which still acts as a CCB for some Eurobonds issued under UK law and held in one of the two ICSDs.

### **3.3 CCBM2 – THE NEXT GENERATION OF EUROSISTEM COLLATERAL MANAGEMENT**

The increased integration of the euro area's banking and financial markets and the importance of the cross-border use of collateral have increased markets' demand for more efficient collateral mobilisation solutions. Despite the achievements of the CCBM, Eurosystem counterparties have identified a number of shortcomings, mainly linked to the fact that the service was designed as an interim solution. These relate principally to: (i) the lack of homogeneity in terms of automation at the central banks; (ii) the differences between domestic and cross-border procedures; and (iii) the resulting lack of standardisation (in terms of the legal techniques and methods used for collateralisation, operational cut-off times, communication protocols and messages), which prevents institutions operating in more than one country from enjoying the benefits of centralised collateral management.

Partially in response to these market concerns, the Governing Council of the ECB decided in March 2007 to review the Eurosystem's collateral management procedures – particularly the CCBM. A medium-term project to establish the next generation of collateral management was then launched in July 2008 under the name “Collateral Central Bank Management”.

The main objectives of CCBM2 are to increase the efficiency of the Eurosystem's collateral management and address the drawbacks identified by market participants with regard to the current CCBM framework, to the extent that these

fall within the remit of central banks. CCBM2 will be able to adjust to changes in the Eurosystem’s collateral and operational frameworks – as well as market developments – in a smooth and swift manner.

The CCBM only provided for the cross-border delivery of collateral, while each national central bank had its own procedures for the use of domestic collateral. The scope of CCBM2 goes beyond that of the CCBM, as it aims to establish efficient procedures for the mobilisation and management of collateral for both domestic *and* cross-border use. Moreover, it will handle all eligible collateral, including credit claims, and support all of the various collateralisation techniques and methods (pledges, repos, assignment, pooling, earmarking, etc.), depending on the practices of the relevant central bank.

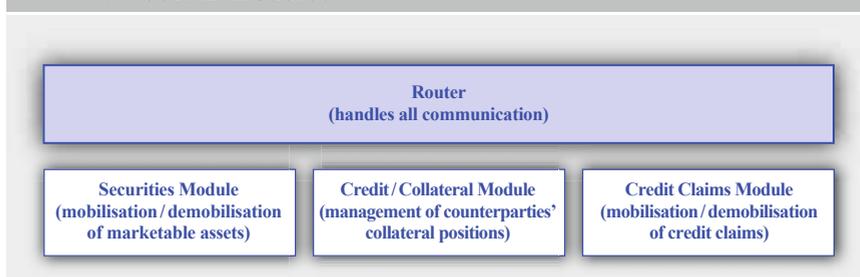
CCBM2 will be based on a modular approach. It will consist of a number of modules, whereby only participation in the first module – the message router – will be compulsory for Eurosystem central banks participating in the platform. The mandatory participation in this module will ensure harmonised and standardised interaction between the Eurosystem and counterparties. The other modules, which deal with the actual handling of the marketable and non-marketable assets, will remain optional. This modular approach gives national central banks the flexibility to choose the CCBM2 modules that suit their own requirements and market needs.

CCBM2 will provide Eurosystem NCBs with a single IT platform for the management of any assets eligible for use in Eurosystem credit operations. It will be built and operated on behalf of the Eurosystem by the Nationale Bank van België/Banque Nationale de Belgique and De Nederlandsche Bank.

In accordance with the principles defined for it, CCBM2 will perform central banking functions related to settlement instructions for the (domestic and cross-border) delivery of collateral. It will process instructions in real time on a straight-through-processing basis, such that the delivery of collateral triggers the release of the relevant credit in TARGET2. CCBM2 will enable the delivery of collateral through all eligible SSSs and eligible links.

Furthermore, CCBM2 will provide a harmonised level of service on the basis of SWIFT communication protocols, which will facilitate interaction between the Eurosystem central banks and their counterparties, with particular benefits for

**Chart 45 CCBM2 modules**



Source: ECB.

those counterparties which are active in more than one euro area country. Finally, CCBM2 will be fully compatible with TARGET2 and T2S, particularly as regards the communication interfaces of these two platforms and the settlement procedures of T2S for the delivery of securities.

Although CCBM2 will remain a collateral management facility for Eurosystem central banks, it will, of course, also have an impact on Eurosystem counterparties, which will benefit from having a single interface with the Eurosystem and harmonised, efficient procedures for the collateralisation of Eurosystem credit operations. Counterparties' overall costs related to the mobilisation of collateral are therefore expected to decrease accordingly. CCBM2 will also provide Eurosystem counterparties with new opportunities to optimise their collateral use and enhance their liquidity management.

The Eurosystem aims to ensure that counterparties and other interested parties remain involved in the CCBM2 project – e.g. by means of public consultations.

## **4 TARGET2-SECURITIES**

### **4.1 INTEGRATION OF SECURITIES INFRASTRUCTURES**

The integration of bond and equity markets relies on the integration of the underlying infrastructure, particularly that of securities settlement systems and central counterparties. However, in the euro area, progress in the integration of securities infrastructures has not kept pace with that of large-value payment infrastructures. This is largely because securities are inherently considerably more complex, which has led to cross-country differences in terms of market practices and legal, regulatory and fiscal regimes.

While the post-trading infrastructure is fragmented for bonds, it is even more fragmented for equities. Cross-border settlement for bonds is largely concentrated in the two international central securities depositories, whereas the cross-border settlement of equities still relies heavily on national central securities depositories. This high degree of fragmentation results in substantial post-trading costs for EU cross-border securities transactions, reduces the potential for economies of scale and is an obstacle to the emergence of a level playing field in Europe in this area. Although Europe is comparable to the United States in terms of its economic size, it lags behind it in terms of both the volume and cost of securities transactions. The price gap is particularly large for cross-border settlement.

An important element in the integration of securities infrastructures within the Single Market is the establishment of a common, neutral securities settlement platform that will foster effective interoperability and competition between service providers. Consequently, with a view to promoting financial integration and overcoming the fragmentation of the securities settlement infrastructure through the provision of central bank services, the Eurosystem has launched its TARGET2-Securities initiative in order to provide this missing element.

T2S will be a pan-European platform to be used by CSDs for the settlement of securities transactions in central bank money. The participating CSDs will maintain their legal relationships with their customers and will continue to perform their custody and notary functions.

Moreover, it has been decided that, in addition to settlement in euro, T2S will also offer settlement in other currencies. Thus, participation in T2S will be open not only to the CSDs of euro area countries, but also to those of other EEA countries and Switzerland, which will have the option of joining T2S not only for settlement in euro, but also (subject to a formal decision by their respective markets and relevant authorities) for settlement in their national currencies.

## 4.2 THE BASIC CONCEPT OF T2S

The T2S initiative builds on the fact that the securities settlement services of CSDs and central banks are closely linked to the services provided by payment systems. A securities trade typically results in the delivery of securities (i.e. the securities leg) in exchange for the transfer of cash funds (i.e. the cash leg). If the cash leg is settled in a central bank settlement facility, it is settled in central bank money. To avoid credit risk, the completion of one leg is conditional on the completion of the other through delivery-versus-payment arrangements. While this method of settling securities trades is very effective within individual countries, it is so far hardly available at all at a cross-border level in Europe.

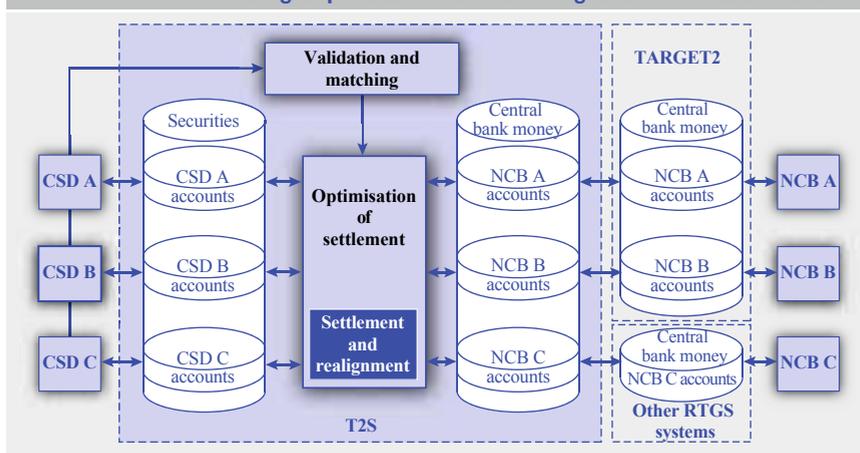
Holding securities accounts and central bank cash accounts on the same platform for settlement purposes is considered the most efficient way of settling the two legs of securities trades. With the launch of TARGET2, the Eurosystem now offers a single platform for the settlement of payments (i.e. the cash leg) in central bank money. However, securities are still held on multiple platforms (i.e. individual CSDs). Outsourcing the central bank cash accounts to multiple CSDs would have reversed the gains from bringing central bank accounts together on TARGET2's single platform, while outsourcing to only a small number of CSDs would have given those CSDs a competitive advantage. Furthermore, the outsourcing of central bank cash accounts could pose a threat to the Eurosystem's ability to maintain full control over the provision of central bank money in all circumstances.

Consequently, with its T2S initiative, the Eurosystem has invited European CSDs to outsource their securities accounts to a single platform, which it will operate. The main underlying aim of T2S is to bring all securities and cash accounts together on one technical platform (see Chart 46) with a view to settling nearly all securities transactions in Europe on that platform.

CSDs will, for settlement purposes, hold all of their clients' securities positions in T2S. The underlying account information (relating to the custody and notary functions) will still be held by the CSDs themselves. Each securities account held in T2S will be attributable to one CSD only.

Similarly, T2S will maintain dedicated central bank cash accounts for all CSD clients that are eligible to open them. It will be possible to use a client's cash account to settle any transactions relating to that client's securities accounts,

Chart 46 T2S – a single platform for settling cash and securities



Source: ECB.

which may involve one or more CSDs. This cash account structure will foster efficiency improvements for clients that use more than one CSD. Ultimately, it will be possible for a client to access nearly all European securities using just one securities account and one cash account in T2S. Where a CSD's client does not itself have access to an account with a central bank, it may be authorised by a settlement bank (i.e. a TARGET2 participant) to operate a dedicated cash account in T2S. Operating TARGET2 and T2S in tandem will result in synergies being achieved. This will allow considerable cost savings and, at the same time, enable banks to improve their liquidity and information management.

T2S will be able to validate and match settlement instructions and provide real-time DvP settlement with optimisation procedures, regardless of which CSDs and central banks provide the respective underlying securities accounts and central bank cash accounts. T2S – by linking, in real time, any securities account at any participating CSD with any cash account at any participating central bank – will ensure that future cross-border settlement is identical to today's domestic settlement.

T2S will result in benefits relating to both economies of scale and competition. Economies of scale will result from the use of a single platform for the settlement of both the securities leg and the cash leg, as well as from moving transaction volumes from multiple platforms onto one single platform. This will also allow the pooling of securities on one single platform and significantly reduce settlement-related liquidity needs. Moreover, T2S will also trigger the harmonisation of back office procedures and market practices in the securities industry, thereby further improving efficiency. This will result in significantly lower costs and fees – both for national and, in particular, for cross-border settlement.

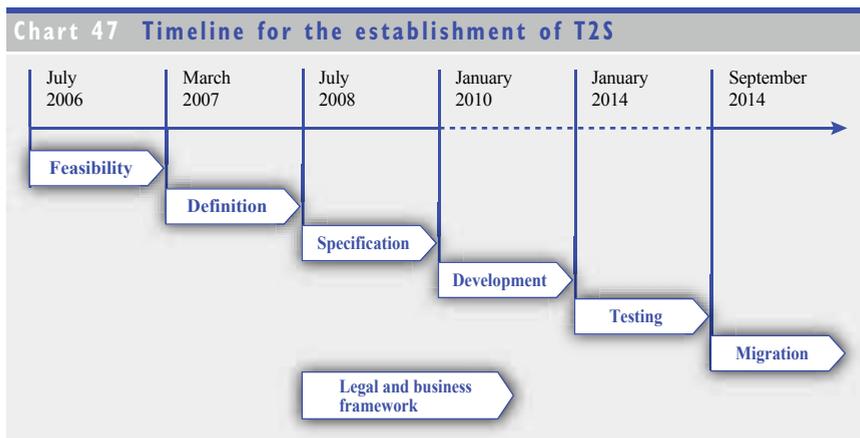
As regards competition, national CSDs currently operate in a monopolistic market environment in which they are largely protected from competition with other CSDs. Once T2S has been established, CSDs will be able to provide services

for securities that are issued in another CSD. Furthermore, although CSDs will continue to provide services other than settlement, the use of a common settlement platform will make it easier for issuers to issue securities outside their national borders and for market participants and investors to determine where they wish to hold a given security. T2S will encourage CSDs to offer their participants the opportunity to centralise their securities holdings in one place. It will therefore be easier for investors to choose their CSD on the basis of cost and the level of service, rather than the location of the securities. This increased competition is expected to drive down fees.

### 4.3 MAJOR PROJECT MILESTONES

In July 2006 the Governing Council of the ECB announced that it was evaluating means of providing efficient settlement services for securities transactions in central bank money and indicated that this work would be carried out in close cooperation with CSDs and market participants. Following consideration of the relevant economic, legal, operational and technical aspects, the Governing Council confirmed the fundamental feasibility of T2S in March 2007 and agreed that further planning should go ahead.

In April 2007 the Governing Council defined the general principles of T2S and submitted them for public consultation in order to seek the views of the market. On the basis of these general principles, the Eurosystem worked closely and intensively with CSDs and the potential users of the platform in order to define user requirements. In late 2007 those user requirements were submitted for public consultation, together with a proposal for a methodology for analysing the economic impact of T2S. The Eurosystem then conducted a thorough analysis of the economic impact of T2S and the legal basis for the system. In July 2008, on the back of the positive feedback received from European CSDs, market participants and political authorities, the Governing Council decided to launch the T2S project and provide the resources necessary for its completion. It entrusted the Deutsche Bundesbank, the Banque de France, the Banca d'Italia and the Banco de España with the task of developing and operating T2S on behalf of the Eurosystem.



Source: ECB.

Following the Governing Council's decisions of July 2008, important technical documentation for the development of the T2S platform was further expanded and developed. In early 2010 the user requirements were frozen in order to provide the four national central banks with a stable basis on which to develop the software for T2S. Furthermore, the first versions of the system's general specifications, general functional specifications and general technical design were shared with the market.

In parallel, in July 2008 the relationship between the Eurosystem and participating CSDs was formalised in a memorandum of understanding. By early 2010 a total of 29 CSDs had signed that memorandum of understanding, thereby officially committing themselves to using T2S once it begins operating. These included all the CSDs of the euro area, eight CSDs located in EU countries outside the euro area (namely Denmark, Estonia, Latvia, Lithuania, Poland, Romania, Sweden and the United Kingdom), and three CSDs located in countries outside the EU (namely Switzerland, Iceland and Norway). In addition, with the support of their markets and central banks, the CSDs of Denmark, Sweden and Norway expressed an interest in settling securities transactions in T2S in their national currencies.

In early 2010 the development phase of the project began. Besides the development of the actual software for T2S, the main milestones of this phase will be the contractual agreements to be concluded with the CSDs and non-euro area central banks. In early 2010 the Governing Council decided on the criteria that CSDs must meet in order to be eligible for participation in T2S. It is envisaged that the contractual framework will be presented to CSDs' regulators for review in the course of 2010. Thereafter, the contract will be finalised and presented to CSDs for signing. In parallel, discussions with non-euro area central banks are continuing with a view to finalising their currency participation agreements ahead of the agreement with the CSDs.

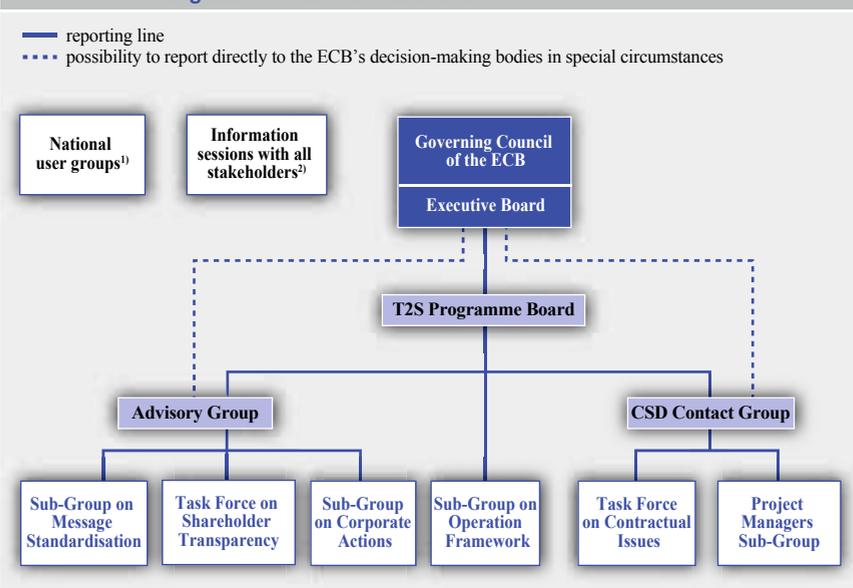
The specific approach to be adopted as regards testing and migration will be discussed with those CSDs that sign the contract with the Eurosystem. The testing phase will run until September 2014, when T2S is expected to go live. CSDs are then expected to migrate to T2S in three waves.

#### **4.4 GOVERNANCE AND ORGANISATION**

The governance of the T2S project has always been characterised by its high degree of transparency. The Eurosystem shares all relevant documents with interested parties in the T2S section of the ECB's website. Furthermore, the Eurosystem actively involves all relevant stakeholders. As early as April 2007 the Governing Council established the T2S Advisory Group, which was tasked with defining the user requirements for T2S and advising the Governing Council on the market's needs in this regard. The group consists of equal numbers of representatives from central banks, CSDs and users, and is supported by several sub-structures.

In March 2009 the Governing Council modified the governance structure of the T2S project, establishing the T2S Programme Board as a streamlined management body and tasking it with developing proposals for the Governing Council on key

**Chart 48 The governance structure of T2S**



Source: ECB.

1) National user group meetings involve providers and users of national securities services and are held with a view to supporting the development and implementation of T2S.

2) T2S information sessions are meetings where any interested external stakeholders are informed on the T2S project.

strategic issues and conducting work of a purely technical nature in relation to T2S. While the Governing Council remains the ultimate decision-making body, the T2S Programme Board will ensure that T2S is successfully implemented on time, within budget and in accordance with the needs of the market. The members of the T2S Programme Board are appointed by the Governing Council for a renewable 18-month term. Moreover, in October 2009 the Governing Council established the CSD Contact Group, acknowledging the specific role played by CSDs, and mandated this group to prepare the contractual agreement between the Eurosystem and CSDs. The CSD Contact Group consists of high-level executives of CSDs and the members of the T2S Programme Board.

The current governance structure is illustrated in Chart 48. Once the contractual agreements between the Eurosystem and the participating CSDs have been signed, the governance structure will be amended again.

## CHAPTER 12

# THE EUROSISTEM'S OVERSIGHT ROLE

### I OVERSIGHT IS A CENTRAL BANK FUNCTION

Payment systems and securities clearing and settlement systems are infrastructures essential for the proper functioning of market economies. As has been argued throughout this publication, they are indispensable if there is to be an efficient flow of payments for goods, services and financial assets. Moreover, the smooth functioning of such systems is crucial both for the practical implementation of the central bank's monetary policy and in order to maintain the stability of – and confidence in – the currency, the financial system and the economy in general. Through their oversight function, the European Central Bank and the Eurosystem more generally aim to ensure the safety and efficiency of payment systems and securities clearing and settlement systems operating in euro by applying, inter alia, appropriate oversight standards and minimum requirements. The objectives, scope, methodology and organisation of the Eurosystem's oversight function, as well as details of the Eurosystem's interaction with other authorities, are clearly set out in the Eurosystem's oversight policy framework, which was published by the ECB in February 2009.

The Eurosystem defines the oversight of payment and settlement systems as a central bank function whereby the objectives of safety and efficiency are promoted by monitoring existing and planned systems, assessing them against these objectives and, where necessary, fostering change (a definition in line with that contained in the Committee on Payment and Settlement Systems' oversight report of 2005). The Eurosystem includes payment instruments in this definition, as they are an integral part of the payment system.

Four important principles are applied in Eurosystem oversight, and these are worth mentioning at the outset. First, the Eurosystem has high standards regarding transparency. It publishes its oversight policies and provides regular and comprehensive information about its oversight activities. Through its transparency, the Eurosystem is able to demonstrate the consistency of its approach to oversight and provide a solid basis on which to judge the effectiveness of its policies, thereby ensuring that its oversight activities are performed in an accountable manner. A report providing information on Eurosystem oversight activities is published on a regular basis. Second, within the ECB, oversight is conducted by a dedicated team which is separate from the ECB's operational units. The same principle of the separation of functions is applied by the Eurosystem NCBs. This helps to address the potential for conflicts of interest as a result of the central bank being both the system operator and the oversight authority. Third, in order to ensure equal treatment, the ECB and the Eurosystem as a whole apply the same oversight policies to all systems – i.e. both private systems and those operated by the central banks themselves. Fourth, systems' owners and operators have primary responsibility for ensuring the reliable functioning of their infrastructures and providing safe and efficient payment and settlement services.

Although oversight has, over the last 20 years, become increasingly formalised and expanded in scope, the enforcement of oversight policies still relies heavily on moral suasion and the acceptance of the Eurosystem’s expert advice. The ECB has not yet made use of its statutory entitlement to issue regulations in the field of oversight.

In this chapter, unless otherwise indicated, the term “payment and settlement systems” is used as a generic label covering both payment systems (including payment instruments) and securities clearing and settlement systems (including central counterparties for securities and derivatives). Where necessary, a distinction is drawn between the two types of system.

## **2 THE RATIONALE FOR THE EUROSISTEM’S INVOLVEMENT IN THE OVERSIGHT OF PAYMENT AND SETTLEMENT SYSTEMS**

The ECB and the NCBs of the Eurosystem have traditionally been involved in payment and settlement systems in many different ways: as operators of systems; as providers of central bank money as a settlement asset; as participants in those systems; as catalysts; and as oversight authorities. As a result, they have gained expertise both in the way that payment and settlement systems work and in the potential failures that can occur in such systems. Payment and securities infrastructures are exposed to a wide range of risks, including legal risks, financial risks (i.e. credit and liquidity risks) and operational risks, which can have implications for those systems’ operators and participants and any other infrastructures that are linked to or dependent on them. In certain circumstances, these risks can become systemic, meaning that a disruption affecting one participant or system gives rise to failures by other participants or related systems. Thus, systemic risk poses a serious threat not only to the smooth functioning and stability of payment and settlement systems, but also to the wider financial sector and, as a result, the economy as a whole.

Safety concerns and the desire to mitigate such risks lead to costs being incurred by system operators and participants. As a result, designing payment and settlement systems in a prudent manner involves weighing the mitigation of risk against the cost-efficiency of operating and participating in such systems. When faced with this trade-off, operators and participants may have insufficient incentives to fully consider the external – or systemic – dimension of risk, and thus behave in a manner which is less risk-averse than would be desirable from the point of view of social welfare. This is particularly true if the participants or operator assume that they are “too big to fail” or “too interconnected to fail” and expect that a public authority will intervene in any crisis situation.

The Eurosystem considers that achieving the appropriate combination of safety and efficiency in payment and settlement systems may require some form of public involvement to ensure that participants and operators have the right incentives to act prudently, avoid risk and minimise the overall cost to society. To this end, the Eurosystem, like most central banks worldwide, is active in its currency area in an oversight role, as a system operator and in a supporting capacity as a catalyst for the development of private sector solutions.

### 3 OVERSIGHT RESPONSIBILITIES

The oversight responsibilities of the Eurosystem are based on a clear legal mandate and a framework of internationally agreed standards and recommendations.

As regards the Eurosystem's involvement in payment and settlement systems, the Treaty provides a clear legal mandate for the conduct of oversight. That mandate relates not only to the oversight of payment systems and instruments, but also to the Eurosystem's interest in the smooth functioning of securities clearing and settlement systems, an area in which oversight makes a key contribution (see Section 1 of Chapter 14 on the legal basis for Eurosystem involvement).

The Eurosystem's oversight policies focus on the objectives of safety and efficiency in payment and settlement systems. It does not actively pursue other public policy objectives, such as combating money laundering, data protection, consumer protection or the avoidance of anti-competitive practices in payment and settlement systems, where other authorities have an explicit mandate.

The Eurosystem has translated its oversight objectives into specific standards and requirements that payment systems are expected to comply with. These standards and requirements are largely based on international standards developed by the CPSS.

Similarly, the Eurosystem's interest in the smooth functioning of securities clearing and settlement systems has resulted in the European System of Central Banks working with the Committee of European Securities Regulators to formulate recommendations for securities clearing and settlement in the EU. The ESCB-CESR recommendations are based on the recommendations developed jointly by the CPSS and the International Organization of Securities Commissions for securities settlement systems and central counterparties.

International standards and recommendations ensure equal treatment at the global level, with the oversight approaches of central banks and any other relevant authorities converging towards internationally accepted best practices. At the same time, by adapting those international standards and recommendations to suit the euro area, the Eurosystem ensures that those standards and recommendations take into account the specific features of the euro area.

### 4 SCOPE OF OVERSIGHT

The scope of the Eurosystem's oversight activities is generally guided by its objective of promoting safety and efficiency in the market infrastructure for the euro and is determined more specifically by the relevant provisions of the Treaty. The scope and depth of Eurosystem oversight may change over time as arrangements for the clearing and settlement of payments and securities evolve. This section details the oversight activities conducted for all the different types of system and instrument that make up the payment and settlement landscape of the euro area. An overview of the most relevant policy documents is provided in Box 26 below.

**Box 26 Oversight policy documents published by the Eurosystem**

In August 1998 the ECB published its “Report on electronic money”, building on the analysis conducted under the aegis of the EMI. This report addresses the reasons why the issuance of electronic money should be regulated and sets out minimum requirements for issuers of electronic money and desirable objectives.

In November 1998 the Eurosystem outlined its policy principles in relation to the development of payment and securities clearing and settlement infrastructures providing services for euro-denominated transactions outside the euro area.

In a statement in June 2000 (“Statement on the role of the Eurosystem in the field of payment systems oversight”), the Governing Council of the ECB clarified the role of the Eurosystem in the field of payment systems oversight and explained its objectives and principles.

In February 2001 the Governing Council of the ECB adopted the Core Principles for Systemically Important Payment Systems (“Core Principles”), which constitute minimum standards applied by the Eurosystem in its common oversight policy for payment systems. These principles provide guidance concerning the design and operation of payment systems by defining general requirements for the key features of these infrastructures, including: a sound legal basis; adequate management of financial risks; security and operational reliability; efficiency; and sound governance arrangements. The Core Principles apply to systemically important payment systems of all types and are addressed to all countries of the world. A payment system is considered to be systemically important if disruptions within it could trigger further disruptions in the wider financial system. The Eurosystem takes the view that every large-value payment system operating in euro is systemically important.

In September 2001 the ECB published a document entitled “The Eurosystem’s policy line with regard to consolidation in central counterparty clearing”, in which it presented its policy stance on the possible implications of the consolidation process in central counterparty clearing.

In May 2003 the “Electronic Money System Security Objectives” report was published. This sets out the requirements of the Eurosystem as regards the technical security of e-money schemes. The report contains a general description of e-money schemes, a comprehensive risk/threat analysis and a list of security objectives that should be met by e-money schemes in order to deal with such risks/threats.

In June 2003 an oversight framework was adopted for retail payment systems operating in euro. This framework seeks to ensure that retail payment systems cannot transmit systemic risks or economic disturbances within the euro area. The framework contains criteria for the classification of retail payment systems on the basis of their systemic relevance.

In June 2006 a report entitled “Business continuity oversight expectations for systemically important payment systems (SIPS)” was published. As a response to the new types of threat that have emerged in recent years, the basic aim of the report was to establish a harmonised oversight framework for business continuity in the euro area. The report provides guidance to operators of systemically important payment systems with a view to achieving sufficient and consistent levels of resilience, focusing on business continuity strategy, planning and testing, as well as crisis management.

In July 2007 the ECB published a report entitled “Eurosysteem policy principles on the location and operation of infrastructures settling euro-denominated payment transactions”. These principles apply to all existing or potential payment infrastructures located outside the euro area that settle transactions in euro. They further specify the stance of the Eurosystem in this field, namely its commitment to retaining ultimate control over its currency, the euro, in all circumstances. In November 2008 the ECB further defined the term “legally and operationally located in the euro area”, as used in the policy principles.

In January 2008 the Governing Council of the ECB approved a report entitled “Oversight framework for card payment schemes – standards”, which lays down common oversight standards with regard to card payment schemes operating in the euro area. These standards focus on ensuring the safety and efficiency of card payment schemes.

In February 2009 the ECB published the “Eurosysteem oversight policy framework”. This provides an overview of the set of methods and instruments that the Eurosystem employs in the field of oversight. It also provides an insight into the allocation of roles within the Eurosystem and places the Eurosystem’s oversight activities in a global context, most notably with regard to the interdependence and location of payment and settlement systems.

In February 2009 the ECB published the Eurosystem’s “Harmonised oversight approach and oversight standards for payment instruments”. These standards establish common ground across the Eurosystem as regards the oversight of payment instruments.

In June 2009 the ESCB and CESR issued recommendations for securities settlement systems and central counterparties in the European Union with the aim of increasing the safety and soundness of post-trading infrastructure.

## 4.1 PAYMENT SYSTEMS

Large-value payment systems form the backbone of the euro area’s market infrastructure in that they act as the transmission channel for monetary policy and are the main way for market participants to settle their financial and business transactions. The Eurosystem takes the view that every large-value payment system operating in euro is systemically important. The Eurosystem applies the CPSS Core Principles for Systemically Important Payment Systems and has enhanced them by issuing its “Business continuity oversight expectations for systemically important payment systems”, which consider in greater detail the business continuity aspects of Core Principle VII (see Box 27).

## Box 27 The Eurosystem's oversight policy on business continuity

In many countries, market participants and public authorities have been reconsidering their business continuity policies and the adequacy of their business continuity planning in the light of the vulnerabilities revealed by terrorist acts (notably the events of 11 September 2001 in the United States), natural disasters and major power outages. In the euro area, various fruitful in-depth discussions have taken place and a range of initiatives have been carried out with regard to business continuity. However, until recently, these initiatives had largely been implemented at the national level and had not taken sufficient account of the fact that the euro area's financial system operates as a network of interrelated markets, market infrastructures and participants.

Given the nature of the financial system and the need to coordinate business continuity policies and plans at the euro area level, the Eurosystem carried out a public consultation in 2005 on a proposed set of business continuity expectations with a view to ensuring a sufficiently robust and consistent level of resilience across all systemically important payment systems operating in euro. Following that public consultation, the Eurosystem finalised its "Business continuity oversight expectations for systemically important payment systems (SIPS)", which were adopted by the Governing Council of the ECB in May 2006 and form an integral part of the Eurosystem's oversight framework.

Those business continuity expectations identify the following elements as being key to business continuity management.

1. Systems should have a well-defined business continuity strategy and monitoring mechanism endorsed by their board of directors. Critical functions should be identified, and processes within those functions should be categorised in accordance with their criticality. Business continuity objectives for systemically important payment systems should aim for the recovery and resumption of critical functions by the end of the settlement day.
2. Business continuity plans should envisage a variety of plausible scenarios, including major natural disasters, power outages and terrorist acts affecting a wide area. Systems should have a secondary site, and that site's dependence on the same critical infrastructure components used by the primary site should be kept to the minimum necessary to enable the stated recovery objectives to be met for the scenarios concerned.
3. System operators should establish crisis management teams and well-structured formal procedures to deal with any crisis, as well as internal/external crisis communication channels.
4. The effectiveness of business continuity plans needs to be ensured through regular testing of each aspect of those plans. System operators should consider performing whole days of live operations from the secondary site, and those sites should also be tested periodically using the participants' contingency facilities. Systems should participate in industry-wide testing organised and coordinated by a commonly agreed financial authority. System operators' business continuity plans should be periodically updated, reviewed and audited to ensure that they remain appropriate

and effective. Operators should consider the partial disclosure of business continuity plans to external stakeholders – e.g. other systemically important payment systems, oversight authorities and banking supervisors.

However, systemically important payment systems remain responsible for their own business continuity management and, in particular, should endeavour to meet demanding resilience objectives for the systems themselves, their critical participants and third-party providers of critical functions and/or services.

Retail payment systems are used for the bulk of payments among individuals and between individuals, corporations and public administrations. Although many of these are not of systemic importance, they play an important role in the safety and efficiency of the financial system as a whole and citizens' confidence in the euro. Recognising the relevance of retail payment systems, the Eurosystem has introduced "Oversight standards for euro retail payment systems", which distinguish between systemically important retail payment systems, retail payment systems of prominent importance and other retail payment systems. These indicate the Core Principles which are also of relevance for retail payment systems of prominent importance (see Box 28 below).

#### **Box 28 The oversight of retail payment systems**

While at first the Eurosystem concentrated on the oversight of large-value payment systems, given that these are regarded as the systems most relevant for financial stability in the euro area, turnover data for retail payment systems operating in euro suggested that some of these systems had likewise reached a size – and thus a degree of relevance – where disruptions could trigger systemic risks.

Consequently, in June 2003 the Governing Council of the ECB adopted an oversight framework for retail payment systems operating in euro. It is important to note that this oversight framework is intended to ensure that retail payment systems cannot transmit systemic risks or economic disturbances within the euro area. The framework contains criteria for classifying retail payment systems in three different categories: "systemically important retail payment systems" (SIRPSs); "prominently important retail payment systems" (PIRPSs); and "other retail payment systems". The decisive factor in defining the classification criteria was the degree of disruption that a malfunction in one of these systems could cause in the financial markets and/or the wider economy. Where appropriate, the relevant impact criteria are defined on the basis of the national markets in which the retail payment systems operate.

With regard to the criteria governing the classification of retail payment systems as SIRPSs, the Eurosystem took account of the degree of market penetration within the relevant retail payment market, the financial risks pertinent to the system and the risk of domino effects. The following three quantitative indicators were used:

- a market share of more than 75% of the relevant retail payment market – i.e. the payments processed via interbank retail payment systems and other payment arrangements (“market penetration”);
- the processing of payments with a total value of more than 10% of that of the national RTGS system, or the processing of payments with an average daily value of more than €10 billion (“aggregate financial risk”);
- a concentration ratio (i.e. the market share of the five largest participants) of 80% or more, a netting ratio of 10% or less, or a net debit position for participants which exceeds €1 billion (“risk of domino effects”).

Systems fulfilling all of these criteria are considered SIRPSs. If disruptions in retail systems do not have systemic implications, but could still have a severe impact, such systems are considered to be of prominent importance for the functioning of the retail economy (i.e. they are considered PIRPSs). PIRPSs are characterised by the fact that they play a prominent role in the processing and settlement of retail payments and their failure could have major consequences for the economy and undermine the public’s confidence in payment systems and the currency in general. In classifying PIRPSs, there was therefore a focus on the concentration of the retail payment market and, in particular, the degree of market penetration of the relevant system.

There are other retail payment systems that do not belong to either of these categories. Those systems have less impact on the financial infrastructure and the real economy, with the result that they do not necessarily have to comply with the Core Principles. Such systems have to comply with the relevant oversight standards as defined for them (e.g. the common oversight standards for payment instruments).

It was decided that retail payment systems operating in euro should comply with different sets of standards depending on their classification. SIRPSs have to comply with all of the Core Principles, while PIRPSs have to observe a sub-set of those Core Principles, namely Core Principles I, II and VII to X (the “Retail Standards”). In the light of the continuation of the process of European integration, especially owing to the SEPA initiative, the Eurosystem may in the future envisage replacing these national criteria with criteria that take account of systemic relevance for the euro area as a whole.

In order to ensure the consistent application of these oversight standards by the ECB and the various national central banks, the Eurosystem has published a common methodology for the assessment of systems against the relevant standards (“Terms of Reference for the oversight assessment of euro systemically and prominently important payment systems against the Core Principles”).

## 4.2 PAYMENT INSTRUMENTS

Non-cash payment instruments (e.g. payment cards, credit transfers, direct debits and cheques) are used by end users of payment systems to transfer funds between accounts held with banks or other payment service providers. Payment instruments and the rules applied to them by the relevant payment scheme form an essential part of the payment system. Although risks in the provision and use of payment instruments have not generally been identified as being of systemic concern, the safety and efficiency of payment instruments is important in terms of maintaining confidence in the currency and promoting an efficient economy. The Single Euro Payments Area is significantly changing the euro's retail payment landscape, increasing the importance of having a consistent approach across the euro area in the oversight of payment instruments. Consequently, the Eurosystem has been harmonising its oversight activities for payment instruments.

In May 2003 the Eurosystem established a common set of standards for assessing the security of e-money schemes (“Electronic Money System Security Objectives according to the Common Criteria Methodology”), which were a new payment instrument at that time. The Eurosystem then looked at whether or not it was necessary to develop a common policy for the conduct of oversight for other payment instruments, and it has recently developed common standards for direct debits, credit transfers and cards, as well as other, new payment instruments (such as m-payments) that could potentially be used in SEPA. Furthermore, in view of the application of those standards in respect of the new SEPA payment instruments developed by the European Payments Council (i.e. SEPA credit transfers and SEPA direct debits), the Eurosystem has started to develop oversight frameworks providing a more detailed interpretation of those standards. A public consultation on these frameworks was launched in August 2009.

In this context, in January 2008 the Eurosystem published, as a first step, its oversight framework for cards, and in May 2008 it began its oversight assessment of card payment schemes (27 schemes, including four international schemes) operating in the euro area. International card schemes are assessed by cooperative assessment groups consisting of a lead overseeing central bank and other volunteering central banks. These assessments are subject to peer reviews in order to ensure the consistent application of oversight standards. The Eurosystem plans to publish an overall assessment report describing the main assessment results at an aggregated level. It also plans to issue an annual report on card fraud.

## 4.3 SECURITIES CLEARING AND SETTLEMENT SYSTEMS

Securities clearing and settlement systems (including central counterparties for securities and derivatives) are key components of the financial system. A financial, legal or operational problem in any of the institutions that perform critical functions in the securities clearing and settlement process can be a source of systemic disturbance for the financial system as a whole. This is particularly true for central counterparties, which by their very nature concentrate credit risk. Moreover, because securities transactions typically comprise a securities leg and a cash leg, disturbances in the transfer of securities can spill over into the payment systems used by the securities clearing and settlement systems, also causing disruptions in those systems.

In most euro area countries, oversight of securities clearing and settlement systems is conducted by the relevant NCB, alongside regulation by securities regulators. The competences and powers transferred to individual NCBs under the relevant national legislation do, however, differ. The Eurosystem promotes consistency in the oversight policies and activities of the various euro area countries. In June 2009 the ESCB, together with CESR, published recommendations for securities settlement systems and central counterparties in the European Union (see Box 29 below).

**Box 29 ESCB-CESR recommendations for securities clearing and settlement in the European Union**

At the international level, the Committee on Payment and Settlement Systems and the International Organization of Securities Commissions have developed recommendations for securities settlement systems and central counterparties. At the EU level, on 23 June 2009 the European System of Central Banks and the Committee of European Securities Regulators published recommendations for securities settlement systems and central counterparties in the European Union. The main aim of the ESCB-CESR recommendations is to promote efficient, safe and sound pan-European post-trading arrangements in order to increase confidence in securities markets, ensure better investor protection, contain systemic risk and foster financial stability. Furthermore, the recommendations seek to improve the efficiency of Europe's market infrastructure, which should in turn promote integration and efficiency in the wider financial market.

Securities regulators and central banks are committed to integrating the ESCB-CESR recommendations into the frameworks and/or practices that they use to assess the safety, soundness and efficiency of the post-trading infrastructures for which they are responsible. Some EU countries are already assessing new systems against these recommendations. In the case of pan-European systems, memoranda of understanding between overseers already foresee the replacement of the CPSS-IOSCO recommendations with the ESCB-CESR recommendations. It is expected that all systems in the EU will have been assessed against the ESCB-CESR recommendations by end-2011.

The ESCB-CESR recommendations complement the work of other European fora and can be regarded as one of the key pillars of the framework for developing the post-trading sector in the EU, together with TARGET2-Securities, the Code of Conduct on Clearing and Settlement and the dismantling of Giovannini barriers.

In addition, the Eurosystem has adopted standards for the use of securities settlement systems in Eurosystem credit operations. These were defined from the user's perspective and were not intended as oversight standards. These user standards aim to ensure that the settlement procedures for collateral provided in Eurosystem credit operations are conducted in a safe and sound manner, thereby preventing the Eurosystem from taking on inappropriate levels of risk.

#### **4.4 CORRESPONDENT BANKS AND CUSTODIAN BANKS**

Correspondent banks (which provide other banks with payment services and other services) and custodian banks (which hold securities for their customers and provide related services) are key components of an economy's payment and settlement arrangements. In some cases, payment and settlement flows are concentrated in a few large banks, giving rise to heightened financial and operational risk. Moreover, additional risks may occur when correspondent and custodian banks replace infrastructures altogether by providing similar services ("internalisation"). Finally, correspondent and custodian banks often grant their customers significant amounts of uncollateralised credit, particularly for short periods of time (e.g. intraday).

As is the case for payment and securities clearing and settlement infrastructures, the Eurosystem has an interest in monitoring the activities of correspondent and custodian banks and related risks. In the case of correspondent banks, regular surveys are conducted for a sample of banks to assess the characteristics of these particular payment arrangements from a risk perspective. Owing to the confidential nature of the data provided by the banks, the results of the surveys can only be accessed by participants. As correspondent banks and custodian banks are subject to banking supervision, the Eurosystem works with and through bank supervisors to assess the management of potential risks, as opposed to applying specific oversight standards and recommendations. It thereby seeks to avoid double regulation in relation to these institutions.

#### **4.5 THIRD-PARTY SERVICE PROVIDERS**

Third-party service providers to which payment and settlement systems contract all or part of their operations (e.g. their IT infrastructure) may be of critical importance for the functioning of those systems. For the Eurosystem, a key principle is that the individual systems retain full responsibility for any activity that is material to their operations, including responsibility for ensuring that the service provider complies with applicable oversight policies. Only when a service provider supplies important services to more than one key system will direct oversight activities be undertaken. For instance, this is the case for SWIFT, a global provider of interbank financial telecommunication services (see Section 7 on cooperative oversight). Non-bank payment providers (other than the above-mentioned third-party providers) fall, at least for the time being, outside the scope of the Eurosystem's oversight.

## 5 OVERSIGHT METHODS

The Eurosystem performs its oversight activities in a three-step process: it collects relevant information; it assesses that information against its oversight objectives; and it promotes change where necessary.

### COLLECTION OF INFORMATION

The Eurosystem uses a wide range of information sources, including bilateral contacts with system owners and operators, regular or ad hoc reporting on system activity (including incident reports and their follow-up) and system documentation. It also relies on statistical information on payment and settlement systems. In this regard, a comprehensive description of the various payment and settlement systems operating in the countries of the EU is regularly prepared and made available in the ECB publication entitled “Payment and securities settlement systems in the European Union” (known as the “Blue Book”), together with detailed statistical data on those systems in the “Blue Book Addendum”. In its collection of information, the Eurosystem benefits from national legislation establishing the respective NCBs’ power to obtain information, or on moral suasion where information is provided on a voluntary basis.

### ASSESSMENT OF INFORMATION

The Eurosystem assesses the information received on the basis of its oversight standards, recommendations and expectations. Assessments are conducted on a regular basis, either as a full assessment of an entire system for all relevant standards, or as an impact assessment focusing on specific aspects and a small sub-set of standards. An ad hoc assessment is usually performed when a system operator plans to make a change to a system’s procedures, operations or governance. Thus, the scale of the assessment (i.e. the choice of a full assessment or a focused impact assessment) depends on the scope of the intended change.

Reliance on a standard-based assessment allows the oversight of payment and settlement systems to be carried out in a harmonised and systematic manner. This approach also allows assessments to be conducted in a straightforward and clear manner, with the assessment results of different systems being easily comparable. When planning its oversight activities, the Eurosystem also relies on a risk-based assessment. This enables the Eurosystem to prioritise both the various systems and instruments for which it carries out oversight activities and the various sources of risk. Finally, the Eurosystem conducts research on new developments and general trends in payment and settlement systems and the euro area market infrastructure as a whole (see Box 30).

### Box 30 Payment Economics Network

The quantity and quality of research on issues related to payment and settlement systems has increased over the past few years. However, this area has not yet gained the recognition or organised structure that other central bank-related research fields enjoy. As a first step towards filling this gap and as an attempt to further strengthen the link between research and practice, the ECB has joined forces with several interested central bankers (from the Bank of England, the Reserve Bank of Australia, the Federal Reserve Bank of New York, the Federal Reserve Bank of Chicago, the Bank of Canada and De Nederlandsche Bank), as well as academics, and has established an informal network for interested central bankers and academics around the world. A public internet website (which can be accessed through the website of the ECB) has been launched, providing links to working papers, relevant publicly available policy documents and upcoming or past conferences. It also gives participants the opportunity to post details of interesting research projects. The focus of the network goes beyond oversight and includes a wide range of issues in the field of payment systems and post-trading infrastructure.

## INDUCING CHANGE

On the basis of the results of that assessment, the Eurosystem takes action and induces change where it finds that a particular payment or settlement system, or the market infrastructure as a whole, does not have a sufficient degree of safety or efficiency. To this end, the Eurosystem has a range of tools available, including moral suasion, public statements, influence stemming from its participation in systems, cooperation with other authorities, and binding regulations (a tool that the Eurosystem has not used thus far).

### Box 31 Common oversight assessments conducted by the Eurosystem

In 1998 a first collective assessment exercise was carried out at ESCB level to assess the compliance with the Lamfalussy standards of all the large-value net settlement systems which were to begin operating in euro at the start of Stage Three of Economic and Monetary Union in January 1999.

In 2001, at the request of the ECB, the IMF prepared reports on the observance of standards and codes in the euro area in the context of its Financial Sector Assessment Program. In the field of payment systems, that assessment covered TARGET and the EURO1 system. The findings were published on the websites of the ECB and the IMF in October 2001.

Prior to the launch of the CLS system in 2002, the ECB, together with other central banks with currencies eligible for settlement in CLS, performed a joint risk assessment of the system. In the light of the positive results of that assessment, the ECB approved the inclusion of the euro in CLS.

In the course of 2003 19 large-value payment systems operating in euro, including all TARGET components, were assessed against the Core Principles. The results of this assessment (“Assessment of euro large-value payment systems against the Core Principles”) were published on the ECB’s website in 2004.

In early 2005 the TARGET oversight authorities carried out an oversight assessment of SORBNET-EURO, Narodowy Bank Polski's RTGS system operating in euro, in view of its intention to connect to TARGET via the BI-REL system operated by the Banca d'Italia.

In August 2005 the results of a detailed oversight assessment of 15 retail payment systems operating in euro on the basis of the applicable Core Principles were outlined on the ECB's website.

In 2006 an in-depth oversight assessment was performed on the impact of connecting Eesti Pank's RTGS system operating in euro to TARGET via the BI-REL system.

Prior to its implementation in November 2007, the design of TARGET2 was the subject of a comprehensive oversight assessment against the Core Principles. The final version of that detailed assessment report on TARGET2 was published in May 2009.

In mid-2009 the Eurosystem began assessing all systemically important euro payment systems, including TARGET2 and EURO1, against the business continuity oversight expectations for systemically important payment systems. The results of this assessment were published in 2010.

In May 2008, following the Governing Council's approval of the oversight framework for cards in January 2008, the Eurosystem began to conduct oversight assessments of card payment schemes operating in the euro area against the newly established oversight standards (covering 27 individual schemes, including four international schemes).

Throughout the oversight process, and regardless of the specific methods that it employs for that oversight, the Eurosystem attaches considerable importance to constructive cooperation with the systems overseen. This helps the Eurosystem to ensure that its oversight is effective. However, responsibility for ensuring compliance with applicable Eurosystem oversight policies remains with the systems themselves.

## **6 ORGANISATIONAL SET-UP AND ALLOCATION OF ROLES WITHIN THE EUROSISTEM**

Since the Eurosystem applies the same policy requirements and standards to all systems (i.e. both its own systems and private sector systems), all Eurosystem central banks have separated the work of their oversight staff from that of their operational teams in terms of organisational units and direct line management. This separation minimises possible conflicts of interest in the assessment of the Eurosystem's own systems and helps to protect the confidentiality of information that is received from private systems.

Oversight is the responsibility of the Eurosystem. For the purposes of effective and efficient oversight, the Eurosystem shares this responsibility in a way that

allows the Eurosystem to benefit from its decentralised structure while ensuring the coordination of its oversight activities and the consistent implementation of its policy stance throughout the euro area.

For the oversight of individual systems – including the collection of information, the assessment of that information and any measures aimed at fostering change – the Eurosystem entrusts the leading role to the central bank that is best placed to conduct that oversight, either because of its proximity to the overseen entity (for example, where the system is legally incorporated in its jurisdiction) or in view of national legislation that establishes an oversight obligation. This is typically the case for systems that are clearly anchored in one particular country.

For systems that are not clearly based in one particular country, the body entrusted with oversight responsibility is the NCB where the system is legally incorporated, unless the Governing Council of the ECB decides otherwise and assigns primary responsibility for oversight to the ECB. The ECB is also responsible for the oversight of the euro-denominated systems of EBA CLEARING (i.e. EURO1, STEP1 and STEP2), as well as TARGET2, where the ECB also draws on the expertise of the NCBs (see Box 32). In the case of the Continuous Linked Settlement system, which is run by CLS Bank International in New York, the Federal Reserve System has primary responsibility for oversight under a cooperative oversight framework (see also Section 7.2 on cooperative oversight arrangements). The ECB also participates in this arrangement, together with the Eurosystem NCBs that belong to the G10. Within the Eurosystem, the ECB has primary responsibility for overseeing the settlement of the euro in CLS, but cooperates closely with all NCBs.

#### **Box 32 Oversight conducted by the ECB**

The oversight of TARGET2 is a Eurosystem function. The Governing Council of the ECB is the ultimate oversight authority. The Governing Council is assisted by the Payment and Settlement Systems Committee (PSSC). The PSSC, in turn, is assisted by the Oversight Working Group, with clearly defined roles at the technical level. All TARGET2 oversight activities are led and coordinated by the ECB, which works closely with the national central banks of the euro area.

EURO1 is a large-value payment system for cross-border and domestic payments in euro between banks operating in the EU. It is operated by the clearing company of the Euro Banking Association, EBA CLEARING, which is also the operator of the STEP1 and STEP2 systems. The STEP1 system is designed to process single cross-border payments in euro between banks operating in the EU. It provides access to the EURO1 processing platform to banks that do not comply with the strict EURO1 admission criteria and allows these banks to exchange payments with other STEP1 participants, as well as the entire community of EURO1 banks. STEP2 is a retail payment system for cross-border – and increasingly also national – payments in euro. STEP2 is classified by the Eurosystem as a retail payment system of prominent importance. The Governing Council has entrusted the ECB with the oversight

of EURO1, STEP1 and STEP2. Oversight assessments and major issues are brought to the attention of the Payment and Settlement Systems Committee and the Oversight Working Group.

The Eurosystem has agreed that all card schemes operating in the euro area which are not subject to the waiver criteria should be assessed in a coordinated manner. For card payment schemes operating in more than one euro area country (i.e. cross-border schemes), the lead oversight authority within the Eurosystem coordinates the implementation of an oversight assessment carried out by an assessment group. For those schemes legally incorporated outside the euro area, the ECB is the lead oversight authority. This is currently the case for Visa Europe, Diners and American Express.

A similar approach is applied for payment instruments. The main focus as regards assigning the role of primary oversight authority within the Eurosystem is on the country in which the scheme is based and the legal incorporation of its governing body. The central bank entrusted with primary responsibility for oversight within the Eurosystem represents the Eurosystem's interests as regards the prudent design and management of the systems or instruments it oversees. However, it will also take into account the oversight interests and expertise of the ECB and other NCBs. Each central bank reports its oversight policies, assessments and results to the Governing Council of the ECB via the ECB's committee structure.

In the case of securities clearing and settlement systems, the Eurosystem benefits from the oversight competence legally conferred on the NCBs by national legislation. Each NCB reports on its own oversight assessments, which are conducted in cooperation with the relevant securities regulators, with a view to ensuring the transparent implementation of the recommendations applied in the various countries. In the future, transparency and consistency will be ensured through the application of the ESCB-CESR recommendations.

The Eurosystem ensures that its decentralised oversight activities for payment and settlement systems are effectively coordinated. Effective coordination is of particular importance in times of crisis, when appropriate information-sharing and close cooperation between central banks will allow the Eurosystem to identify and address the sources and impact of a crisis quickly and effectively.

## **7 COOPERATIVE OVERSIGHT**

### **7.1 INTERDEPENDENCIES AND LOCATION OF PAYMENT AND SETTLEMENT SYSTEMS**

While it offers numerous benefits for the financial sector and the economy as a whole, globalisation also poses a challenge for central banks seeking to retain control over their currencies, as it increases the extent to which currencies are used beyond the confines of the territory in which they are issued. Thus, financial

and economic activities carried out in a given currency may take place outside the area in which the issuing central bank is entitled to exercise its statutory powers. More generally, globalisation creates interdependencies between activities around the globe. Thus, regulatory measures and policy actions for a given jurisdiction tend to gain relevance that extends beyond the geographical borders of that area.

Global financial integration has led to market infrastructures that settle in euro or clear euro-denominated transactions outside the euro area (i.e. offshore infrastructures) gaining in importance. These developments have a bearing on how the Eurosystem organises and conducts its oversight activities.

While a payment infrastructure can affect the stability of the financial system largely through its design, its location can also play a role. Relevant factors in this context include the settlement asset used by the infrastructure, the legal regime under which it operates, its governance, and the role played by oversight authorities and other stakeholders in crisis situations. While the Eurosystem has a legal responsibility to influence such aspects in the context of domestic payment infrastructures, its ability to do so is more limited when it comes to offshore payment and settlement infrastructures.

This could have serious consequences for the smooth functioning of market infrastructures operating in euro and financial stability in the euro area more generally. In particular, offshore infrastructures which malfunction or have an inappropriate design have the potential to affect the smooth functioning of domestic systems. In an extreme case, the development of offshore infrastructures could even give rise to a situation in which a substantial share of domestic traffic was ultimately settled offshore in commercial bank money, with key domestic payment infrastructures used only for the settlement of end-of-day positions.

Cooperative oversight arrangements at the international level (assuming that the host central bank accepts primary responsibility for oversight) can mitigate the loss of direct influence to some extent, but not entirely. In particular, in the case of a crisis situation affecting an offshore system, the fact that the issuing central bank is dependent on the host central bank for the management of the crisis makes a real difference by comparison with a situation where payments are settled in a domestic infrastructure. It might not be possible to gain access to comprehensive or timely information from the infrastructure in question (e.g. owing to time zone differences), and the central bank with primary responsibility for oversight might – in its policy actions – focus on addressing the consequences for its own currency and financial system, paying less attention to the interests of other central banks.

Given its mandate to promote the smooth operation of payment and settlement systems operating in euro, the Eurosystem has serious concerns with regard to the development of large payment infrastructures operating in euro which are located outside of the euro area, as such infrastructures could potentially threaten the Eurosystem's control over the euro. As a matter of principle, infrastructures settling euro-denominated payment transactions should settle such transactions

in central bank money, be legally incorporated in the euro area and have full operational responsibility for processing euro-denominated transactions.

The Eurosystem accepts exceptions to this rule only in very specific circumstances, assessing cases on an individual basis. One important exemption relates to multi-currency systems that settle payment transactions related to foreign exchange trades on a payment-versus-payment basis. These are, by definition, offshore as regards one or more currency areas. For example, the Eurosystem has never tried to apply its location policy to the PvP element of CLS, instead insisting that the Eurosystem be closely involved in the oversight activities of the central bank with primary responsibility for oversight – the Federal Reserve System. However, that exemption does not apply to non-PvP transactions, for which the payment infrastructure could easily be operationally and legally located in the euro area.

Another exemption concerns systems which are relatively small in size and therefore not likely to affect financial stability or monetary policy in the euro area. More precisely, the Eurosystem does not insist on the location requirement for systems which settle less than €5 billion per day or 0.2% of the total daily average value of payment transactions processed by euro area interbank funds transfer systems which settle in central bank money (whichever of the two amounts is larger).

The Eurosystem has also issued statements on the location of central counterparties, stressing the Eurosystem's interest in having the core infrastructure for the euro located in the euro area.

## **7.2 COOPERATIVE OVERSIGHT ARRANGEMENTS**

Cooperation with oversight authorities (and other bodies) at international level complements the Eurosystem's location policy and is a means of addressing the rising importance of interdependencies. Although it has a clear preference for euro payment and settlement systems being located in the euro area, the Eurosystem recognises that offshore systems and interdependencies with other systems and third-party providers create a need for efficient and effective cooperation between the central banks responsible for the oversight of such systems.

Having central banks adopt the same internationally recognised oversight standards and recommendations plays an important role in reducing the risk of inconsistent oversight policies. However, this remains an incomplete response to this risk and does nothing to reduce the risk of duplication or gaps.

Based on the principles of international cooperative oversight, as reiterated by the CPSS oversight report of 2005, the central banks of the Eurosystem participate successfully in various cooperative oversight arrangements, for example those in place for SWIFT and CLS (see Box 33). Participation in these arrangements is guided by both the interests of the Eurosystem as a whole and the relevant Eurosystem policies. Without prejudice to the role of the primary oversight authority, coordination within the Eurosystem has proven very useful. Moreover, the Eurosystem seeks to ensure that the results of that cooperative oversight at international level are shared within the Eurosystem.

## Box 33 Cooperative oversight arrangements

### Oversight arrangements for CLS

The Continuous Linked Settlement system primarily provides settlement services for payment instructions related to foreign exchange transactions, covering 17 currencies around the globe. In addition, CLS settles single-currency payment transactions linked to a limited set of financial instruments – i.e. over-the-counter transactions for credit derivatives and non-deliverable forward transactions. The CLS system is the most important offshore system operating in euro in terms of both settlement volumes and values. Accordingly, the safety and efficiency of CLS and its compliance with the Eurosystem’s policy principles is of prime importance to the Eurosystem.

CLS is managed by CLS Bank International in New York, which is regulated by the Federal Reserve System. The Federal Reserve System is also the lead oversight authority in a cooperative oversight arrangement for CLS, working together with the other central banks whose currencies are settled by CLS. Within this cooperative oversight framework, the ECB is the primary oversight authority for the settlement of the euro in CLS.

### Oversight of SWIFT

Given that SWIFT is incorporated in Belgium, the Nationale Bank van België/Banque Nationale de Belgique is the lead oversight authority. It conducts its oversight of SWIFT in cooperation with the ECB and the G10 central banks. The Nationale Bank van België/Banque Nationale de Belgique and SWIFT have formalised their oversight relationship in a protocol arrangement, while the relationship between the Belgian NCB and the other cooperating central banks is laid down in bilateral memoranda of understanding between the Nationale Bank van België/Banque Nationale de Belgique and the respective central banks.

The oversight of SWIFT focuses on the security, operational reliability, business continuity and resilience of the SWIFT infrastructure. The oversight activities performed by the various central banks seek to ensure that SWIFT has put in place appropriate governance arrangements, structures and processes, together with risk management procedures and controls, that enable it to effectively manage the potential risks it poses for financial stability and the soundness of financial infrastructures. The oversight of SWIFT does not grant SWIFT any form of certification, approval or authorisation, and SWIFT remains responsible for the security and reliability of its systems, products and services.

The overseers of SWIFT have developed “High Level Expectations for the Oversight of SWIFT” as a specific set of principles tackling various areas of operational risk. By formulating those principles, those oversight authorities have emphasised the importance they attach to the operational reliability of SWIFT, while clarifying their objectives to various stakeholders (i.e. SWIFT’s management and Board, central banks and other public authorities). These expectations were deliberately labelled “high-level”, as the oversight authorities did not want to impose a specific methodology as regards SWIFT’s IT security framework, but rather to offer SWIFT maximum flexibility to demonstrate its compliance with those expectations with reference to its framework, processes, standards and security baselines. Thus, SWIFT is free to choose its own methodology for its IT security framework.

## 7.3 COOPERATION WITH OTHER AUTHORITIES

Cooperation with other authorities is another important means of ensuring effective and efficient oversight, as the oversight responsibilities of central banks are closely related to the responsibilities of other prudential supervisors and securities regulators. This is particularly evident in crisis situations, where close and timely cooperation between central banks and supervisory authorities can be decisive in containing the scope and impact of a financial crisis.

The principles of cooperative oversight by central banks provide a useful framework for cooperation between central banks and other authorities, both internationally and domestically. In particular, it is recognised that each regulator will need to fulfil its own regulatory responsibilities, that cooperation must be without prejudice to those responsibilities, and that there can be no delegation of these responsibilities. In addition to any arrangements that national central banks may have in place governing cooperation with other national authorities, the Eurosystem has concluded memoranda of understanding with prudential supervisors and regulators in order to lay down procedures and principles governing regulatory cooperation (see Box 34 below).

### Box 34 Existing memoranda of understanding

Memorandum of understanding on cooperation between payment systems overseers and banking supervisors in Stage Three of Economic and Monetary Union, April 2001

Memorandum of understanding on high-level principles of cooperation between the banking supervisors and central banks of the European Union in crisis management situations, March 2003

Memorandum of understanding on cooperation between the banking supervisors, central banks and finance ministries of the European Union in financial crisis situations, May 2005

Memorandum of understanding on cooperation between the financial supervisory authorities, central banks and finance ministries of the European Union on cross-border financial stability, June 2008

Given that the Eurosystem's forthcoming TARGET2-Securities platform will settle transactions in European securities in central bank money, the ESCB and CESR have begun working together to define and subsequently apply an oversight framework tailored to T2S.

At the global level, the ECB and a number of Eurosystem national central banks are contributing to the work of the OTC Derivatives Regulators Forum, an informal body for the exchange of information between authorities with responsibility for market infrastructures for OTC derivatives, particularly as regards central counterparties and trade repositories in this area.

## CHAPTER 13

# THE EUROSISTEM'S CATALYST ROLE

### I A CATALYST FOR MARKET EFFICIENCY AND INTEGRATION

The Eurosystem's catalyst function seeks to facilitate the efficiency of the overall market arrangements for payments, clearing and settlement. Financial integration and financial development are two complementary processes facilitating efficiency. The catalyst function complements the oversight function, which seeks to ensure the safety and efficiency of individual payment, clearing and settlement systems, as well as the safety of the overall market infrastructure.

While the current process of European integration has its origins in the early 1950s, the first substantial steps in the direction of greater financial integration were taken in the 1980s and 1990s. The most prominent events were undoubtedly the launch of the European Single Market in 1986, the introduction of the euro in 1999, and the changeover to euro banknotes and coins in 2002. The introduction of the euro in particular gave financial market integration a considerable boost.

As indicated in previous chapters, the euro area's original payment and securities clearing and settlement systems were created in order to meet domestic needs. They were therefore relatively diverse in nature and not designed to meet the needs of a single currency area, where area-wide infrastructures based on common standards, rules and business practices are needed in order to allow an efficient and effective flow of payments and securities at low cost.

With the introduction of TARGET in January 1999, the Eurosystem, in its operational role, provided a system enabling the euro area-wide real-time settlement of euro payments – particularly large-value and time-critical payments – in central bank money. In parallel, the private sector system EURO1 provided an alternative means of processing large-value and commercial payments in euro, with that system available to a large number of banks throughout the euro area and the EU. These systems allowed a considerable degree of integration in the large-value payment segment.<sup>25</sup> However, the same cannot be said for the retail payment and securities sectors, where euro area infrastructure has suffered from fragmentation, resulting in inefficiencies and high costs, especially for cross-border transactions. The euro area's highly complex and fragmented infrastructure has prevented it from benefiting fully from the considerable economies of scale (and scope) present in the processing of payments and securities.

The Eurosystem's statutory task of promoting the smooth operation of payment systems means that it has a keen interest in the integration of the retail payment and securities sectors, which is the logical next step following the introduction

<sup>25</sup>Initially, four other local or regional systems also served the large-value payment market. These have since withdrawn from the market.

of the euro. In its catalyst role, the Eurosystem encourages change in these market segments and seeks to overcome the problem of fragmentation, which leads to inefficiencies, lower levels of growth and innovation, and unnecessary risks associated with the complexity of the market. In acting as a catalyst for change, the Eurosystem occasionally mediates between market forces and helps to remove obstacles to the integration and development – and thus efficiency – of the euro area’s retail payment and securities sectors.

There are various ways of achieving a more integrated and efficient European financial market. On a conceptual level, the establishment of area-wide integrated payment or securities settlement services means that participants: (i) are subject to a single set of rules; (ii) have equal and open access to the services in question; and (iii) are treated equally when using those services. This means that integration concerns issues such as standardisation, harmonisation (i.e. common rules, standards and business practices), interoperability and/or the consolidation of systems. Among other things, financial integration typically facilitates competition and creates economies of scale. Financial development involves a process of financial innovation and organisational improvement that renders markets more complete, increases agents’ options when engaging in financial transactions, improves market transparency, reduces transaction costs and increases competition.

Financial integration and development are primarily market-driven processes. Where payment or securities markets are engaged in a process of integration and development, with constructive initiatives emerging, the Eurosystem prefers to allow market forces to act and restricts its involvement to facilitating developments and establishing framework policies. Market participants are normally best placed to determine the most efficient and practical solutions when it comes to meeting the needs of their customers and the economy in general. Indeed, the Eurosystem has always endeavoured to facilitate market-driven integration and development in the handling of retail payments and securities. It has done so by bringing together the stakeholders concerned, identifying and analysing issues relevant for progress, setting public policy objectives, encouraging standardisation and helping to address barriers that cannot be fully removed by the private sector alone.

It should be noted that both the Eurosystem and the European Commission are involved in activities facilitating market efficiency and integration. However, while they often have the same public policy goals, they act from slightly different perspectives. Whereas the Eurosystem has statutory responsibilities as regards the euro and the euro area (being responsible, among other things, for its payment, clearing and settlement arrangements), the Commission aims to create a single market with a level playing field and equal opportunities covering all of the countries – and currencies – of the European Union. One of the tasks of the Commission is to strive for the further harmonisation of legislation within the EU – including legislation applicable to payment, clearing and settlement systems – by proposing directives to be implemented in national legislation by the Member States. The Commission also has responsibilities in the related areas of competition policy and consumer protection. Moreover, it investigates barriers preventing the creation of a single market for banking and finance. By helping

to remove legal barriers and introducing harmonised rules, the Commission stimulates competition in payment and securities markets with a view to establishing a level playing field and promoting economic integration.

## 2 LEADERSHIP AND COORDINATION

The establishment of efficient and integrated euro area-wide markets for the handling of retail payments and securities where previously there were only fragmented national markets is a complex process involving a large number of infrastructure operators, many thousands of financial institutions and hundreds of millions of different end users. It is therefore not surprising that coordination problems occasionally arise, especially given that stakeholder groups and institutions sometimes have divergent interests. Acting as a facilitator, the Eurosystem aims to help the private sector to overcome these problems. Drawing on its position as a public authority and a neutral party, as well as its relationships with market participants and its considerable experience in the areas of payment and settlement, it seeks to assist the market in organising cooperation, defining development strategies, setting milestones and timetables, and ensuring the effective sharing of information.

While market participants may look to the Eurosystem for leadership on some issues, it should be noted that leadership does not, in this case, mean the Eurosystem taking over private sector development projects. On the contrary, this means that the private sector can rely on the Eurosystem's willingness to help it address the problems it faces. Although the Statute of the ESCB gives the ECB the power to issue regulations addressing payment, clearing and settlement systems (see Chapter 14), it has so far avoided using this instrument, relying instead on moral suasion.

An important element in furthering financial integration and development is to have in place an appropriate framework for cooperation. It has therefore been important for the Eurosystem that structures be created at the European level to steer the relevant projects and complement and coordinate the work being conducted by the various parties at the national level. Indeed, market participants have established a number of European organisations and groupings for the specific purpose of considering issues in the field of clearing and settlement systems for payments and securities. These cooperation arrangements serve to promote the interests of their members, facilitate exchanges of views and develop common standards and practices.

The most prominent private sector bodies in the payment market are the European Payments Council, the European Automated Clearing House Association and the Euro Banking Association, while the most significant organisations in the area of securities infrastructures are the European Central Securities Depositories Association (ECSDA), the European Association of Central Counterparty Clearing Houses (EACH) and the Federation of European Securities Exchanges. In addition to such European bodies, the Eurosystem also has regular contact with infrastructure operators and their governing bodies, with providers of payment, clearing and settlement services, and with representatives of users such as issuers

and intermediaries. For instance, three European credit sector associations<sup>26</sup> represent the banking industry and are active in the areas of both payments and securities. Thanks to regular and close contact with market participants and their associations, the ECB is able to convey its ideas to the private sector and obtain feedback on how the work of the Eurosystem is perceived by the market. Two examples of this cooperation are the Contact Group on Euro Payments Strategy (COGEPS) and the Contact Group on Euro Securities Infrastructures (COGESI). More information on these fora can be found in Chapter 14.<sup>27</sup>

As a monetary authority with responsibilities in the area of payments and settlement, the Eurosystem guides the work of the private sector by defining and clearly communicating the public policy objectives to be achieved. Such guidance is essential in complex projects where definition and implementation last a number of years and involve a considerable number of stakeholders – e.g. the SEPA project. The Eurosystem has also endeavoured to ensure that the “rules of the game” do not change in the course of such projects, as this could result in a substantial threat to the project in question. High-level objectives may nevertheless be complemented over time by more specific guidance (e.g. concrete timetables) and recommendations on various issues. This approach allows the Eurosystem to address any issues that may arise, as has been done in a considerable number of SEPA-related reports issued by the ECB. Moreover, since 2005 the ECB has regularly organised high-level meetings on SEPA as a means of fostering an informal exchange of ideas and views between high-level representatives of the financial industry and board members of Eurosystem central banks.

When setting policy objectives, the Eurosystem generally seeks to organise discussions regarding strategy or obtain the necessary information by other means, involving all relevant stakeholders. It has, for instance, consulted the banking industry, infrastructure providers and end users (including corporations, merchants, small and medium-sized enterprises, public administrations and consumers) on SEPA-related issues. Similarly, users of securities infrastructures are consulted and involved in discussions on post-trading issues. Several representatives of banks attend COGESI meetings alongside infrastructure providers. The involvement of all relevant stakeholder groups is important in order to ensure not only that their needs are met by new policy initiatives, but also that they contribute to the successful and coordinated implementation of new measures.

Another form of Eurosystem involvement can be found in the coordination and sharing of information with other public bodies and fora dealing with financial sector issues at the EU level, such as Commission working groups and committees comprising representatives of national governments (see Chapter 14 for a description of the arrangements governing cooperation with other European institutions). Integration efforts in the field of payment and settlement activities

<sup>26</sup>The European Banking Federation, the European Savings Banks Group and the European Association of Cooperative Banks.

<sup>27</sup>The agendas of COGEPS and COGESI meetings and summaries of those meetings are also available on the ECB’s website.

are aligned with EU policies on financial services and also contribute to the achievement of the “Europe 2020 Strategy” for growth and jobs, which aims to make the European economy more competitive. Positive feedback from these EU bodies lends strong political support to integration and development projects.

### **3 AREAS OF INVOLVEMENT**

#### **3.1 INTEGRATION OF RETAIL PAYMENT MARKETS**

##### **PROMOTING TECHNICAL STANDARDISATION IN PAYMENT PROCESSING**

Technical standards are very important for efficient interaction between the various parties involved in the processing chains for payment and securities transactions. They provide a basis for effective communication, interoperability and the automation of processes. Technical standards are for institutions and systems what language is for people. Without a common language, communication may be impossible or lead to material misunderstanding.

Since the establishment of an integrated euro area market requires the existence of common standards for a variety of activities, the Eurosystem attaches great importance to the development and implementation of standards. In particular, in the context of the SEPA project, it has supported the development of various technical standards for retail payments. The Eurosystem holds the view that, whenever possible, non-proprietary international standards should be used, or new common European standards should be developed.

In Europe, the European Committee for Banking Standards (ECBS) was formed in 1992 by the three European credit sector associations representing the interests of European banks and associations. Its committees and working groups sought to develop technical standards that would help to harmonise the European financial sector. The ECB (as well as its predecessor, the European Monetary Institute) participated in some of these groups. Between 1995 and 1999 standards and implementation guidelines were defined which harmonised cross-border credit transfers within Europe. The best known of the standards developed or promoted by the ECBS are the International Bank Account Number (which is an International Organization for Standardization (ISO) standard) and the International Payment Instruction, which have helped to automate cross-border credit transfers. The IBAN is gradually replacing national bank account numbers and must therefore be used for all retail payments in the euro area. The ECBS has since been integrated into the EPC.

As part of its facilitation of the SEPA project, the Eurosystem has continuously followed and encouraged the standardisation work carried out by the banking industry. In 2004 it established a set of seven high-level recommendations regarding standardisation work. It asked that the industry formulate and regularly review a strategic vision – complemented by a detailed action plan – setting out the business and technical standards necessary in order to design and implement safe, efficient and fully automated payment services using the best available technology with a view to supporting the SEPA project. This work was to be triggered by assessments of user needs and the business models that could

potentially be deployed Europe-wide in pan-European payment schemes and was to follow clear and efficient procedures. The Eurosystem also asked the industry to clarify the roles and responsibilities of the various bodies and stakeholders involved and – with a view to integrating the standardisation work necessary for the SEPA project into the wider international context – to enhance cooperation with parties such as the European Standards Organisations, the ISO and SWIFT. Activities and initiatives aimed at strengthening the security of payment services and combating fraud also needed to be developed in more detail. Moreover, the implementation of standards needed to be supported by a coherent communication strategy targeting all relevant stakeholder groups.

The EPC has now adopted a common approach for the development of standards that will allow the automated processing of euro-denominated payments. Taking the universal financial industry (UNIFI) message standards – i.e. the UNIFI (ISO 20022) XML message standards – developed by the ISO as a starting point, the EPC has identified the data that need to be exchanged between financial intermediaries. These standards will form the basis for SEPA messages and are set out in the rulebooks for SEPA credit transfers and direct debits. The EPC has also developed a set of SEPA implementation guidelines to define the use of these standards. Those guidelines stipulate that the UNIFI standards are compulsory in the bank-to-bank domain, with their use recommended in the customer-to-bank domain.

In defining and implementing SEPA, the EPC initially concentrated on core services and aspects related to interbank procedures. The Eurosystem has therefore encouraged standardisation work in the customer-to-bank and bank-to-customer domains, which are indispensable for the achievement of end-to-end straight-through processing. In order to fully reap the benefits of STP, the Eurosystem has also encouraged banks to automate their intra-bank processes. The link between banks and their customers is a significant source of cost and offers considerable potential for savings. Further work also needs to be undertaken in the definition and implementation of security standards, as well as in the forward-looking domains of e-payments, e-invoicing and m-payments.

In the view of the Eurosystem, card payments represent a field of activity that requires particular attention in standardisation work. While migration to the EMV standard for cards, POS terminals and ATMs is well under way, further standardisation efforts are needed in the terminal-to-acquirer and acquirer-to-issuer domains, as well as regarding the security and certification of equipment. A uniform certification scheme is of great importance for both manufacturers and buyers of equipment used in the handling of card transactions.

## **THE SEPA PROJECT**

As part of its statutory task of promoting the smooth operation of payment systems, and given its desire to facilitate financial integration, the Eurosystem analyses developments in the products, processing and settlement of the retail payment market and the corresponding evolution of technical standards with a view to establishing a single retail payment market for the euro area. The Eurosystem considers the creation of a single retail payment market to be

important for the integration of banking markets and European integration in general. With this in mind, the Eurosystem has given the industry considerable guidance in order to ensure that this single market is established in the way that best meets the needs of Europe's citizens and corporations.

The Eurosystem has a vision of an integrated market for payment services which is subject to effective competition and makes no distinction between cross-border and national payments. Competition is expected to increase, as providers will be able to offer their services to the entire euro area market. This, coupled with economies of scale, will ensure that customers are offered a wider range of competitive payment solutions.

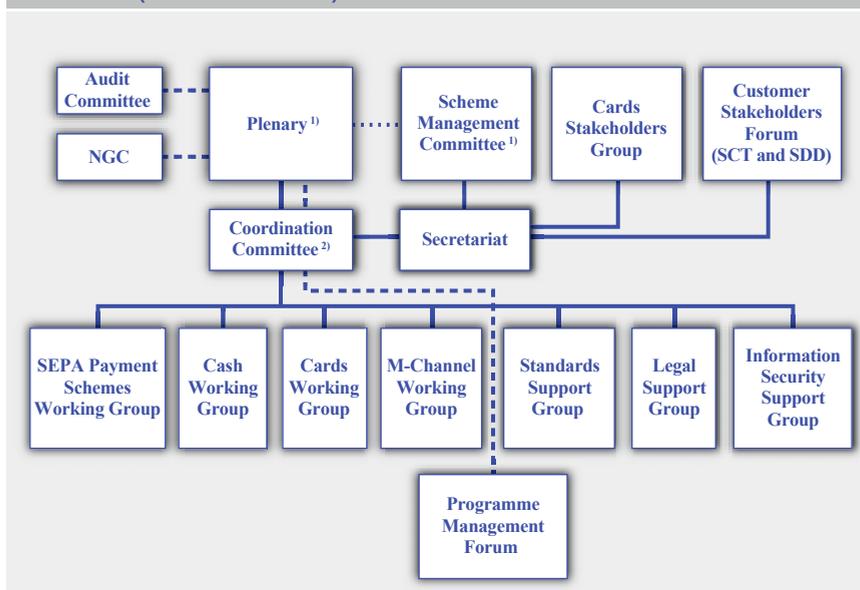
As long ago as September 1999 the Eurosystem published a report entitled "Improving cross-border retail payment services in the euro area – the Eurosystem's view", in which it called on the banking and payment service industry to achieve a number of objectives by 1 January 2002. The industry was asked to substantially improve the efficiency of cross-border credit transfers, reducing the fee for cross-border credit transfers, bringing settlement times into line with those for national payments, having the originator bear all fees unless otherwise agreed, and implementing the technical standards defined by the European Committee for Banking Standards.

One year later the Eurosystem stressed that, in order to achieve the objectives set out in the previous report by 1 January 2002, banks needed to do four things: publicly commit themselves, together with infrastructure providers, to the implementation of the STP standards they had agreed on; stop double-charging and instead respect the agreement that fees would be paid by the originator; design and name a common credit transfer product; and launch an information campaign aimed at customers.

December 2001 saw the adoption of Regulation (EC) No 2560/2001 of the European Parliament and of the Council of 19 December 2001 on cross-border payments in euro, which required that the same fees be charged for domestic and cross-border electronic retail payments in euro (see Chapter 10). This gave the banking community a strong incentive to address obstacles to efficient retail payments. In May 2002 the European banking community published a white paper entitled "Euroland: Our Single Payments Area!", which set out the banking sector's objective of creating a Single Euro Payments Area by 2010 (see also Chapter 8). This paper and the establishment of the self-regulatory European Payments Council in June 2002 were welcomed by the Eurosystem, and strong support was offered to the EPC in the creation of SEPA.

It was soon agreed that the Eurosystem would facilitate the work of the EPC by participating with observer status in its General Assembly and working groups. Participation in the General Assembly allows the Eurosystem to provide input in high-level and strategic discussions. Participation in the various working groups (which have evolved over time) allows the Eurosystem to closely follow the work of the EPC, to make its expertise available and, last but not least, to learn from the banks – which are, after all, responsible for providing the services in

**Chart 49 Organisational structure of the European Payments Council (November 2009)**



Source: EPC.

1) Decision-making body.

2) Process-making body.

question to end users. At the same time, the fact that the Eurosystem does not participate in the EPC's Coordination Committee means that banks have a forum in which they can discuss issues among themselves without the involvement of central bankers.

By 2004 progress was being made in the development of the SEPA payment instruments for credit transfers, direct debits and cards. The Eurosystem requested that these instruments be available to individuals and companies for national payments as of 2008. Full migration for banks and their customers was to be achieved by end-2010.

To ensure that the payment instruments developed by the EPC would meet the needs and requirements of customers, the Eurosystem asked that end users be involved in the finalisation of the schemes. It also requested that the EPC develop a standard for priority (i.e. same-day) payments. The direct debit schemes were to be complemented by a suitable solution for business customers (i.e. business-to-business schemes), and different options were to be considered for the handling of mandates with a view to tackling the different customer needs and payment habits across the SEPA area. The Eurosystem also requested that infrastructures be able to process both "old" national and "new" SEPA instruments as of January 2008. The banking sector was urged to examine e-invoicing in greater depth and to provide a proposal for the development of SEPA-wide standards for this service. To ensure a smooth migration process, the first national migration plans were expected by mid-2006.

In July 2007 the Eurosystem stressed the urgent need for clarity regarding all of the features of SEPA direct debits. This related in particular to the finalisation of the business-to-business scheme and the secure handling of electronic mandates. The EPC was also asked to finalise its definition of standards for cards in 2008, and the Eurosystem expressed a strong desire for a new European card scheme. It was suggested that this could be achieved by establishing a completely new scheme, through an alliance between existing national schemes or by expanding an existing national scheme. The Eurosystem also called for better and more extensive communication, as well as the closer involvement of non-bank stakeholders in order to ensure that they were ready for the transition to SEPA instruments in 2008.

In 2007 the ECB worked with the banking industry on a survey looking at the impact of SEPA. The aim was to gain a greater understanding of the potential economic consequences of SEPA. The study found that the overall financial impact for the banking industry varied depending on the development of the SEPA project. It was shown, for instance, that the project phase in which national and SEPA payment schemes coexisted should be as short as possible, as a longer migration period would entail higher costs. The study also indicated that forward-looking banks that used innovation and technology to offer their customers value-added services were likely to gain the most from SEPA.

A parallel study carried out by the Commission showed that the potential benefits of SEPA could exceed €123 billion over the next six years in payment markets alone, with a further €238 billion to be gained if SEPA could be used as a platform for electronic invoicing. Consequently, the ECB and the Commission called on banks to maintain the momentum of the SEPA process so that users could migrate quickly to the new SEPA payment instruments in a market-led process and the costs of dual payments could be kept to a minimum. The Eurosystem and the Commission also repeatedly encouraged public administrations – which are major initiators and recipients of retail payments – to be among the first to move over to SEPA instruments. With this in mind, the Eurosystem welcomed the ECOFIN Council's strong expression of support for the SEPA project in October 2006, January 2008 and December 2009.

The clearing and settlement framework defined by the EPC for infrastructure providers required that infrastructures support the agreed SEPA message standards and ensure that all parties could be reached within the SEPA area. In order to achieve the second of those objectives by end-2010, a number of infrastructures were expected to establish links between their systems. In the long term, the Eurosystem expects the number of infrastructures to fall, as those that do not plan to become SEPA-compliant are expected ultimately to close.

To facilitate the implementation of SEPA and to increase transparency, the ECB published all national migration plans on its website in 2007. Later that year the ECB played host to the signing of the first adherence agreements by European banks. By signing those agreements, the banks committed themselves to offering SEPA credit transfers as of 28 January 2008. At this point, the EPC was again encouraged to step up its communication efforts during 2008 in order to increase awareness of SEPA.

Moreover, in 2008 the Eurosystem developed and published criteria (in the form of non-binding “terms of reference”) to assess the SEPA compliance of payment infrastructures, doing the same for card schemes the following year. Payment infrastructures and card schemes were asked, in 2008 and 2009 respectively, to assess their own compliance with SEPA using those terms of reference and to publish the results. The resulting disclosure allowed the Eurosystem and other stakeholders to monitor service providers’ implementation of SEPA in a more effective manner, as well as supporting and encouraging greater transparency and competition.

The Eurosystem also repeatedly pointed out that the EPC was expected to ensure good governance arrangements, promoting innovation, transparency and the adequate involvement of stakeholders. Once SEPA had been launched, the EPC was expected to deal with all communities and stakeholders in an open and non-biased way, and all suggestions for changes to the various schemes were to be considered, regardless of their source. Furthermore, the EPC was encouraged to continue working on new initiatives, such as e-invoicing, e-reconciliation and mobile initiation, as these types of service would foster the establishment of a paperless payment area with end-to-end STP for all SEPA-compliant payments. This would result in paper-based services and manual work being replaced by automated processes, giving rise to time and cost savings for all parties.

On 28 January 2008 the ECB, the European Commission and the European Payments Council, as the key promoters of SEPA, held a joint high-level event to mark the launch of the project. The Eurosystem and the European Commission also published a joint statement welcoming the official launch of the SEPA credit transfer scheme and acknowledging the substantial amount of preparatory work that had been undertaken by European banks in order to create SEPA under the aegis of the European Payments Council. In addition, most ACHs that processed credit transfers in euro had become SEPA-compliant by this point. January 2008 also saw the launch of SEPA for cards.

In November 2008 the Eurosystem emphasised that financial market participants (such as banks, corporate entities, public administrations, national banking communities and merchants) needed to continue their efforts in order to ensure the success of SEPA. The Eurosystem also stated once again that it expected a European card scheme to emerge in the coming years. Setting a realistic but ambitious end date for migration to the SEPA credit transfer and direct debit schemes was mentioned as being key to the progress of the SEPA project. While greatly appreciating the work already done, the Eurosystem noted that the project had entered a critical phase in which concerted efforts needed to be made by all stakeholders in order to continue the momentum of the project and realise the benefits of SEPA at an early stage. The Eurosystem also identified ten key “milestones” for the implementation of and migration to SEPA, as well as a series of tasks necessary for their achievement.

The SEPA direct debit scheme was launched on 2 November 2009. It had to wait until the Payment Services Directive came into force, which occurred in most Member States in November 2009 (see Chapter 10). In a joint press

release in September 2008 the ECB and the Commission encouraged the EPC to move ahead with the launch of the SEPA direct debit scheme. At the time of writing, the euro area countries still have their own national direct debit schemes, and – although the SEPA direct debit scheme is available – it is not possible to establish cross-border direct debit arrangements in Europe. This will change by November 2010 at the latest. As of then, if they offer national direct debit services in euro, banks will have a legal obligation to also offer pan-European direct debit services in euro. Under the SEPA scheme, bank customers will be able to set up direct debit arrangements in order to make payments to companies in euro from bank accounts in any of the 32 European countries participating in SEPA. Since discussions on interbank charging had become an obstacle to progress, the ECB and the Commission announced in a press release that they were prepared to support the idea of a multilateral interchange fee for cross-border direct debits within the framework of the SEPA scheme, on the condition that such fees were not only objectively justified, but also transitional – i.e. applicable only for a limited period.

Over the years, in discussing the way forward, some stakeholder groups have at various times expressed the view that it would be possible to retain the current national instruments and systems and concentrate on defining and implementing common standards, instruments and schemes for cross-border payments. However, this would ultimately result in a “mini SEPA”, which would not be acceptable to the Eurosystem or the users of payment services. For this reason, the Eurosystem has repeatedly insisted that the banking community come up with solutions for a single euro retail payment market which integrate all national and area-wide activities.

#### **Box 35 Ensuring stakeholder involvement: the SEPA Council**

SEPA is a major project that needs clear and transparent governance arrangements involving all stakeholders (i.e. payment service providers, end users and public authorities). In several reports, the Eurosystem has considered improvements to the overall governance of SEPA.

The creation of the SEPA Council was agreed upon by the European Commission and the Governing Council of the European Central Bank in March 2010 and is a joint initiative. The two institutions co-chair this stakeholders’ forum, which aims to promote the establishment of an integrated euro retail payment market by ensuring the proper involvement of stakeholders at a high level and by fostering consensus on the next steps to take in establishing SEPA.

The SEPA Council is composed of five high-level representatives from the demand side of the market and another five from the supply side. The demand side represents consumers, retailers, businesses/corporations, small and medium-sized companies, and national public administrations. The supply side includes the EPC, cooperative banks, savings banks, commercial banks and payment institutions. In addition, four NCB board members represent the Eurosystem.

The SEPA Council will meet twice a year for an initial period of three years. The Commission and the ECB will evaluate its efficiency and functioning by the end of 2011. The first meeting of the SEPA Council took place in June 2010. Meeting agendas and summaries are available in the SEPA section of the ECB's website.

The establishment of SEPA is of major importance for the euro area, as it will result in increased competition in the market for retail payment services and greater integration of retail payment infrastructure. The SEPA project will allow cost savings to be made in the processing of payments and increase business opportunities. Overall, SEPA will contribute to the enhanced integration and efficiency of the euro area financial system. It will also provide a common European basis for the development and deployment of innovative payment services such as e-payments, m-payments and e-invoicing. The Eurosystem will continue to facilitate the evolution of SEPA to ensure that it develops in the way that best meets the needs of the euro area's citizens, corporations and merchants, as well as the European economy in general.

Finally, the ECB has launched a project to enhance the general understanding of the cost-efficiency of different payment instruments. For this purpose, the ECB, in close cooperation with the European System of Central Banks, intends to conduct a study on the costs of retail payments. The overall objective of the study is to estimate and analyse the social costs of different payment instruments. Based on a common methodology, the study intends to establish a consistent and comprehensive framework allowing a comparison of the costs of different payment instruments across European countries.

### **3.2 INTEGRATION OF SECURITIES INFRASTRUCTURES**

Where the trading, clearing and settlement of securities and other financial instruments is too costly or complex as a result of insufficient integration, financial transactions are discouraged. This has a negative impact on the allocation of capital, risk-sharing across agents and economic growth. In other words, the integration of the securities infrastructure is a necessary precondition for the integration of the financial markets served by that infrastructure. Given its interest in financial integration, the Eurosystem is involved in many activities which promote the integration of euro securities infrastructures.

The objectives of the Eurosystem's catalyst function in the field of securities are broadly similar to the objectives pursued in the field of payments: more transparent, efficient and resilient infrastructures, leading to wider choice and lower costs for users and, ultimately, sustainable growth in the securities markets of the various euro area countries.

#### **SUPPORTING THE INDUSTRY'S EFFORTS TO ACHIEVE INTEGRATION AND EFFICIENCY**

Over the years, the Eurosystem has held regular meetings with market participants to discuss issues relevant to the harmonisation and integration of securities market infrastructure (see Section 2). By bringing representatives of

different industry groups together, the Eurosystem has encouraged those groups to become better organised, to better structure their work and to increase their dialogue with other interest groups.

The Eurosystem's attitude towards securities clearing and settlement systems has been guided by the principles of efficiency and neutrality. Efficiency requires the harmonisation of processes and business practices across borders, as well as the removal of barriers to competition and consolidation within the European securities infrastructure. This infrastructure needs to be reshaped to allow all euro area securities to be easily transferred from one part of Europe to another. The principle of neutrality means that the Eurosystem does not favour any particular solution in the process of integration – i.e. it does not interfere with market competition between different systems, financial centres or categories of bank.

As set out in Chapter 9, some consolidation has been achieved in the euro area through mergers and acquisitions involving CSDs. However, this process has been slow and limited in scope, notably owing to significant market-related and regulatory obstacles. Because market-led consolidation seemed unlikely to deliver an integrated market infrastructure for Europe in the foreseeable future, in mid-2006 the Eurosystem, acting in its operational role, decided to launch the TARGET2-Securities initiative, which envisages the establishment of a platform for the settlement in central bank money of securities transactions in Europe (see Chapter 11). However, T2S will not in itself lead to a fully integrated securities market. It will merely provide core settlement services, thereby triggering greater competition between CSDs, as well as the restructuring of the post-trading industry at the pan-European level. Consequently, in parallel with its work to develop T2S, the Eurosystem continues to act as a catalyst for integration as regards other aspects of post-trading services.

Furthermore, the Eurosystem also plays a catalyst role in the field of clearing, which is closely related to securities settlement. For example, in 2009 the ECB hosted two meetings on the establishment of one or more European CCPs for credit default swaps. The meetings brought together representatives of the European banking and clearing industry, the Eurosystem, the European Commission, the Council of the European Union, the European Parliament and other stakeholders. Their aim was to further the dialogue between European public authorities and the industry on the need for market infrastructure for CDSs in Europe, to discuss the respective private and public sector requirements, and to encourage the development of existing and future CCP facilities.

## **COOPERATION WITH THE EUROPEAN COMMISSION ON POST-TRADING INITIATIVES**

In the last ten years the ECB has played an important catalyst role in two major policy initiatives launched by the European Commission in order to increase the integration of European securities infrastructure. The first of these initiatives is the removal of the “Giovannini barriers” to clearing and settlement, and the second is the Code of Conduct for Clearing and Settlement.

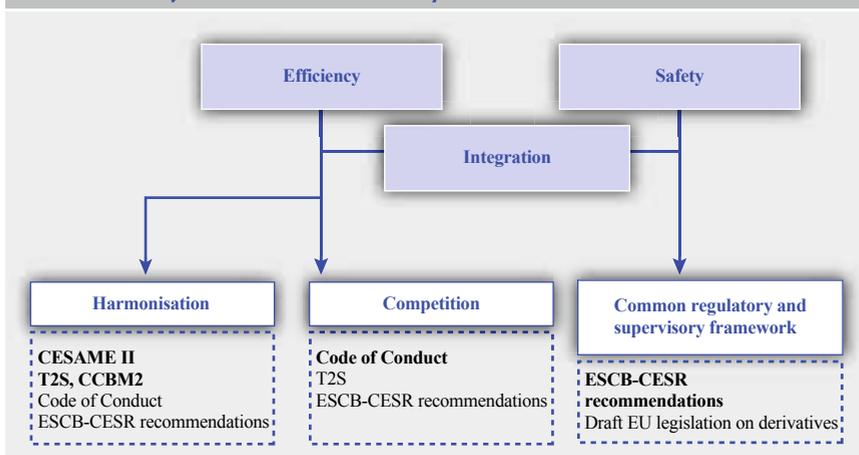
The ECB contributed to the preparation of the two Giovannini Reports of 2001 and 2003, which identified 15 barriers to the cross-border integration of clearing and settlement systems in Europe and proposed measures to be undertaken in order to remove them. While some of these barriers (termed “private sector barriers”) are embedded in divergent market practices and therefore require changes to the way in which market participants do business, nine barriers (“public barriers”) pertain to the fiscal and legal frameworks of the Member States. In order to support the private sector’s efforts to harmonise market practices (e.g. the harmonisation of message standards and rules on the processing of corporate actions), the Clearing and Settlement Advisory and Monitoring Expert Group was established by the Commission in 2004. From the very beginning, the ECB participated in CESAME meetings as an observer and helped to monitor the industry’s progress towards the adoption of harmonised European market standards. Examples of such standards include a common communication protocol for key post-trading processes and market standards on corporate actions.

The final CESAME report was produced in November 2008. As a number of barriers have not yet been fully removed, CESAME has been replaced by CESAME II, in which the ECB continues to play an active role. The ECB tries, in particular, to ensure that market standards are designed and implemented in a way that is compatible with the Eurosystem’s own initiatives in this field, such as the ESCB-CESR recommendations for SSSs and CCPs, which contribute to the removal of some of the Giovannini barriers (see Section 4 of Chapter 12 for more details regarding these ESCB-CESR recommendations). In general, the Eurosystem supports the priorities identified in the final CESAME report and recognises that, while some barriers (e.g. the absence of a harmonised process for allocating ISIN codes to new securities) have largely been removed, other important barriers (e.g. differences in settlement periods) remain and require urgent action.

In parallel to the work of CESAME, discussions on how to remove legal and fiscal barriers to cross-border clearing and settlement took place within the framework of two expert groups composed mostly of officials from the Member States: the Legal Certainty Group, in which the ECB participated, and the Fiscal Compliance Group.

In July 2006 the European Commission asked securities infrastructures to come forward with a code of conduct governing clearing and settlement in order to enhance competition in the post-trading sector. The resulting Code of Conduct for Clearing and Settlement was signed by the European industry associations for exchanges and post-trading infrastructures in November 2006. It comprises three pillars, which together create the conditions necessary for greater competition between securities infrastructures (see Chapter 9). The first pillar relates to price transparency and requires infrastructures to publish their price lists, including details of rebate and discount schemes. The second pillar concerns the principles of access and interoperability, encouraging infrastructures to establish links with one another in order to facilitate cross-border transactions. Finally, the third pillar deals with the need for infrastructures to unbundle their services and report separate accounts for their main activities, making clear any cross-subsidisation for the various services

**Chart 50 Contributions of various securities initiatives to the objectives of the Eurosystem**



Source: ECB.

that they offer (e.g. differentiating between revenues and costs for trading, clearing and settlement in the case of vertically integrated groups).

Given that the Code of Conduct is a self-regulatory tool, a strict monitoring mechanism was set up to ensure its proper implementation in the form of an ad hoc monitoring group comprising representatives of the European Commission, CESR and the ECB. In this context, the ECB has been working with securities infrastructures and the Commission to improve price comparability, encouraging, among other things, the development of best practices. In 2008 the ECB and the ECSDA jointly presented a conversion table developed by European CSDs. This table provides a means of comparing CSDs' respective price lists, overcoming the fact that each CSD tends to use different terminology and pricing models. Furthermore, in 2009 the ECB carried out two fact-finding studies looking at example prices and price simulators. These concluded that, while substantial progress had been made on price transparency, real comparability remains difficult to achieve in the absence of a harmonised definition of services.

Overall, it appears that the various initiatives in which the Eurosystem plays a catalyst role, such as the Code of Conduct and the removal of the Giovannini barriers, have together helped to create fresh momentum in the market, notably by fostering greater competition between what used to be “national monopolies”. Chart 50 offers a schematic presentation of the main European initiatives in the field of securities infrastructures, highlighting their contribution to the Eurosystem's objectives of efficiency, integration and safety.

In 2010 the European Commission announced its intention to set up an Expert Group on Market Infrastructures, which will take over and carry forward the work of CESAME II and MOG.

## 4 DEVELOPING AND SHARING THE EUROSISTEM'S EXPERTISE

One final aspect of the catalyst activities carried out by the Eurosystem in the field of payments, clearing and settlement relates to the continuous development and sharing of its expertise in these matters. Indeed, a better knowledge and understanding of the markets and processes involved is essential in order to increase transparency and develop appropriate and well-grounded policy initiatives. Consequently, in addition to its direct involvement in projects, the Eurosystem regularly collects and publishes relevant data and reports on payment, clearing and settlement-related issues.

In order to stay informed and discuss current trends and issues, the ECB frequently holds ad hoc bilateral and multilateral meetings with a wide variety of stakeholders in the payment and securities businesses. Where a particular issue or development deserves more detailed analysis, it may decide to organise a dedicated round table discussion or conference involving participants from central banks, the private sector and academia with in-depth knowledge of the subjects concerned. In the field of payment innovations, for instance, the ECB organised informal meetings with central bank representatives and market participants in 2009 in order to discuss the progress made in developing solutions for m-payments, e-payments and e-invoicing (i.e. the activities referred to under the term “eSEPA”).

Based on this market input and its own research, the Eurosystem continuously develops its expertise in the area of payments, clearing and settlement with a view to identifying the main challenges and best practices both within and outside the central banking community. One way to collect useful information on the operation of payment and securities infrastructures is for the ECB – with the close involvement of Eurosystem central banks – to carry out surveys. In the field of securities, for instance, the Eurosystem has been working on issues such as DvP settlement procedures, interoperable links between CCPs, and settlement failures. These fact-finding exercises are valuable in that they encourage central banking and private sector experts to exchange best practices in relation to major issues in the payment and securities sectors.

Moreover, the ECB produces various publications in the field of payments, clearing and settlement. These are aimed at a wide audience, from policy-makers, academia and interested citizens to market practitioners. These publications are a way for the Eurosystem to publicise its catalyst role and make its work more transparent vis-à-vis the general public. General publications such as the ECB's Annual Report and the annual “Financial integration in Europe” report usually contain a few sections describing the overall progress made in the catalyst activities of the Eurosystem in the fields of payments and securities. Articles are occasionally published in the ECB's Monthly Bulletin, and from time to time the ECB also publishes more specific reports, such as those on the role of central counterparties (2007), integration and innovation in retail payments (2009), and OTC derivatives and post-trading infrastructures (2009). The ECB's Occasional Papers and Working Papers have also made a number of valuable contributions to discussions on market infrastructure issues over the years. The issues considered in such publications include card payments (2009), the integration of securities

market infrastructure (2005), the governance of securities clearing and settlement systems (2004), and the securities custody industry (2007).

To facilitate the analysis of relevant trends, the ECB also publishes, on an annual basis, statistics on the handling of payments and securities. More generally, information on the Eurosystem's policy objectives and its position with regard to integration and development work is also disseminated in speeches given by members of the ECB's Executive Board and other ECB officials participating in conferences, seminars and workshops.

Moreover, between 2002 and 2008, as part of its efforts to facilitate development and innovation, the ECB operated the "electronic Payment Systems Observatory" website, which acted as an open forum for the sharing of information regarding innovation in the areas of electronic and retail payments. In parallel, it published an electronic "Payments and Settlements Newsletter", which was distributed to a wide range of subscribers by e-mail. In June 2010 a new "eSEPA" website was officially launched, at which point the electronic newsletter was also renamed the "eSEPA Newsletter".

Finally, a substantial amount of information on integration and development issues in the fields of payments and securities is available on the websites of the ECB and the NCBs of the euro area.



# CHAPTER 14

## LEGAL BASIS AND COOPERATION FRAMEWORK

### I THE LEGAL BASIS FOR EUROSISTEM INVOLVEMENT

#### I.1 INTRODUCTION

The legal basis for the ECB's competence in the area of payment and settlement systems is contained in the Treaty on the Functioning of the European Union. According to the fourth indent of Article 127(2) of the Treaty, one of the basic tasks of the European System of Central Banks is "to promote the smooth operation of payment systems". This provision is mirrored in the fourth indent of Article 3.1 of the Protocol on the Statute of the European System of Central Banks and of the European Central Bank ("the Statute of the ESCB"), which is annexed to and forms an integral part of the Treaty on European Union and the Treaty on the Functioning of the European Union.

A specific legal basis for the ECB's competence in this area is contained in Article 22 of the Statute of the ESCB, according to which "[t]he ECB and the national central banks may provide facilities, and the ECB may make regulations, to ensure efficient and sound clearing and payment systems within the Union and with other countries".

From these legal bases, it can be concluded that the competence of the ECB in this area comprises two elements. One is the task of ensuring safe and efficient payment systems (including the provision of facilities), and the other is the exercise of oversight powers.

As regards the legal acts issued by the ESCB, Article 34 of the Statute of the ESCB refers to the adoption of the regulations foreseen in Article 22 of the Statute of the ESCB and the adoption of decisions for the carrying-out of the tasks of the ESCB (which include the task of promoting the smooth operation of payment systems).

It should be noted that the ECB is a European Union institution under the Treaty<sup>28</sup> and that, in this area, provisions referring to "the ESCB" and "the national central banks" should be understood as referring to "the Eurosystem" and "the NCBs of the euro area", since all of the above provisions apply only to them, and not to the EU Member States and NCBs outside the euro area. It should also be noted that the Eurosystem (i.e. the ECB plus the NCBs of the euro area) is recognised by the Treaty.<sup>29</sup>

<sup>28</sup> Article 13 of the Treaty on European Union (as amended by the Treaty of Lisbon, which entered into force on 1 December 2009) lists the ECB as a European Union institution, on a par with the European Parliament, the European Council, the Council, the European Commission, the Court of Justice of the European Union and the Court of Auditors.

<sup>29</sup> Article 282(1) of the Treaty and the first paragraph of Article 1 of the Statute of the ESCB.

While the ECB is directly responsible for the euro area and the Eurosystem, it is clear that it also has strong operational ties with the NCBs of Member States outside the euro area, with considerable shared interests. Indeed, officials from those NCBs are members of the ESCB's committees, which allows for the necessary coordination between the Eurosystem and the non-euro area NCBs.

The ECB's competence and activities do not end there, instead having a global dimension in line with Article 22 of the Statute of the ESCB, which enables the Eurosystem to ensure efficient and sound clearing and payment systems "within the Union and with other countries". One such activity at the global level is the ECB's oversight of the settlement of the euro leg in CLS, as explained in more detail in Chapter 12.

## **1.2 THE EUROSISTEM'S POWERS IN THE AREA OF PAYMENTS, CLEARING AND SETTLEMENT**

The ECB and the national central banks of the Eurosystem have, on the legal bases described above, been involved in payment, clearing and settlement in various ways: (i) as providers of facilities and settlement in central bank money (see Chapter 11); (ii) as oversight authorities (see Chapter 12); and (iii) as catalysts for change (see Chapter 13).

### **PROVISION OF FACILITIES AND SETTLEMENT IN CENTRAL BANK MONEY**

The Eurosystem is involved in the provision of facilities and settlement in central bank money with a view to ensuring the effective implementation of its monetary policy, the smooth operation of payment systems and the maintenance of financial stability. As described in greater detail in Chapter 11, the Eurosystem's TARGET2 payment system offers real-time gross settlement for payments in euro, with settlement in central bank money and immediate finality. It is therefore used for the settlement of central bank operations and large-value and time-critical euro interbank transfers, as well as other euro payments. In addition, the CCBM provides a mechanism for the cross-border delivery of collateral in Eurosystem credit operations, while the new central bank collateral management facility CCBM2, a project launched in July 2008, will cover both domestic and cross-border collateral delivery.

The Eurosystem will also provide the T2S platform, which will be a technical platform providing services to CSDs for the settlement of securities transactions in central bank money on a DvP basis. The T2S platform will host both dedicated central bank cash accounts and securities accounts. It will not entail the creation of a new central securities depository.

Article 22 of the Statute of the ESCB is the principal legal basis for the launch of the T2S platform, as it allows the ECB and the NCBs, as noted earlier, to "provide facilities" in order "to ensure efficient and sound clearing and payment systems within the Union and with other countries". This provision has a direct bearing on the Eurosystem's competence to launch and operate T2S on account of the close links between payment systems and securities clearing and settlement systems, as explained in more detail in Chapters 7 and 11. The Eurosystem's involvement is based on its role in respect of TARGET2 and is closely linked to the CCBM2

project. T2S will offer a real-time DvP link between securities settlement and cash settlement in central bank money, providing dedicated central bank cash accounts linked with RTGS accounts in TARGET2. Thus, T2S will complement and support the operation of TARGET2 and CCBM2.

## OVERSIGHT

As part of their payment systems oversight function, central banks monitor developments in payment, clearing and settlement arrangements in order to assess the nature and scale of the risks inherent in existing or planned arrangements and ensure the efficiency and reliability of payment instruments and services (see Chapter 12).

As noted earlier, the Treaty and the Statute of the ESCB task the Eurosystem with promoting the smooth operation of payment systems and grant the ECB the power to adopt regulations in this field. Neither the Treaty nor the Statute of the ESCB draws a distinction between retail and large-value payments. Neither do they limit the ECB's activities to systemic risk issues. On the contrary, one can conclude that they follow the logic that fostering safety and efficiency for all payments, payment instruments, systems, procedures, and clearing and settlement arrangements for payments and financial instruments is part of the ECB's responsibilities as regards the single currency. Consequently, the ECB has a broad mandate in the field of payment systems. It acts as an operator, an oversight authority and a catalyst with regulatory powers.

## CATALYST FOR CHANGE

The Eurosystem acts as a catalyst for change with a view to ensuring the efficiency of payment, clearing and settlement arrangements as a whole. It seeks to bring relevant stakeholders together, facilitates exchanges of views and encourages the parties concerned to find solutions where further development is required.<sup>30</sup>

The SEPA project is an important example of this kind of process. The ECB, together with the European Commission, has helped the European banking community, under the aegis of the European Payments Council, to move in a market-led process from national electronic payment instruments to new, common, area-wide SEPA instruments. As explained in more detail in Chapter 13, SEPA is considered to be a natural progression following the introduction of the euro and a very important step on the road to an integrated euro retail payment market.

Another example of such catalyst activity can be found in the area of securities trading, clearing and settlement. Indeed, market infrastructure for financial instruments lies at the heart of financial markets, and deficiencies in its processes can have serious consequences. When trading, clearing and settlement are too costly or complex as a result of insufficient integration, financial transactions are discouraged, which has a negative effect on the allocation of capital, risk-sharing across agents and economic growth. The integration of market infrastructure is essential to the integration of the financial markets that it serves. Owing to its

<sup>30</sup>See also "The role of the Eurosystem in payment and clearing systems", *Monthly Bulletin*, ECB, Frankfurt am Main, April 2002.

interest in financial integration, the Eurosystem is involved in many activities aimed at promoting the efficiency and integration of market infrastructure for euro-denominated financial instruments. It regularly meets market participants to discuss issues relevant to the efficiency and integration of market infrastructure, such as standardisation, interoperability and the harmonisation of business practices. It also contributes to the work carried out by the European Commission with a view to eliminating barriers to efficient clearing and settlement. Moreover, in pursuing the above-mentioned objectives, the Eurosystem also cooperates with other institutions, bodies and associations in the fields of payments and the clearing and settlement of securities and other financial instruments (see Section 2).

### **1.3 THE EUROSISTEM'S INTEREST IN THE CLEARING AND SETTLEMENT OF FINANCIAL INSTRUMENTS**

The Eurosystem's interest in the handling of, and market infrastructures for, securities and other financial instruments is based on its competence in the fields of payment systems, financial stability and monetary policy.

#### **THE PAYMENT SYSTEM PERSPECTIVE**

The ECB's interest in securities and derivatives market infrastructure is also linked to the ESCB's task of promoting the smooth operation of payment systems under the fourth indent of Article 3.1 of the Statute of the ESCB. It is difficult to draw a distinction between systemic risks to payment systems and systemic risks to clearing and settlement systems for securities and derivatives, as these types of system are, in many cases, very closely linked. As indicated earlier (see Chapter 7), a major disturbance in market infrastructure for financial instruments could spill over to a payment system and threaten its smooth functioning. Indeed, the potential for such spillovers is likely to have increased in recent years given the increased importance of repos as money market instruments, the increased use of securities collateral to control risks in payment, clearing and settlement activities, the rapid growth of securities settlement volumes, and the strong increases observed in the trading of derivatives.<sup>31</sup> Securities clearing and settlement systems are important for payment systems, since most securities transactions generally also involve the settlement of funds. As a result, banks include the payment flows stemming from securities settlement in their intraday liquidity management. If these funds are not delivered, or are not delivered on time, payment systems can become gridlocked. The development of DvP facilities has further strengthened the link between securities settlement systems and payment systems. Consequently, as an overseer of the payment system, the Eurosystem has a strong, legitimate interest in the proper functioning of the clearing and settlement of securities and other financial instruments.

According to Article 22 of the Statute of the ESCB, the ECB may make regulations to ensure efficient and sound clearing and payment systems within the European Union. It can be claimed that Article 22 of the Statute of the ESCB also covers securities clearing and settlement systems, given the close links, in modern financial systems, between payment systems and securities clearing and

<sup>31</sup> See *The interdependencies of payment and settlement systems*, CPSS, BIS, Basel, June 2008.

settlement systems, especially as a result of the application of DvP mechanisms. Indeed, the settlement of both legs of the transaction needs to be subject to the same safeguards, as otherwise there may be asymmetries with systemic implications.<sup>32</sup> Thus, Article 22 may, in the context of modern clearing and payment systems, be applied in such a way that it covers both payment systems and the clearing and settlement of financial instruments. However, the ECB could not use the regulatory powers vested in it by Article 22 to intrude on the competence of the EU or the Member States in the fields of securities law, private law or insolvency law.

Moreover, a textual interpretation of Article 22 would also seem to suggest that it covers both payment systems and the clearing and settlement of financial instruments, as the wording of that provision suggests that the term “clearing” has a separate meaning, different from that of the term “payment”. In the first Blue Book in September 1992, “clearing” and “clearing system” were defined as “a set of procedures whereby financial institutions present and exchange data and/or documents relating to funds or securities transfers to other financial institutions at a single location (clearing house) [...]”. However, the conclusion that Article 22 of the Statute of the ESCB covers securities clearing and settlement systems has also been disputed.<sup>33</sup> With regard to the textual interpretation of Article 22, it has been noted, among other things, that the Statute of the ESCB makes no mention of securities settlement systems and that “clearing” is not “a specific feature of a securities transfer system”.<sup>34</sup> In this connection, however, it is worth recalling that Article 2(1) of Council Decision 98/415/EC of 29 June 1998 on the consultation of the European Central Bank by national authorities regarding draft legislative provisions states that “[t]he authorities of the Member States shall consult the ECB on any draft legislative provision within its field of competence pursuant to the Treaty and in particular on: [...] payment *and settlement* systems” (emphasis added). Thus, payment and settlement systems are considered one of the particular fields of competence of the ECB pursuant to the Treaty. It should also be noted that in the 2003 BIS publication “A glossary of terms used in payments and settlement systems”, the Committee on Payment and Settlement Systems defines a settlement system as “a system used to facilitate the settlement of transfers of funds or financial instruments”.

The competence of central banks in the field of securities is also shown, at the global level, by the establishment by central banks and securities regulators of

<sup>32</sup>“The role of the Eurosystem in payment and clearing systems”, *Monthly Bulletin*, ECB, Frankfurt am Main, April 2002. See also Alexander, K., Dhumale, R. and Eatwell, J., *Global Governance of Financial Systems*, Oxford University Press, Oxford, 2006, p. 121: “the ESCB framework is not static but rather dynamic and has the capacity to evolve and to expand its powers, if necessary, in order to meet the regulatory challenges of evolving financial markets”.

<sup>33</sup>See von Bogdandy, A. and Bast, J., *Scope and limits of ECB powers in the field of securities settlement. An analysis in view of the proposed “TARGET2-Securities” system*, EUREDIA, 2006/3-4, p. 365 et seq.

<sup>34</sup>Keller, C., *Regulation of Payment Systems – some reflections on Article 22 of the Statute of the ESCB*, EUREDIA, 2001-2002/3, p. 462. The author considers, however, that “central banks have a genuine interest in the smooth operation of central securities custody and transfer systems”, that “the activities of [the] ESCB/Eurosystem in this domain [are] focused on assessing [the] risk when taking centrally deposited securities as collateral”, and that “any such assessment under the standards may as a matter of fact serve the overall stability of the financial system”.

the CPSS-IOSCO recommendations for SSSs and CCPs. At the European level, the ESCB and CESR have cooperated in establishing recommendations for SSSs and CCPs in the EU (see Chapter 12).

### **THE FINANCIAL STABILITY PERSPECTIVE**

As regards financial stability, Article 3.3 of the Statute of the ESCB expressly states that the ESCB is tasked with contributing, inter alia, to the smooth conduct of policies pursued by the competent authorities relating to the stability of the financial system. In this respect, it is also worth mentioning that Article 2(1) of the abovementioned Council Decision 98/415/EC makes reference to “rules applicable to financial institutions insofar as they materially influence the stability of financial institutions and markets” as one of the particular fields of competence of the ECB pursuant to the Treaty.

In more general terms, as stated in the 1992 BIS report “Delivery Versus Payment in Securities Settlement Systems”, “disturbances to settlements in the securities markets have the potential to spread to the payment system and to the financial system generally”. A major malfunction in a securities clearing and settlement system could undermine the stability of the financial markets and ultimately affect public confidence in the currency. Such systemic risks are particularly important as regards central counterparties, which manage and concentrate the credit risk of the markets that they serve. In such circumstances, the consequences of risk management failures are particularly serious. Consequently, the Eurosystem closely follows all developments in the market infrastructure for financial instruments that could potentially have an impact on financial stability.

### **THE MONETARY POLICY PERSPECTIVE**

According to the first indent of Article 3.1 of the Statute of the ESCB, one of the basic tasks of the ESCB is to define and implement the monetary policy of the European Union. Consequently, the ESCB is highly concerned about disturbances affecting payment, clearing and settlement systems and money markets, as such systems and markets are relied upon as vehicles for the conduct and transmission of monetary policy. In short, a malfunction within a securities clearing and settlement system could threaten the smooth implementation of monetary policy.

Furthermore, securities clearing and settlement systems are important for payment systems, since securities transactions generally also involve the settlement of funds. As indicated earlier, the link between securities settlement systems and payment systems has been further strengthened by the development of DvP facilities. As a result, banks include the payment flows stemming from securities settlement in their intraday liquidity management. Moreover, RTGS systems rely on the availability of intraday credit to facilitate a smooth flow of payments. Such credit is based on collateral delivered using securities settlement systems. Alternatively, participants can obtain liquidity by exchanging securities for funds (e.g. in repo operations). If a malfunction in a securities settlement system means that collateral or funds are not delivered, or are not delivered on time, payment systems can become gridlocked.

As a user of securities settlement systems in the conduct of its monetary policy and intraday credit operations, the Eurosystem pays great attention to the assessment of its risks when accepting centrally deposited securities as collateral under the second indent of Article 18.1 of the Statute of the ESCB, which states that “[i]n order to achieve the objectives of the ESCB and to carry out its tasks, the ECB and the national central banks may [...] conduct credit operations with credit institutions and other market participants, with lending being based on adequate collateral”.

For this reason, in January 1998 the European Monetary Institute released a report on “Standards for the use of EU securities settlement systems in ESCB credit operations” (“Eurosystem user standards”). The report sets out standards to be met by EU securities settlement systems eligible for the settlement of the credit operations of the Eurosystem. The objective of the Eurosystem user standards is to limit the risk to which the Eurosystem could be exposed in settling its credit operations, which, under the Statute of the ESCB, must be based on adequate collateral.

In conclusion, for the above-mentioned reasons, the handling of, and market infrastructures for, securities and other financial instruments represent activities that could be seen to fall within, or at least be closely linked to, the performance of the Eurosystem’s statutory tasks in the areas of payment systems, financial stability and monetary policy.

#### **1.4 THE ECB’S LEGAL ACTS AND INSTRUMENTS**

In respect of the regulatory powers granted to the ECB under the Treaty and the Statute of the ESCB, a distinction can be drawn between (i) legal acts intended to produce external effects (i.e. legal acts potentially addressed to parties other than the NCBs of the Eurosystem), which take the form of regulations, decisions, recommendations and opinions, and (ii) other legal instruments addressed to the ECB and/or the NCBs of the Eurosystem, which are binding on those institutions and take the form of guidelines, instructions and internal decisions.

More specifically, Article 132 of the Treaty and Article 34 of the Statute of the ESCB empower the ECB to adopt EU legal acts. In addition, on the basis of Article 12 of the Statute of the ESCB, the ECB adopts other legal instruments (i.e. guidelines, instructions and internal decisions). In order to carry out the tasks entrusted to the ESCB/Eurosystem, the ECB, in accordance with the provisions of the Treaty and the Statute of the ESCB, makes regulations to the extent that this is necessary, takes decisions, makes recommendations and delivers opinions. Under Article 41 of the Statute of the ESCB, in several instances (e.g. the areas of statistics and minimum reserves) legal action by the ECB requires previous legislative action by the Council of the European Union.

As regards the issuance of opinions, the Eurosystem plays an important role in the legislative process of the European Union by virtue of the specific functions that the ECB exercises and the high degree of expertise that the ECB enjoys.<sup>35</sup>

<sup>35</sup>See the Judgement of the Court, 10 July 2003, Case C-11/00, *Commission of the European Communities v European Central Bank*, paragraphs 110-111.

In this respect, and in accordance with Article 127(4) of the Treaty and Article 4 of the Statute of the ESCB, the ECB is consulted on any national draft legislative provisions and any proposed EU legal acts in its fields of competence, including the area of payment, clearing and settlement. In addition, the ECB may, on its own initiative, submit opinions to the appropriate EU institutions or bodies or to national authorities on matters in its fields of competence.

Outside the area of regulatory powers, the ECB can of course also participate in other types of instrument, such as memoranda of understanding. For example, in respect of payment systems oversight, a memorandum of understanding on cooperation between payment systems overseers and banking supervisors in Stage Three of Economic and Monetary Union was agreed in April 2001. While the memorandum of understanding itself is not publicly available, the following information was included in the press release published by the ECB: (1) the memorandum of understanding is aimed primarily at promoting cooperation in relation to large-value payment systems; (2) the overall framework provided by the memorandum of understanding seeks to ensure the soundness and stability of the relevant payment systems and the participating credit institutions; (3) investment firms participating in payment systems also fall within the scope of the memorandum of understanding to the extent that their home supervisors have agreed to include them in the agreement; (4) cooperation and information-sharing are specifically foreseen (i) in the case of an application to join an existing payment system or when a new system is established, (ii) on an ongoing basis, and (iii) in crisis management situations; and (5) the memorandum of understanding is not legally binding.

### Box 36 ECB legal acts and instruments<sup>1</sup>

#### Regulations

Article 22 of the Statute of the ESCB states that the ECB may make regulations to ensure efficient and sound clearing and payment systems within the European Union and with other countries. Regulations are legal acts of general application, are binding in their entirety and are directly applicable in all Member States. They therefore represent the strongest type of legal act bestowed on the ECB by the Statute of the ESCB, both generally and in the specific field of clearing and payment systems.

#### Decisions

A decision is binding in its entirety upon those to whom it is addressed. Decisions have been issued by the ECB on a number of occasions, for instance in order to impose sanctions on Eurosystem counterparties failing to comply with ECB legal acts.

#### Recommendations

Recommendations are non-binding legal acts. There are two types of ECB recommendation. They can be used to initiate legislative procedures at the European Union level, leading to the adoption of EU legislation. Recommendations can, in the traditional sense of the term, also be used to provide impetus for European Union action of a non-legal nature.

<sup>1</sup> See also “Legal instruments of the European Central Bank”, *Monthly Bulletin*, ECB, Frankfurt am Main, November 1999.

### Opinions

The ECB has an advisory role in the legislative process within its fields of competence, which includes clearing and payment systems. The ECB's advisory role applies in respect of both proposed EU legal acts and national draft legislative provisions. Opinions are also non-binding. The duty to consult the ECB on such legislation stems from Article 127(4) of the Treaty and is, in respect of consultations on national draft legislative provisions, dealt with in detail in Council Decision 98/415/EC of 29 June 1998 on the consultation of the European Central Bank by national authorities regarding draft legislative provisions. The requirement to consult applies to European Union institutions and all EU Member States except the United Kingdom, for which an exemption is provided in its protocol. The procedures for consultations on proposed EU legal acts have not been set out in any such legislative acts, but measures have been put in place to ensure that the ECB is consulted and delivers its opinions as early as possible in the legislative process.<sup>2</sup>

### Other ECB legal instruments

The ECB may also adopt legal instruments of internal relevance to the Eurosystem. These are intended to govern the Eurosystem without having a direct legal effect on third parties. Each of the Eurosystem's constituent bodies (i.e. the ECB and the national central banks of the Member States participating in the euro area) retains its own legal personality. Taking this unique structure into account, the ECB needs to have at its disposal the legal instruments necessary to allow the Eurosystem to operate efficiently as a single entity with a view to achieving the objectives of the Treaty and the Statute of the ESCB. Consequently, the Statute of the ESCB stipulates that the national central banks of the Eurosystem are an integral part of the ESCB and must act in accordance with the guidelines and instructions of the ECB (see Article 14.3 of the Statute of the ESCB).

### Guidelines

Guidelines are legal instruments defining and implementing the policy of the Eurosystem. They set out the general framework and the main rules to be implemented by the NCBs. As guidelines are legal instruments which are internal to the system and addressed only to the NCBs, they are not intended to directly or individually affect the legal rights of counterparties.

### Instructions

Instructions are adopted by the Executive Board of the ECB and addressed to the central banks of the Eurosystem with a view to implementing the monetary policy decisions and guidelines of the Governing Council of the ECB.

### Internal decisions

In addition to guidelines and instructions, the ECB can, with a view to addressing internal matters of an organisational or administrative nature, adopt internal decisions which are binding within the Eurosystem.

<sup>2</sup> See *Guide to consultations of the European Central Bank by national authorities regarding draft legislative provisions*, ECB, Frankfurt am Main, June 2003.

## 2 THE EUROSISTEM'S COOPERATION FRAMEWORK

### 2.1 THE NEED FOR INTERACTION

This section aims to provide readers with an insight into the main features of the Eurosystem framework governing cooperation and interaction. As the central banking system for the euro, the Eurosystem is responsible for the euro area, which therefore forms the basis for the Eurosystem's cooperation framework. It should be noted, however, that Internal Market issues, which include financial services issues, are a matter for the European Union as a whole. Moreover, as a key actor in central banking matters, the Eurosystem is actively involved in international and global cooperation activities.

When it comes to market infrastructure issues, the central bank, as the monetary authority, has overall responsibility for ensuring that the currency is sound and that money is an effective means of payment. In the institutional framework for the financial system, other authorities also have important roles to play. The legislator, banking supervisors and securities regulators all have responsibilities in the shaping of the legal, regulatory and supervisory environments. Banks and other financial institutions are core parties in the market infrastructure, with banks constituting the principal providers of payment accounts, instruments and financial services to end users. While individual financial institutions compete with one another, they do, at the same time, for economic and business reasons, need to cooperate on market infrastructure issues. In this respect, they may jointly own and operate systems and arrangements and be participants in and users of common systems. Market organisations of different kinds (e.g. banking associations, clearing house associations and bodies such as the European Payments Council) play an important role in cooperation arrangements by furthering the interests of their members. In addition, various user groups have an interest in the functioning of market infrastructures.

The main objectives of the Eurosystem in relation to market infrastructure are: (i) to maintain the stability of the system; (ii) to promote efficiency; (iii) to maintain public confidence in payment systems, instruments and the currency; and, last but not least, (iv) to safeguard the monetary policy transmission channel. These objectives are relevant for all of the functions performed by the Eurosystem in relation to market infrastructure.

The Eurosystem has a range of tools at its disposal in order to achieve its market infrastructure objectives. As a system of central banks, the Eurosystem is the "bank of banks" and therefore has a number of banking tools available. For example, it can take decisions on who can open an account with it, receive credit and have access to the systems it operates, and subject to which conditions. Another important tool is "moral suasion", by means of which relevant parties are convinced to adhere to certain policies or practices. Ultimately, the ECB's policy stance can be enforced by means of an ECB regulation (an option not resorted to thus far).

The Eurosystem's banking and regulatory tools mean that it is, in principle, in a position to pursue most of its market infrastructure objectives. However, the complexity of these issues means that it is sometimes unable – or would be ill advised – to act alone. Moreover, in a free market environment with free competition, an interventionist approach could have a significant distortionary effect and potentially be costly for society. For these reasons, the Eurosystem has chosen to actively involve relevant stakeholders and has established extensive arrangements for cooperation, interaction and consultation, the main features of which are set out in the remainder of this chapter.

## **2.2 THE EUROPEAN LEVEL – COOPERATION AND INTERACTION WITH OTHER AUTHORITIES**

### **THE EUROPEAN LEGISLATOR AND THE EUROPEAN COMMISSION**

Market infrastructure arrangements, oversight functions and regulatory regimes need to be supported by a sound legal framework that provides legal certainty and supports the management of risk. It is therefore in the public interest that there be regular contact and exchanges of information at policy and expert level between the Eurosystem and the European legislator, both at European Union level and at the level of individual euro area countries. The Council of the European Union and the European Parliament are empowered to adopt legal instruments, while the remit of the European Commission includes acting as the guardian of the EU's treaties and proposing legislation to the Parliament and the Council.

A key area of responsibility for the European Commission is the Internal Market, which includes financial services issues. There is regular contact between the ECB and the European Commission's Directorate General Internal Market and Services in order to exchange views on payment and settlement-related issues. Where necessary, there is also interaction with the Directorate General Competition with a view to providing information on issues surrounding the functioning of market infrastructure. Information is also regularly provided to the European Parliament, particularly its Committee on Economic and Monetary Affairs.

In addition to contact on legal and regulatory issues, financial integration is one prominent subject area in which the Eurosystem and the European Commission support each other's work and, where necessary, coordinate their policies. At the time of writing, topical issues include the Single Euro Payments Area and enhancing the safety and efficiency of the clearing and settlement infrastructure in Europe, particularly for OTC derivatives.

To facilitate cooperation, a representative of the European Commission regularly participates as an observer in the meetings of the Payment and Settlement Systems Committee when it meets in its ESCB composition. European Commission observers also participate in other relevant meetings, such as COGEPs and COGESI meetings (see Section 2.3). Conversely, the ECB also participates as a member or observer in a number of bodies headed by the Commission, such as the Payment Systems Market Expert Group, the Payments Committee, and the Clearing and Settlement Advisory and Monitoring Expert Group.

It is also important to note that the ECB is represented at meetings of the European Securities Committee, the Financial Services Committee, the Economic and Financial Committee and the ECOFIN Council.

## **BANKING SUPERVISORS**

Central banks and banking supervisors have shared responsibility for maintaining financial stability. One of the Eurosystem's market infrastructure policy objectives is the management of systemic risk – i.e. ensuring the safety and soundness of market infrastructure for payments and financial instruments. Banking supervisors, in turn, are responsible for the soundness of banks (i.e. credit institutions) and other financial institutions.

The safety and soundness of payment systems depend on the ability of those systems' participants (primarily credit institutions) to meet their obligations when due. Conversely, credit institutions may be exposed to risks arising in payment, clearing and settlement systems, including risks arising from the provision of correspondent banking or custody services. Thus, central bank overseers will want to be informed in the event that banking supervisors identify a serious problem in an institution participating in a system, while banking supervisors will want to be informed if central bank overseers identify a payment, clearing or settlement-related risk that will potentially affect participants in a system or arrangement.

With banks increasingly establishing branches and subsidiaries in other EU countries and cross-border participation in systems increasing, these issues are becoming more and more important. Given these interdependencies, close cooperation is of mutual interest to central bank overseers and banking supervisors. For these reasons, in April 2001 EU central banks and banking supervisors concluded a memorandum of understanding on cooperation and information-sharing, particularly for large-value payments.

Moreover, owing to the increased cross-border links between financial activities within the EU, the likelihood of a financial stability problem spreading from one country to another has increased. With a view to organising cross-border cooperation between responsible authorities in the event of a financial crisis, a memorandum of understanding on cross-border financial stability was signed by all of the European Union's financial supervisory authorities, central banks (including the ECB) and finance ministries in 2008 (replacing a previous memorandum signed in 2005). This memorandum of understanding contains high-level principles governing cooperation in crisis situations and establishes practical procedures involving all relevant parties. These are based on the various parties' existing legal responsibilities and build on existing networks of authorities.

## **SECURITIES REGULATORS**

The smooth functioning of market infrastructure for financial instruments is of vital importance for the Eurosystem in view of the implementation of monetary policy, the smooth functioning of payment systems and the maintenance of financial stability. The functioning of the money market, collateralisation processes and liquidity management in payment systems could all be affected if there were a problem in securities settlement systems. Conversely, SSSs can also be affected by problems arising in payment systems.

While activities relating to financial instruments are of common interest to central banks and securities regulators, the two have complementary roles. The Eurosystem's main focus is on mitigating systemic risk and promoting the efficiency and safety of clearing and settlement procedures and arrangements. Securities regulators mainly address issues relating to investor protection. Cooperation between the central bank and the securities regulator takes different forms in the various euro area countries, with some countries having that cooperation and the division of responsibilities laid down more formally in a memorandum of understanding.

At the EU level, an important example of cooperation is the initiative to promote the development and consistent application of a common framework for the regulation, supervision and oversight of securities settlement systems and central counterparties in the EU. In 2001 the ESCB and the Committee of European Securities Regulators began cooperating on the development of recommendations for securities settlement systems and central clearing counterparties in the EU. These ESCB-CESR recommendations build on the CPSS-IOSCO recommendations for SSSs and CCPs, but adapt them to the specific features of the EU environment. Their overall objective is to promote the establishment of a harmonised set of exacting safety and efficiency standards for the EU's SSSs and CCPs. Adopted in June 2009, the ESCB-CESR recommendations, although not binding, constitute a major cooperation tool for central bank overseers and securities regulators in the field of market infrastructure for financial instruments.

### **2.3 THE EUROPEAN LEVEL – INTERACTION WITH MARKET PARTICIPANTS AND OTHER STAKEHOLDERS**

The Eurosystem also has a wide variety of arrangements for cooperation and interaction with other market infrastructure stakeholders. These are intended to help the Eurosystem to achieve its main market infrastructure policy objective and are particularly important for the Eurosystem's operational and catalyst roles.

The *Contact Group on Euro Securities Infrastructures* was created by the Eurosystem in order to deal with issues which are relevant for the euro securities settlement industry and of common interest to the Eurosystem, market infrastructures and market participants. Issues considered by COGESI include: developments in the fields of collateral management and liquidity management; infrastructure developments; issues related to regulation, standards and legal frameworks; and post-trading activities in general. Of particular interest to the ECB is the receipt of feedback from market participants and infrastructures on the Eurosystem's collateral framework and initiatives related to the integration of the clearing and settlement of securities in euro.

COGESI normally meets twice a year and is chaired by the Director General of the ECB's Directorate General Payments and Market Infrastructure. COGESI has around 40 members. These represent the Eurosystem, market infrastructures (CSDs, ICSDs, CCPs and exchanges), and infrastructure users (mostly banks, including custodians). European associations representing infrastructures and intermediaries also participate in these meetings (see Section 2 of Chapter 13 for more details of relevant European trade associations). The national central banks of those EU countries that have not yet joined the euro area are represented by

four delegates acting as observers, as is the European Commission. COGESI's members are senior executives in the respective organisations who have made a recognised contribution to the establishment of efficient settlement infrastructures. COGESI's composition is reviewed on a regular basis.

The *Contact Group on Euro Payments Strategy* was set up in June 2001 in order to address issues and developments in the field of payment systems and services which are relevant for the euro area banking industry and for the Eurosystem. It covers both large-value and retail payment systems and services. COGEPS meetings serve as a discussion forum allowing an exchange of views between the banking industry and the Eurosystem on issues of common concern. These discussions focus on strategic issues.

COGEPS is co-chaired by the Director General of the ECB's Directorate General Payments and Market Infrastructure and the Chairman of the European Payments Council (with the chairmanship alternating between the two). It normally meets twice a year. COGEPS has around 45 members, comprising representatives of the Eurosystem and representatives of the euro area banking industry selected by the EPC (who attend on behalf of commercial banks, EU banking associations and the EPC's working groups). The national central banks of those EU countries that have not yet joined the euro area are represented by four delegates acting as observers, as is the European Commission. The Group's members are senior executives from the respective organisations who are recognised for their expertise in the field of payment systems and services.

The *Euro CLS Group* was set up in order to address issues related to the functioning of the CLS system – particularly liquidity management issues arising in the settlement process, with a special focus on euro liquidity issues. It also serves as a forum for discussing foreign exchange settlement practices and related risk management aspects. The Group used to meet regularly around the time that CLS began its operations in 2002, but it has since met only occasionally.

As regards retail payments and SEPA-related issues, COGEPS meetings are complemented by strategic discussions in the *SEPA High-Level Group*, which comprises board members of euro area NCBs, board members from some 25 commercial banks, and the Chairman and two Vice-Chairmen of the EPC. The SEPA High-Level Group meets twice a year with a view to sharing information on, and building a common commitment to, the SEPA project. In addition, a broad range of SEPA-related issues are addressed in Eurosystem meetings with different end users (e.g. corporate treasurers and consumer organisations), infrastructure providers and card schemes. The ECB's participation as an observer both in EPC Plenary meetings and in the working groups that report to the Plenary represents a very important form of interaction. Its participation as an observer in EPC General Assembly meetings, together with the regular meetings of the SEPA High-Level Group and COGEPS, allows the ECB to maintain a constant high-level dialogue with the relevant market participants. At the same time, as the ECB does not take part in the meetings of the EPC's Coordination Committee, banks also have a forum for "internal"

discussions on SEPA. Finally, the ECB's participation as an observer in all EPC working groups allows the Eurosystem to act as a catalyst, provide expertise on various issues and better understand the issues and challenges that banks face in the context of SEPA as providers of retail payment services to end users.

In addition to the above high-level groups, where strategic issues are discussed, and in which the Eurosystem mostly plays a catalyst role (see Chapter 13), a wide range of business and operational issues are also discussed in joint fora at working level. These groups allow the Eurosystem, in its operational capacity, to ensure comprehensive and timely communication with the market as regards the decisions taken and the progress made in its projects.

In the field of large-value payments, TARGET2-related issues are discussed at the regular meetings of the Eurosystem Working Group on TARGET2 and the private sector TARGET Working Group. At the national level, TARGET user group meetings provide a forum for discussions between the relevant national central bank and its banking community. During the development of TARGET2, several temporary groups were set up, with participation by both the Eurosystem and the private sector.

Close cooperation with all relevant stakeholders is also a key objective of the Eurosystem in relation to the TARGET2-Securities project. Work on this project is being conducted with unprecedented transparency, and key stakeholders are closely involved in the project's governance arrangements. (For more information on T2S governance arrangements, see Section 4 of Chapter 11.)

The Eurosystem's interaction with relevant stakeholders at a variety of special meetings, round-table discussions and conferences also plays an important role in the discussion of market infrastructure issues. In its operational capacity, the Eurosystem assigns considerable importance in its projects to comprehensive and timely communication as regards the decisions taken and the progress made. In addition to working groups and joint fora, the Eurosystem also uses more general cooperation tools to communicate with the market. In this regard, extensive information is provided in dedicated sections of the ECB's website and the Eurosystem NCBs' websites (e.g. sections dedicated to the TARGET2 and TARGET2-Securities projects). Information on Eurosystem policies and objectives is regularly communicated to the public in speeches by Governing Council members and other senior Eurosystem officials, as well as in articles, reports and other Eurosystem publications.

Last but not least, public consultations constitute an important tool allowing the Eurosystem to communicate possible future policies and plans to stakeholders and the general public, giving participants the opportunity to scrutinise and comment on such plans prior to implementation. Public consultations allow market participants and other relevant external parties to express their opinion, meaning that the Eurosystem is able to identify potential weaknesses in its proposals. Any subsequent improvements thereby result in greater acceptance and support for such projects on the part of market participants.

## 2.4 INTERACTION AT THE GLOBAL LEVEL

Eurosystem cooperation arrangements are not limited to the euro area or the EU, with comprehensive cooperation also at the global level. The most important forum for multilateral central bank cooperation on market infrastructure issues is the Committee on Payment and Settlement Systems, which comprises representatives of the central banks of the G20 countries (including the ECB), the Monetary Authority of Singapore, the Hong Kong Monetary Authority and the South African Reserve Bank.

According to its mandate, the CPSS: (i) allows its member central banks to monitor and analyse developments in domestic payment, clearing and settlement systems, as well as in cross-border multi-currency settlement schemes; (ii) is a means of coordinating the oversight functions to be assumed by central banks with regard to payment systems; (iii) undertakes specific studies in the field of payment and settlement at its own discretion or at the request of the governors in the Global Economy Meeting (hosted by the BIS); and (iv) is at the forefront of efforts to reduce risks in payment and settlement systems.

The work of the CPSS has contributed significantly to progress made in areas such as controlling risks in net settlement systems, cooperative oversight, promoting RTGS systems and reducing foreign exchange settlement risk. The CPSS has become known as the main international standard-setter in the area of payment, clearing and settlement systems policy. In particular, it defined the Core Principles for Systemically Important Payment Systems published by the Bank for International Settlements in 2001. Moreover, in cooperation with the International Organization of Securities Commissions, it has developed recommendations for securities settlement systems and central counterparties. Both were mentioned by the Financial Stability Forum (which has now been replaced by the Financial Stability Board) in its list of 12 key areas where the adoption of international standards should be made a priority, and the International Monetary Fund and the World Bank make assessments on the basis of these standards in the context of Financial Sector Assessment Program missions.

The CPSS is an important forum allowing an ongoing exchange of views by its member central banks as regards new developments in payment and settlement systems.

The CPSS normally meets three times per year. In order to carry out more detailed work on particular issues, it often establishes temporary working groups. These are disbanded once their mandate has been fulfilled. The ECB is typically represented in such working groups, and those CPSS central banks that belong to the euro area are often also represented.

In 2009 the CPSS and IOSCO agreed to work together to further clarify the CPSS-IOSCO recommendations for CCPs with a view to facilitating their consistent application by responsible authorities and to set out considerations for trade repositories. The ECB actively contributed to this work and co-chaired the relevant joint group. Moreover, the ECB and the other CPSS central banks in the euro area are actively contributing to a joint CPSS-IOSCO review

initiated in 2010 looking at the three sets of CPSS core principles and CPSS-IOSCO recommendations.

The ECB and certain national central banks of the euro area also contribute – whether directly or via the CPSS – to work conducted under the auspices of the Financial Stability Board. The ECB has, for example, contributed to an FSB working group on OTC derivatives.

Moreover, the ECB and a number of Eurosystem national central banks are contributing to the work of the OTC Derivatives Regulators Forum, which was set up with a view to exchanging information on market infrastructures for OTC derivatives – i.e. information relating to central counterparties and trade repositories. This is an informal body for authorities with responsibility in this area.

As the central banking system of a major world currency, the Eurosystem is, of course, also involved in a wide range of regular and ad hoc bilateral and multilateral central bank cooperation and technical assistance activities. While these cannot all be listed in the context of this publication, the ECB and the CPSS central banks that belong to the euro area are, for example, members of the World Bank International Advisory Councils for payment and settlement initiatives established for Latin American and Arab countries and the Commonwealth of Independent States. Moreover, Eurosystem officials frequently take part in assessment and technical assistance missions, such as those organised by the IMF, the World Bank and the Arab Monetary Fund.

### **3 ORGANISATION WITHIN THE ECB AND THE EUROSYSTEM**

#### **3.1 DECISION-MAKING BODIES OF THE ECB**

The Eurosystem is the central banking system for the euro area, comprising the ECB and the NCBs of those EU Member States which have adopted the euro as their currency. The euro area NCBs (and the ECB) carry out the tasks conferred upon the Eurosystem in accordance with the rules established by the ECB's decision-making bodies: the Executive Board and the Governing Council.

The ECB's Executive Board comprises the President and Vice-President of the ECB, as well as four other members appointed by the Heads of State or Government of those Member States which have adopted the euro. The Executive Board conducts preparations for the meetings of the Governing Council and implements its decisions, thereby giving the necessary instructions to the euro area central banks, as well as dealing with the day-to-day business of the ECB.

The most senior decision-making body is the Governing Council of the ECB, which comprises the six members of the Executive Board of the ECB and the governors of the national central banks of the Member States which have adopted the euro. The Governing Council adopts guidelines and takes the decisions necessary in order to ensure the performance of the tasks entrusted to the Eurosystem, as laid down in the Treaty. It also takes decisions on Eurosystem policies as regards market infrastructure issues in the euro area.

## 3.2 ORGANISATION AT THE ECB

At the ECB, two business areas have responsibilities in the field of market infrastructure: the T2S Programme and the Directorate General Payments and Market Infrastructure (DG/P). The two used to be part of the same directorate general, before the T2S Programme was made an independent business area in June 2008.

The T2S Programme is responsible for the development and operation of the TARGET2-Securities service. Its one division, the *TARGET2-Securities Division*, manages all issues related to the T2S project, including the management of relationships with external stakeholders and users, as well as technical service providers for the T2S platform.

The Directorate General Payments and Market Infrastructure deals with all payment and settlement systems issues relevant to the ECB and the Eurosystem (except those related to the development and operation of T2S). DG/P is made up of three divisions.

The *Market Integration Division* contributes to the efficiency and integration of all financial market infrastructure for payments and financial instruments. Acting as a facilitator, it focuses on contributing to the banking industry's establishment and development of the Single Euro Payments Area.

The *TARGET and Collateral Division* deals with the design, maintenance and operation of the TARGET2 system and the maintenance of the existing correspondent central banking model for the cross-border use of collateral. It monitors the development of the CCBM2 project and contributes to the development of the Eurosystem's collateral policy, as well as assessing SSSs against the Eurosystem's user standards.

The *Oversight Division* contributes to the definition and enforcement of the oversight policies and standards of the ECB/Eurosystem. It also analyses and develops the stance of the ECB/Eurosystem on market infrastructure developments and related legal initiatives at EU level. It contributes to the assessment of payment and settlement systems for which the ECB is the lead overseer (i.e. the EBA's EURO1 system, CLS (for activities in euro) and TARGET2).

The Oversight Division operates independently of the other divisions in DG/P. Thus, the operational and oversight functions are clearly separated and are allocated to different divisions, which report separately to DG/P senior management.

In addition to fulfilling its own responsibilities with regard to its operational, oversight and facilitation functions, the ECB coordinates and prepares the proposals/recommendations of the Payment and Settlement Systems Committee and its sub-structures. The PSSC then reports to the ECB's decision-making bodies (see below). There is no ESCB committee specifically devoted to the T2S project. Instead, the Governing Council has set up a dedicated governance structure comprising entities such as the T2S Programme Board, the T2S Advisory Group and the CSD Contact Group. More information on the governance of the T2S project is provided in Section 4.4 of Chapter 11.

### 3.3 ADVISORY BODIES TO THE ECB'S DECISION-MAKING BODIES

In order to assist the decision-making bodies of the ECB in the performance of their tasks, a number of Eurosystem/ESCB committees have been established covering various areas of expertise.

In the field of payment and settlement systems, the Payment and Settlement Systems Committee was established in order to assist the ECB's decision-making bodies as regards issues related to market infrastructure for the handling of payments and securities. Thus, the PSSC deals with issues such as the operation and maintenance of TARGET2, the establishment and monitoring of collateral settlement procedures (including the operation and maintenance of the correspondent central banking model for the cross-border use of collateral), the Eurosystem's catalyst role in the field of payments and securities, general policy issues relating to payment and settlement systems, and oversight issues. In its deliberations, the PSSC clearly separates oversight issues from other matters. The European Commission is invited to participate in PSSC meetings as an observer when issues related to SEPA are discussed.

The PSSC typically meets in two compositions – a Eurosystem composition; and an ESCB composition (i.e. comprising both euro area and non-euro area EU national central banks) – in order to discuss issues covered by the mandate assigned by the Governing Council. It delivers any necessary advice or proposals to the Governing Council via the Executive Board. The Governing Council then provides guidance or decides on the issues at hand.

In order to assess issues and provide detailed and well-founded advice, the PSSC – which typically comprises heads of department from the relevant business areas – may have recourse to regular or ad hoc working groups, task forces or expert groups. These sub-structures look at the relevant issues in detail and present their findings to the PSSC, which then finalises its advice/proposals for presentation to the decision-making bodies.

The PSSC has established four permanent sub-structures. These are: (i) the Payment Systems Policy Working Group, which deals mainly with the integration of the retail payment market and the SEPA project; (ii) the Oversight Working Group, which deals with issues related to the oversight of payment, clearing and settlement systems, market infrastructures and payment instruments; (iii) the Working Group on TARGET2, which deals with operational, business and policy issues related to TARGET2; and (iv) the Working Group on CCBM2, which deals with the CCBM2 project.



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## GLOSSARY <sup>36</sup>

Term	Definition
<b>Acceptance</b>	This term has two meanings. 1) In the field of transfer systems, it refers to the inclusion of a transfer order for funds or securities in a system's operations for further processing, potentially following various checks (e.g. regarding technical standards or the availability of funds), as specified in the rules of the system. 2) In the field of cards, it refers to the process whereby a particular brand of card is accepted by a terminal, merchant or other entity.
<b>Acceptor</b>	A merchant or other entity that accepts a payment instrument presented by a client in order to transfer funds to that merchant or other entity.
<b>ACH</b>	See <i>automated clearing house</i> .
<b>Acquirer (card acquirer)</b>	In point-of-sale (POS) transactions, the entity (usually a credit institution) to which the acceptor (usually a merchant) transmits the information necessary in order to process the card payment.  In automated teller machine (ATM) transactions, the entity (usually a credit institution) which makes banknotes available to the cardholder (whether directly or via the use of third-party providers).
<b>Advisory netting</b>	See <i>position netting</i> .
<b>Agency relationship</b>	A contractual relationship whereby one party (the agent) acts on behalf of another (the principal).
<b>Ancillary system</b>	A system in which payments or securities are exchanged and/or cleared. Meanwhile, the ensuing monetary obligations are settled in another system, typically an RTGS system. See also <i>real-time gross settlement (RTGS) system</i> .
<b>Asset servicing</b>	Administration services provided by a central securities depository (CSD) or custodian in connection with the custody and/or safekeeping of financial instruments (e.g. the processing of corporate events or the handling of taxes).
<b>ATM</b>	See <i>automated teller machine</i> .
<b>Authentication</b>	A security mechanism for verifying: 1) the identity of an individual or other entity (including verification by means of a computer or computer application); 2) the level of authority of that person or entity (i.e. the ability of that person or entity to perform specific tasks or activities).

<sup>36</sup>This glossary was originally published by the ECB on 1 December 2009 as a “Glossary of terms related to payment, clearing and settlement systems”. These are definitions of terms as they are used by market participants, not legal definitions. The objective is for the glossary to have a broad, general scope, rather than being system or infrastructure-specific. The use of these terms and definitions may be subject to limitations on account of the diversity of European infrastructure and legal systems.

Term	Definition
<b>Authorisation</b>	The consent given by a participant (or a third party acting on behalf of that participant) in order to transfer funds or securities.
<b>Auto-collateralisation</b>	A credit operation that is or can be triggered when a buyer does not have sufficient funds to settle a securities transaction in order to improve its cash position for the next settlement cycle. The credit provided can be secured using securities already held by the buyer (“collateral stocks”) or the securities that are being purchased (“collateral flows”).
<b>Automated clearing house (ACH)</b>	An electronic clearing system in which payment orders are exchanged among participants (primarily via electronic media) and handled by a data-processing centre. See also <i>clearing, clearing house</i> .
<b>Automated teller machine (ATM)</b>	An electromechanical device that allows authorised users, typically using machine-readable plastic cards, to withdraw cash from their accounts and/or access other services (allowing them, for example, to make balance enquiries, transfer funds or deposit money). See also <i>cash dispenser</i> .
<b>Automatic linking</b>	A process whereby trading members may automatically link buy and sell trades by marking the respective securities trades. See also <i>linked trade</i> .
<b>Backup system</b>	A system designed to replace the primary system in the event of the primary system being unable to function for whatever reason. See also <i>business continuity</i> .
<b>Bank Identifier Code (BIC)</b>	An International Organization for Standardization (ISO) technical code that uniquely identifies a financial institution. SWIFT is the registration authority for BICs. A BIC consists of eight or eleven characters, comprising a financial institution code (four characters), a country code (two characters), a location code (two characters) and, optionally, a branch code (three characters).
<b>Batch (bulk payments)</b>	A group of orders (payment orders and/or securities transfer orders) to be processed together.
<b>Beneficiary</b>	A recipient of funds (payee) or securities. Depending on the context, a beneficiary can be a direct participant in a payment system and/or a final recipient.
<b>BIC</b>	See <i>Bank Identifier Code</i> .
<b>Bilateral exposure</b>	One party’s exposure to another party. See also <i>exposure</i> .
<b>Bilateral net settlement system</b>	A settlement system in which every individual bilateral combination of participants settles its net settlement position on a bilateral basis. See also <i>net settlement system</i> .

Term	Definition
<b>Bilateral netting</b>	An arrangement whereby two parties net their bilateral obligations. See also <i>multilateral netting, netting, net settlement system</i> .
<b>Bill of exchange</b>	A written order from one party (the drawer) to another (the drawee) instructing it to pay a specified sum on demand or on a specified date to the drawer or a third party specified by the drawer. These are widely used to finance trade and, when discounted with a financial institution, to obtain credit.
<b>Blocking</b>	A process preventing the transfer of a specified amount of funds or a specified quantity of a security.
<b>Book-entry system</b>	A system which enables transfers of securities and other financial assets which do not involve the physical movement of paper documents or certificates (e.g. the electronic transfer of securities). See also <i>dematerialisation, immobilisation</i> .
<b>Book-entry transaction</b>	This term has two meanings. 1) In the field of securities, it refers to a transaction which is processed without the movement of physical certificates, being effected instead by means of credit and debit entries. 2) In the field of payments, it refers to a credit or debit entry made by a credit institution on the account of a customer in accordance with a general instruction issued by the customer (e.g. for a dividend payment or bank fees).
<b>Brand</b>	A particular payment product (especially a card) that has been licensed by its owner for use in a given territory.
<b>Bulk payments</b>	See <i>batch</i> .
<b>Business continuity</b>	A state of uninterrupted business operations. This term also refers to all of the organisational, technical and staffing measures employed in order to: 1) ensure the continuation of core business activities in the immediate aftermath of a crisis; 2) gradually ensure the continued operation of all business activities in the event of sustained and severe disruption. See also <i>backup system</i> .
<b>Cap (limit)</b>	A quantitative limit on the funds or securities transfer activity of a participant in a system. Limits may be set by each individual participant or imposed by the entity managing the system. Limits can be placed on system participants' net debit and/or net credit positions.
<b>Card (payment card)</b>	A device that can be used by its holder to pay for goods and services or to withdraw money.
<b>Card acquirer</b>	See <i>acquirer</i> .
<b>Cardholder</b>	A person to whom a payment card is issued and who is authorised to use that card.

Term	Definition
<b>Card issuer</b>	A financial institution that makes payment cards available to cardholders, authorises transactions at point-of-sale (POS) terminals or automated teller machines (ATMs) and guarantees payment to the acquirer for transactions that are in conformity with the rules of the relevant scheme.
<b>Card scheme</b>	A technical and commercial arrangement set up to serve one or more brands of card which provides the organisational, legal and operational framework necessary for the functioning of the services marketed by those brands. See also <i>three-party card scheme</i> , <i>four-party card scheme</i> .
<b>Card with a cash function</b>	A card enabling the cardholder to withdraw cash from a cash dispenser and/or deposit cash. The cash function is usually combined with a payment function. See also <i>cash card</i> .
<b>Card with a credit function</b>	See <i>credit card</i> .
<b>Card with a debit function</b>	See <i>debit card</i> .
<b>Cash card</b>	A card which has only a cash function. See also <i>card with a cash function</i> .
<b>Cash dispenser</b>	An electromechanical device that permits authorised users to withdraw banknotes, typically using machine-readable plastic cards. See also <i>automated teller machine</i> .
<b>Cash settlement agent</b>	The entity whose assets or liabilities are used to settle the payment obligations arising from funds transfer systems or from securities transfers within a central securities depository (CSD). Commercial banks and central banks are typical cash settlement agents.
<b>CCBM</b>	See <i>correspondent central banking model</i> .
<b>CCBM2</b>	See <i>Collateral Central Bank Management</i> .
<b>CCP</b>	See <i>central counterparty</i> .
<b>Central bank money</b>	Liabilities of a central bank, in the form of either banknotes or bank deposits held at a central bank, which can be used for settlement purposes.
<b>Central counterparty (CCP)</b>	An entity that interposes itself, in one or more markets, between the counterparties to the contracts traded, becoming the buyer to every seller and the seller to every buyer and thereby guaranteeing the performance of open contracts.
<b>Central counterparty (CCP) link</b>	An arrangement between two central counterparties (CCPs) that allows the provision of central counterparty services for trades performed by the participants of those two CCPs, without requiring those participants to become members of both CCPs.

Term	Definition
<b>Central securities depository (CSD)</b>	<p>An entity that:</p> <ol style="list-style-type: none"> <li>1) enables securities transactions to be processed and settled by book entry;</li> <li>2) provides custodial services (e.g. the administration of corporate actions and redemptions);</li> <li>3) plays an active role in ensuring the integrity of securities issues.</li> </ol> <p>Securities can be held in a physical (but immobilised) form or in a dematerialised form (whereby they exist only as electronic records).</p>
<b>Chaining</b>	<p>A method used in certain transfer systems for the processing of orders. This involves altering the sequence in which transfer orders are processed in order to increase the number or value of transfers that can be settled with the available funds and/or securities balances (or the available credit or securities lending lines).</p> <p>See also <i>optimisation routine</i>.</p>
<b>Charge card</b>	See <i>delayed debit card</i> .
<b>Cheque</b>	<p>A written order from one party (the drawer) to another (the drawee; normally a credit institution) requiring the drawee to pay a specified sum on demand to the drawer or a third party specified by the drawer.</p>
<b>Chip card (smart card)</b>	<p>A card with an embedded microprocessor (chip) loaded with the information necessary to enable payment transactions.</p>
<b>Clearing</b>	<p>The process of transmitting, reconciling and, in some cases, confirming transfer orders prior to settlement, potentially including the netting of orders and the establishment of final positions for settlement. Sometimes this term is also used (imprecisely) to cover settlement. For the clearing of futures and options, this term also refers to the daily balancing of profits and losses and the daily calculation of collateral requirements.</p> <p>See also <i>settlement</i>.</p>
<b>Clearing fund</b>	<p>A fund composed of assets contributed by participants in a central counterparty (CCP) or by providers of guarantee arrangements that may be used to meet the obligations of a defaulting CCP participant. In certain circumstances, it may also be used to settle transactions and cover losses and liquidity pressures resulting from such defaults. A clearing fund serves as insurance against unusual price movements not covered by the margin calculation in the event of a member defaulting.</p>
<b>Clearing house</b>	<p>A common entity (or a common processing mechanism) through which participants agree to exchange transfer instructions for funds, securities or other instruments. In some cases, a clearing house may act as a central counterparty for those participants, thereby taking on significant financial risks.</p>
<b>Clearing member</b>	<p>A member of a clearing house.</p> <p>See also <i>direct clearing member, general clearing member, non-clearing member</i>.</p>

Term	Definition
<b>Clearing system</b>	A set of rules and procedures whereby financial institutions present and exchange data and/or documents relating to transfers of funds or securities to other financial institutions at a single location (e.g. a clearing house). These procedures often include a mechanism for calculating participants' mutual positions, potentially on a net basis, with a view to facilitating the settlement of their obligations in a settlement system. See also <i>clearing, netting, clearing house</i> .
<b>Close-out netting</b>	A special form of netting which follows certain contractually agreed events (such as the opening of insolvency proceedings), whereby all existing obligations are accelerated such that they become due immediately. See also <i>netting, default</i> .
<b>Co-branding</b>	An arrangement whereby a product or service is associated with more than one brand.
<b>Collateral</b>	An asset or third-party commitment that is used by a collateral provider to secure an obligation vis-à-vis a collateral taker. See also <i>pledge, collateral pool, repurchase agreement</i> .
<b>Collateral Central Bank Management (CCBM2)</b>	A common platform for Eurosystem collateral management, establishing efficient collateral mobilisation and management procedures for both domestic and cross-border collateral.
<b>Collateral management</b>	Collateral management includes the process used to control the correspondence between the market value of the relevant collateral and the required value of that collateral. It generally also includes the generation and processing of collateral transfers.
<b>Collateral pool</b>	A collateralisation technique that enables an institution to make collateral available to a counterparty without allocating it to a specific transaction. Antonym: <i>earmarking</i> .
<b>Commercial bank money</b>	Commercial bank liabilities that take the form of deposits held at a commercial bank which can be used for settlement purposes. See also <i>loro account, nostro account</i> .
<b>Committed facility</b>	A facility (e.g. a credit line or a repo facility) whereby the provider is contractually required to advance funds in specified circumstances. See also <i>collateral pool, loss-sharing agreement</i> .
<b>Common depository</b>	An entity, usually a credit institution, that provides the two international central securities depositories (ICSDs) with safekeeping and asset servicing for physical papers ("global notes") covering all or part of an issue of international debt instruments (e.g. Eurobonds). See also <i>specialised depository</i> .
<b>Confirmation (trade confirmation)</b>	A process whereby the terms of a trade are verified either by directly involved market participants or by a central entity.

Term	Definition
<b>Contractual settlement date accounting</b>	A contractual commitment by a custodian to credit and debit a customer's cash and securities accounts, as appropriate, on the date on which the customer's contract with its counterparty is due for settlement (i.e. the contractual settlement date), regardless of whether settlement has actually occurred. Such crediting and debiting is normally provisional and does not become final if settlement does not occur within a time period established by the custodian.
<b>Core Principles for Systemically Important Payment Systems (CPSIPS)</b>	International standards for systemically important payment systems developed by the G10 central banks in order to guide the oversight activities of central banks with regard to payment systems of systemic importance. For details, see the report <i>Core Principles for Systemically Important Payment Systems</i> , BIS, January 2001.
<b>Corporate action (corporate event)</b>	An action or event decided by the issuer of a security which has an impact on the holders of that security. This may be optional, in which case those holders have a choice (for example, they may have the right to purchase more shares, subject to conditions specified by the issuer). Alternatively, it may be mandatory, whereby those holders have no choice (e.g. in the case of a dividend payment or stock split). Corporate actions can relate to cash payments (e.g. dividends or bonuses) or the registration of rights (subscription rights, partial rights, splits, mergers, etc.).
<b>Corporate event</b>	See <i>corporate action</i> .
<b>Correspondent banking</b>	An arrangement whereby one bank (the settlement or service-providing bank) makes or receives payments (potentially performing other banking services in addition) on behalf of another bank (the customer or user bank). See also <i>loro account, nostro account, tiering arrangement</i> .
<b>Correspondent central banking model (CCBM)</b>	A mechanism established by the European System of Central Banks with the aim of enabling counterparties to use eligible collateral in a cross-border context. In the CCBM, national central banks act as custodians for one another. This means that each national central bank has a securities account in its securities administration for each of the other national central banks and the ECB.
<b>Counterparty risk</b>	The risk that between the time a transaction is agreed and the time it is actually settled, the counterparty to that transaction will fail to fulfil its obligations.
<b>CPSIPS</b>	See <i>Core Principles for Systemically Important Payment Systems</i> .
<b>Credit cap</b>	See <i>credit limit</i> .

Term	Definition
<b>Credit card (card with a credit function)</b>	A card that enables cardholders to make purchases and/or withdraw cash up to a prearranged credit limit. The credit granted may be either settled in full by the end of a specified period, or settled in part, with the balance taken as extended credit (on which interest is usually charged).
<b>Credit institution</b>	A credit institution is a company duly authorised to carry out banking transactions on a regular basis (i.e. to receive deposits from the public, carry out credit transactions, make funds available and manage means of payment).
<b>Credit limit (credit cap)</b>	A limit on the credit exposure which a payment system participant incurs either vis-à-vis another participant (a “bilateral credit limit”) or vis-à-vis all other participants (a “multilateral credit limit”) as a result of receiving payments which have not yet been settled.
<b>Credit line</b>	A commitment, made in advance by a given entity, to grant credit on demand to another entity subject to agreed terms.
<b>Credit risk</b>	The risk that a counterparty will not settle the full value of an obligation – neither when it becomes due, nor at any time thereafter. Credit risk includes replacement cost risk and principal risk. It also includes the risk of the settlement bank failing. See also <i>replacement cost risk, principal risk</i> .
<b>Credit transfer</b>	A payment instrument allowing a payer to instruct the institution with which its account is held to transfer funds to a beneficiary.
<b>Cross-border payment</b>	A payment where the financial institutions of the payer and the payee are located in different countries.
<b>Cross-border settlement</b>	Settlement that takes place in a country (or currency area) in which one or both parties to the transaction are not located. Antonym: <i>domestic settlement</i> .
<b>Cross-currency settlement risk</b>	See <i>foreign exchange settlement risk</i> .
<b>Cross-margining agreement</b>	An agreement between two central counterparties (CCPs) which makes it possible to limit the margin requirements for institutions participating in both CCPs by regarding the positions and collateral of such participants as one portfolio.
<b>Cross-system settlement</b>	The settlement of a payment or securities transaction through a link between two separate payment systems or securities settlement systems.
<b>CSD</b>	See <i>central securities depository</i> .
<b>CSD link</b>	A set of technical and legal arrangements between two central securities depositories (CSDs) for the cross-system transfer of securities. See also <i>investor CSD, issuer CSD, relayed link, direct link, indirect link</i> .
<b>Custodian</b>	An entity, often a credit institution, which provides securities custody services to its customers (cf. <i>depository</i> ).

Term	Definition
<b>Custody</b>	The holding and administration, by an entity entrusted with such tasks, of securities and other financial instruments owned by a third party.
<b>Custody risk</b>	The risk of a loss being incurred on securities in custody as a result of a custodian's insolvency, negligence, misuse of assets, fraud, poor administration or inadequate record-keeping.
<b>Cut-off time</b>	The deadline set by a system (or an agent bank) for the acceptance of transfer orders for a given settlement cycle.
<b>Daily processing</b>	The complete cycle of processing tasks which need to be completed in a typical business day, from start-of-day procedures to end-of-day procedures. This sometimes includes the backing-up of data.
<b>Daylight credit</b>	See <i>intraday credit</i> .
<b>Debit card (card with a debit function)</b>	A card enabling its holders to make purchases and/or withdraw cash and have these transactions directly and immediately charged to their accounts, whether these are held with the card issuer or not. See also <i>card, delayed debit card</i> .
<b>Default</b>	An event stipulated in an agreement as constituting a default. Generally, such events relate to a failure to complete a transfer of funds or securities in accordance with the terms and rules of the system in question. A failure to pay or deliver on the due date, a breach of agreement and the opening of insolvency proceedings all constitute such events. See also <i>failed transaction</i> .
<b>“Defaulter pays”</b>	A loss-sharing arrangement whereby each participant is required to collateralise any exposures it creates for other participants. As a result, losses resulting from a party's default are borne by the defaulting party. Antonym: “ <i>survivors pay</i> ”.
<b>Deferred net settlement system</b>	A system which settles on a net basis at the end of a predefined settlement cycle (typically at the end of – but sometimes during – the business day). See also <i>net settlement system</i> .
<b>Delayed debit card (charge card)</b>	A card enabling its holders to make purchases and/or withdraw cash and have these transactions charged to an account held with the card issuer, up to an authorised limit. The balance of this account is then settled in full at the end of a predefined period. See also <i>card</i> .
<b>Delivery</b>	The transfer of financial instruments or commodities by means of book entry or physical exchange.
<b>Delivery versus delivery (DvD)</b>	A securities settlement mechanism which links two securities transfers in such a way as to ensure that the delivery of one security occurs if – and only if – the other security in the other transfer is delivered.

Term	Definition
<b>Delivery versus payment (DvP)</b>	A securities settlement mechanism which links a securities transfer and a funds transfer in such a way as to ensure that delivery occurs if – and only if – the corresponding payment occurs.
<b>Dematerialisation</b>	The elimination of physical certificates or documents of title indicating ownership of financial assets, such that the financial assets exist only as accounting records.
<b>Deposit facility</b>	A standing facility of the Eurosystem which counterparties may use to make overnight deposits at a national central bank. Such deposits are remunerated at a pre-specified interest rate. See also <i>standing facility</i> .
<b>Depository</b>	An agent with the primary role of recording (direct or indirect) holdings of securities. A depository may also act as a registrar (cf. <i>custodian</i> ).
<b>Derivative</b>	A financial contract whose value depends on the value of one or more underlying reference assets, rates or indices, on a measure of economic value or on factual events.
<b>Designated system</b>	A system governed by the law of an EEA Member State and designated to the European Commission by the competent national authorities in accordance with Directive 98/26/EC of the European Parliament and of the Council of 19 May 1998 on settlement finality in payment and securities settlement systems.
<b>Digital signature</b>	See <i>electronic signature</i> .
<b>Direct clearing member</b>	A member of a clearing house that clears on its own behalf and on behalf of its customers. See also <i>clearing member</i> , <i>general clearing member</i> , <i>non-clearing member</i> .
<b>Direct debit</b>	A payment instrument for the debiting of a payer's payment account whereby a payment transaction is initiated by the payee on the basis of authorisation given by the payer.
<b>Direct holding system</b>	An arrangement for registering ownership of securities (or similar interests) whereby each and every final investor in the security is registered with a single entity (e.g. the issuer itself, a central securities depository (CSD) or a registry). In some countries, the use of direct holding systems is required by law. Antonym: <i>indirect holding system</i> .
<b>Direct link</b>	An account opened by a central securities depository (CSD), referred to as the "investor CSD", in the books of another CSD, referred to as the "issuer CSD", in order to facilitate the transfer of securities from participants in the issuer CSD to participants in the investor CSD. See also <i>investor CSD</i> , <i>operated direct link</i> , <i>relayed link</i> . Antonym: <i>indirect link</i> .

Term	Definition
<b>Direct participant</b>	A participant in a transfer system that can perform all activities allowed in the system without using an intermediary (including, in particular, the direct inputting of orders in the system and the performance of settlement operations). Antonym: <i>indirect participant</i> .
<b>Domestic settlement</b>	Settlement which takes place in the country (or currency area) in which both parties to the transaction are located. Antonym: <i>cross-border settlement</i> .
<b>Double-entry bookkeeping</b>	An accounting principle whereby for each credit/debit entry made in one account, there is a corresponding entry in another account.
<b>DvD</b>	See <i>delivery versus delivery</i> .
<b>DvP</b>	See <i>delivery versus payment</i> .
<b>Earmarking</b>	A technique for identifying collateral whereby assets provided as collateral are attributed to individual transactions. Antonym: <i>collateral pool</i> .
<b>EBPP</b>	See <i>Electronic Bill Presentment and Payment</i> .
<b>EDI</b>	See <i>electronic data interchange</i> .
<b>EFTPOS terminal</b>	A terminal which captures payment information by electronic means and transmits such information either online or offline. "EFTPOS" stands for "electronic funds transfer at point of sale". See also <i>point-of-sale (POS) terminal</i> .
<b>Electronic Bill Presentment and Payment (EBPP; electronic invoicing)</b>	Services which enable the electronic transmission, browsing and payment of invoices.
<b>Electronic data interchange (EDI)</b>	The exchange between commercial entities (in some cases also public administrations), in a standardised electronic format, of data relating to a number of message categories, such as orders, invoices, customs documents, remittance advices and payments. EDI messages are sent through public data transmission networks or banking system channels. Any movement of funds initiated by EDI is reflected in payment instructions flowing through the banking system. UN/CEFACT, a United Nations body, has established a set of standards relating to electronic data interchange for administration, commerce and transport (EDIFACT).
<b>Electronic invoicing</b>	See <i>Electronic Bill Presentment and Payment</i> .
<b>Electronic money</b>	A monetary value, represented by a claim on the issuer, which is: <ol style="list-style-type: none"> <li>1) stored on an electronic device (e.g. a card or computer);</li> <li>2) issued upon receipt of funds in an amount not less in value than the monetary value received;</li> <li>3) accepted as a means of payment by undertakings other than the issuer.</li> </ol>

Term	Definition
<b>Electronic money institution (ELMI)</b>	A term used in EU legislation to designate credit institutions which are governed by a simplified regulatory regime because their activity is limited to the issuance of electronic money and the provision of financial and non-financial services closely related to the issuance of electronic money.
<b>Electronic purse</b>	See <i>multi-purpose prepaid card</i> .
<b>Electronic signature (digital signature)</b>	A string of data, generated by a cryptographic method, which is attached to an electronic message in order to guarantee its authenticity, identify the signatory and link the content to that signatory (thereby protecting the recipient against repudiation by the sender).
<b>Eligible assets (eligible collateral)</b>	Assets which can be used as collateral in order to obtain credit from the Eurosystem.
<b>Eligible collateral</b>	See <i>eligible assets</i> .
<b>ELMI</b>	See <i>electronic money institution</i> .
<b>EMV</b>	An acronym describing the set of specifications developed by the consortium EMVCo, which is promoting the global standardisation of electronic financial transactions – in particular the global interoperability of chip cards. “EMV” stands for “Europay, MasterCard and Visa”.
<b>Exchange-for-value settlement system</b>	A general term referring to systems which simultaneously exchange the two assets involved in a foreign exchange transaction or a securities transaction. See also <i>delivery versus delivery</i> , <i>delivery versus payment</i> , <i>payment versus payment</i> .
<b>Exit criteria</b>	Criteria determining whether an existing participant in a system should cease participation or not. The participant’s exit may be voluntary, or it may be compulsory (e.g. following the opening of insolvency proceedings).
<b>Exposure</b>	The loss that would be incurred if a certain risk materialised. See also <i>bilateral exposure</i> .
<b>Face-to-face payment</b>	A payment where the payer and the payee are in the same physical location. Antonym: <i>remote payment</i> .
<b>Fail</b>	See <i>failed transaction</i> .
<b>Failed transaction (fail)</b>	A transaction that does not settle on the contractual settlement date. Such a transaction may be retained and may settle thereafter.
<b>Final investor</b>	The ultimate recipient of rights in securities held on a securities account (e.g. ownership rights, voting rights or dividends).

Term	Definition
<b>Final settlement (final transfer)</b>	<p>A settlement or transfer is final when it is unconditional, enforceable and irrevocable, even in the framework of insolvency proceedings opened against a participant (except in the case of criminal offences or fraudulent acts, as determined by a competent court). In the European context, a distinction is made between:</p> <ol style="list-style-type: none"> <li>1) the enforceability of a transfer order which is binding on third parties and protected from insolvency risks, provided that the transfer order was entered in the relevant system, in accordance with the rules of that system, prior to the opening of insolvency proceedings (with transfer orders entered in a system following the opening of insolvency proceedings being legally enforceable only in exceptional circumstances);</li> <li>2) the irrevocability of a transfer order which cannot be revoked by the participants as of the point in time laid down in the rules of that system.</li> </ol> <p>A distinction should be made between the finality of the transfer order and the finality of the <i>transfer</i>, which indicates the moment at which entitlement to the asset in question (be it cash or securities) is legally transferred to the receiving entity.</p>
<b>Final transfer</b>	See <i>final settlement</i> .
<b>Foreign exchange settlement risk (cross-currency settlement risk)</b>	<p>The risk that a party to a foreign exchange transaction will transfer the currency it has sold, but not receive the currency it has bought. This is a form of principal risk.</p> <p>See also <i>principal risk, payment versus payment</i>.</p>
<b>Four-party card scheme</b>	<p>A card scheme where the stakeholders involved are:</p> <ol style="list-style-type: none"> <li>1) the issuer;</li> <li>2) the acquirer;</li> <li>3) the cardholder;</li> <li>4) the card acceptor.</li> </ol> <p>(In the case of automated teller machine (ATM) transactions, it is usually the acquirer that offers its services via the ATM.) By contrast, in a three-party card scheme, the issuer and the acquirer are always the same entity.</p> <p>See also <i>card scheme, three-party card scheme</i>.</p>
<b>Free-of-payment (FOP) delivery</b>	A delivery of securities which is not linked to a corresponding transfer of funds.
<b>FTS</b>	See <i>funds transfer system</i> .
<b>Funds transfer system (FTS)</b>	<p>A formal arrangement based on a private contract or legislation, with multiple membership, common rules and standardised arrangements, for the transmission, clearing, netting and/or settlement of monetary obligations arising between its members.</p> <p>See also <i>interbank funds transfer system, payment system</i>.</p>
<b>Fungibility</b>	A characteristic of securities which are substitutable on account of their being identical.

Term	Definition
<b>General clearing member</b>	A member of a clearing house that clears on its own behalf, on behalf of its customers and on behalf of other market participants. See also <i>clearing member, direct clearing member, non-clearing member</i> .
<b>Global certificate</b>	A single physical certificate that covers all or part of an issue of securities. See also <i>global note</i> .
<b>Global custodian</b>	A custodian that provides its customers with custody services in respect of securities traded and settled in several countries around the world.
<b>Global note</b>	The term used when a global certificate relates to fixed income instruments (e.g. bonds). See also <i>global certificate</i> .
<b>Governance</b>	Procedures through which the objectives of a legal entity are set, the means of achieving them are identified and the performance of the entity is measured. This refers, in particular, to the set of relationships between the entity's owners, board of directors, management, users and regulators, as well as other stakeholders that influence these outcomes.
<b>Gridlock</b>	A situation that can arise in a funds or securities transfer system in which a failure to execute one or more transfer orders prevents the execution of a substantial number of orders submitted by other participants. See also <i>queuing, systemic risk</i> .
<b>Gross margining</b>	A mechanism whereby the margin that a participant posts in a central counterparty (CCP) for its customers' positions is the sum of the requirements for individual customers.
<b>Gross settlement</b>	The settlement of transfer orders one by one. See also <i>net settlement</i> .
<b>Gross settlement system</b>	A transfer system in which transfer orders are settled one by one. See also <i>net settlement system, real-time gross settlement (RTGS) system</i> .
<b>Guarantee fund</b>	A fund which compensates non-defaulting participants for losses which they suffer in the event that one or more participants default on their obligations. See also <i>clearing fund, collateral pool</i> .
<b>Haircut</b>	A risk control measure applied to underlying assets whereby the value of those underlying assets is calculated as the market value of the assets reduced by a certain percentage (the "haircut"). Haircuts are applied by a collateral taker in order to protect itself from losses resulting from declines in the market value of a security in the event that it needs to liquidate that collateral.

Term	Definition
<b>Home banking</b>	Banking services which retail customers of credit institutions can access using various kinds of telecommunication device (e.g. telephones, mobile phones, television sets, terminals or personal computers).
<b>Hybrid system</b>	A system that combines the characteristics of RTGS systems (e.g. the continuous processing and clearing of transfer orders) and net settlement systems (the operation of several settlement cycles per day, some form of netting procedure for transfer orders, etc.). See also <i>net settlement system</i> , <i>real-time gross settlement (RTGS) system</i> .
<b>IBAN</b>	See <i>International Bank Account Number</i> .
<b>ICSD</b>	See <i>international central securities depository</i> .
<b>IFTS</b>	See <i>interbank funds transfer system</i> .
<b>Immobilisation</b>	The placement of physical certificates for securities and financial instruments in a common depository or a central securities depository so that subsequent transfers can be made by book entry (i.e. by debiting and crediting holders' accounts at the depository).
<b>Indirect holding system</b>	A multi-tiered arrangement for the custody and transfer of ownership of securities (or the transfer of similar interests therein) in which investors are identified only at the level of their custodian. Antonym: <i>direct holding system</i> .
<b>Indirect link</b>	A link between two central securities depositories (CSDs) through a non-CSD intermediary. See also <i>relayed link</i> . Antonym: <i>direct link</i> .
<b>Indirect participant</b>	A participant in a funds or securities transfer system with a tiering arrangement that uses a direct participant as an intermediary in order to perform some of the activities allowed in the system (particularly settlement). See also <i>tiering arrangement</i> . Antonym: <i>direct participant</i> .
<b>Initial margin</b>	For instruments cleared by a central counterparty (CCP), the amount of collateral that each participant is required to provide to the CCP (or the clearing member) in order to cover potential losses in the event of that participant defaulting. The initial margin is calculated on the basis of a formula set by the CCP. See also <i>haircut</i> , <i>margin</i> .
<b>Integrity</b>	In the context of data, the quality of being protected against accidental or fraudulent alteration in transmission or in storage. Alternatively, the quality of indicating whether or not such alteration has occurred.

Term	Definition
<b>Integrity of a securities issue</b>	The result of legal requirements and securities accounting procedures ensuring that the number of securities issued is, at all times, equal to the total number of securities in circulation (i.e. validly booked in investors' accounts).
<b>Interbank funds transfer system (IFTS)</b>	A funds transfer system in which all (or almost all) participants are credit institutions.
<b>Interchange fee</b>	A transaction fee payable between the payment service providers involved in a transaction.
<b>Internal settlement</b>	Settlement that is effected through transfers of securities and/or funds on the books of a bank or investment firm, as opposed to settlement via an interbank funds transfer system or a central securities depository (CSD).
<b>International Bank Account Number (IBAN)</b>	An International Organization for Standardization (ISO) technical code that is an expanded version of the basic bank account number (BBAN). Intended for use internationally, the IBAN uniquely identifies an individual account at a specific financial institution in a particular country. The IBAN also includes the bank identifier of the financial institution servicing that account.
<b>International central securities depository (ICSD)</b>	A central securities depository (CSD) which was originally set up to settle Eurobond trades and is now active also in the settlement of internationally traded securities from various domestic markets, typically across currency areas. At present, there are two ICSDs located in EU countries: Clearstream Banking in Luxembourg and Euroclear Bank in Belgium.
<b>Interoperability</b>	The set of arrangements/procedures that allows participants in different systems to conduct and settle payments or securities transactions across systems while continuing to operate only in their own respective systems.
<b>Intraday credit (daylight credit)</b>	Credit extended and reimbursed within a single business day.
<b>Intraday finality</b>	Final settlement achieved continuously or at various times in the course of the settlement day. Intraday finality can be provided through real-time settlement procedures and/or the settlement of the results of batch processing during the settlement day.
<b>Intraday liquidity</b>	Funds which are available or can be borrowed during the business day in order to enable financial institutions to effect payments/settlement. Repayment of the funds borrowed should take place before the end of the business day. See also <i>intraday credit, same-day funds</i> .
<b>Investment firm</b>	Any entity whose regular occupation or business is the provision of one or more investment services to third parties and/or the performance of one or more investment activities on a professional basis.

Term	Definition
<b>Investor CSD</b>	A term used in the context of central securities depository (CSD) links. An investor CSD – or a third party acting on behalf of the investor CSD – opens an account in another CSD (the issuer CSD) so as to enable the cross-system settlement of securities transactions. See also <i>CSD link, central securities depository, issuer CSD</i> .
<b>Issuer CSD (issuing CSD)</b>	A central securities depository (CSD) in which securities are issued (or immobilised). The issuer CSD opens accounts allowing investors (in a direct holding system) and/or intermediaries (including investor CSDs) to hold these securities. See also <i>direct link, investor CSD, relayed link, direct holding system, indirect holding system</i> .
<b>Issuing CSD</b>	See <i>issuer CSD</i> .
<b>Lamfalussy standards (minimum standards of the Lamfalussy report)</b>	The six minimum standards for the design and operation of cross-border and multi-currency netting schemes or systems. For details, see <i>Report of the Committee on Interbank Netting Schemes of the Central Banks of the Group of Ten Countries</i> (the “Lamfalussy report”), BIS, November 1990. See also <i>Core Principles for Systemically Important Payment Systems</i> .
<b>Large-value funds transfer system (wholesale funds transfer system)</b>	A funds transfer system through which large-value and/or high-priority funds transfers are made between participants in the system for their own account or on behalf of their customers. Although, as a rule, no minimum value is set for payments made in such systems, the average size of such payments is usually relatively large.
<b>Large-value payment</b>	Large-value payments are generally for very large amounts, are exchanged mainly between banks or between participants in financial markets, and usually require urgent and timely settlement. Antonym: <i>retail payment</i> .
<b>L/C</b>	See <i>letter of credit</i> .
<b>Legal risk</b>	The risk of a loss being incurred on account of the unexpected application of a law or regulation, or because a contract cannot be enforced.
<b>Letter of credit (L/C)</b>	An irrevocable commitment by a bank (the issuing bank) or other issuer made at the request of a customer (the applicant third party) to pay a specified sum of money to a third party upon request, subject to terms and conditions drawn up in accordance with uniform customs and practices.
<b>Limit</b>	See <i>cap</i> .
<b>Linked trade</b>	A trade where securities are released for delivery only if they become available from another trade.

Term	Definition
<b>Liquidity risk</b>	The risk that a counterparty will not settle an obligation in full when it becomes due. Liquidity risk does not imply that a counterparty or participant is insolvent, since it may be able to effect the required settlement at some unspecified time thereafter.
<b>Loro account (vostro account)</b>	In correspondent banking, an account held by one bank on behalf of another bank (the “customer bank”); the customer bank regards this account as its “nostro account”. Antonym: <i>nostro account</i> .
<b>Loss-sharing agreement</b>	An agreement among participants in a clearing or settlement system regarding the allocation of any losses arising from the default of either a participant in the system or the system itself. See also <i>loss-sharing rule</i> .
<b>Loss-sharing rule</b>	The rule or formula stipulating the way in which losses arising from the default of either a participant in the system or the system itself are to be shared among the various parties in the event that a loss-sharing agreement is activated. See also <i>loss-sharing agreement</i> .
<b>Mandate for direct debits</b>	The authorisation given by a payer to a payee (and/or the institution with which the payer’s account is held) consenting to the debiting of the payer’s account. See also <i>direct debit</i> .
<b>Margin</b>	Highly liquid collateral required in order to cover adverse market price movements. The initial margin is calculated on the basis of a formula set by the counterparties to a trade or by a central counterparty (CCP). A market participant is called upon to provide additional collateral if the collateral that has been deposited is no longer sufficient (with this “margin call” indicating a shortfall in the margin coverage).
<b>Marginal lending facility</b>	A standing facility of the Eurosystem which counterparties may use to receive overnight credit from a national central bank at a pre-specified interest rate against eligible assets. See also <i>standing facility</i> .
<b>Market infrastructure</b>	Systems used for the trading, clearing and settlement of payments, securities or derivatives.
<b>Market risk (price risk)</b>	The risk of losses (in both on and off-balance sheet positions) arising from movements in market prices. See also <i>replacement cost risk</i> .
<b>Marking to market</b>	The practice of revaluing securities and financial instruments using current market prices. See also <i>haircut, variation margin</i> .
<b>Matching</b>	The process used for comparing the trade or settlement details provided by parties in order to ensure that they agree on the terms of the transaction.

Term	Definition
<b>Means of payment</b>	Assets or claims on assets that are accepted by a payee as discharging a payment obligation on the part of a payer vis-à-vis the payee. See also <i>payment instrument</i> .
<b>Member</b>	A participant in a system which also owns a stake in that system.
<b>Merchant service charge (MSC)</b>	A fee paid by the acceptor/merchant to the acquirer.
<b>Minimum reserves</b>	The minimum amount of reserves that a credit institution is required to hold with the Eurosystem.
<b>Minimum standards of the Lamfalussy report</b>	See <i>Lamfalussy standards</i> .
<b>Mobile payment (m-payment)</b>	A payment where a mobile device (e.g. a phone or personal digital assistant (PDA)) is used at least for the initiation of the payment order and potentially also for the transfer of funds.
<b>Money order</b>	An instrument used to transfer money remotely, often used where the payer and/or the payee do not have a current account with a financial institution.
<b>Money remitter</b>	A payment service provider that accepts funds from a payer for the purpose of making them available to a payee, without necessarily maintaining an account relationship with the payer or payee.
<b>M-payment</b>	See <i>mobile payment</i> .
<b>MSC</b>	See <i>merchant service charge</i> .
<b>Multilateral net settlement system</b>	A settlement system in which each settling participant settles its own multilateral net settlement position (typically by means of a single payment or receipt). See also <i>multilateral netting, net settlement system</i> .
<b>Multilateral netting</b>	An arrangement among three or more parties for the netting of obligations and the settling of multilateral net settlement positions. See also <i>bilateral netting, netting</i> .
<b>Multi-purpose prepaid card (electronic purse)</b>	A prepaid card which can be used at the outlets of several service providers for a wide range of purposes. See also <i>prepaid card</i> .
<b>Net credit cap</b>	A limit placed on the credit exposure which a participant is allowed – or willing – to take on vis-à-vis all other participants or a given participant in the system as a result of sending/receiving payments which have not been settled. See also <i>cap</i> .
<b>Net margining</b>	A mechanism whereby the margin that a participant posts in a central counterparty (CCP) for its customers' positions is the net total of the requirements for the individual customers. See also <i>gross margining</i> .
<b>Net settlement</b>	The settlement of transfer orders on a net basis. See also <i>gross settlement</i> .

Term	Definition
<b>Net settlement system</b>	A funds or securities transfer system which settles net settlement positions during one or more discrete periods, usually at pre-specified times in the course of the business day. See also <i>gross settlement system</i> .
<b>Netting</b>	In the context of clearing or settlement systems, the agreed offsetting of mutual obligations by participants in a system. This process involves the calculation of net settlement positions and their legal reduction to a (bilateral or multilateral) net amount. Netting may take several legal forms. See also <i>bilateral netting, multilateral netting, position netting, netting by novation, unwind</i> .
<b>Netting by novation</b>	An agreement whereby obligations derived from individual transfer orders are netted and replaced by a new obligation. The parties to the new obligation may be the same as the parties to the existing obligation. Alternatively, in the context of some clearing house arrangements, there may be some substitution of parties. Antonym: <i>position netting</i> .
<b>Nominee</b>	A person or entity named by another to act on its behalf. Nominees are commonly used in securities transactions to register and obtain legal ownership of securities.
<b>Non-clearing member</b>	A member of a regulated market that uses a general clearing member to access a clearing house's services. All trades must be settled through a clearing member. See also <i>clearing member, direct clearing member, general clearing member</i> .
<b>Non-repudiation</b>	Mechanisms providing evidence of: 1) the identity of the sender of a payment message; 2) the integrity of that message. These are sufficient to prevent the sender of a message from successfully denying the submission of the payment message or the integrity of its contents.
<b>Nostro account</b>	In correspondent banking, an account held by a customer bank on the books of another bank acting as a service provider. The other bank regards this account as a "loro account". Antonym: <i>loro account</i> .
<b>Offline card transaction</b>	A card transaction which is authorised without contacting the issuer at the time of the transaction. Antonym: <i>online card transaction</i> .
<b>Online card transaction</b>	A card transaction which is authorised following explicit approval by the issuer at the time of the transaction. Antonym: <i>offline card transaction</i> .
<b>Operated direct link</b>	A direct link between two central securities depositories (CSDs) where a third party, typically a custodian bank, operates the account in the issuer CSD on behalf of the investor CSD. See also <i>direct link</i> .

Term	Definition
<b>Operational risk</b>	The risk that deficiencies in information systems or internal controls, human error or management failures will result in unexpected losses. This relates to both internal and external events.
<b>Optimisation routine</b>	A procedure determining the order in which transfer orders are to be processed and settled in a transfer system in order to increase settlement efficiency. See also <i>queue management, chaining</i> .
<b>OTC (over-the-counter) trading</b>	A method of trading that does not involve a regulated market. In over-the-counter markets, participants trade directly with each other, typically through telephone or computer links.
<b>Oversight</b>	The oversight of payment systems is a typical central bank function whereby the objectives of safety and efficiency are promoted by monitoring existing and planned systems, assessing them against the applicable standards and principles whenever possible and, where necessary, fostering change. Oversight activities increasingly relate also to securities clearing and settlement systems.
<b>Pan-European automated clearing house (PE-ACH)</b>	A business platform for the processing of euro payment instruments which is made up of governance rules and payment practices and supported by the necessary technical platform(s).
<b>Participant</b>	An entity which is identified/recognised by a transfer system and – either directly or indirectly – is allowed to send transfer orders to that system and is capable of receiving transfer orders from it. See also <i>direct participant, indirect participant, remote participant</i> .
<b>Payer</b>	The party to a payment transaction which issues the payment order or agrees to the transfer of funds to the payee.
<b>Payment</b>	In a strict sense, a payment is a transfer of funds which discharges an obligation on the part of a payer vis-à-vis a payee. However, in a technical or statistical sense, it is often used as a synonym for “transfer order”. See also <i>transfer order</i> .
<b>Payment card</b>	See <i>card</i> .
<b>Payment instrument</b>	A tool or a set of procedures enabling the transfer of funds from a payer to a payee. The payer and the payee can be one and the same person. See also <i>means of payment</i> .
<b>Payment lag</b>	See <i>settlement lag</i> .
<b>Payment order</b>	An instruction sent by a payer or a payee to a payment service provider requesting the execution of a payment transaction.
<b>Payment scheme</b>	A set of interbank rules, practices and standards necessary for the functioning of payment services. See also <i>card scheme</i> .

Term	Definition
<b>Payment system</b>	This term has two meanings. 1) In some cases, it refers to the set of instruments, banking procedures and interbank funds transfer systems which facilitate the circulation of money in a country or currency area. 2) In most cases, it is used as a synonym for “funds transfer system”. See also <i>funds transfer system</i> .
<b>Payment versus payment (PvP)</b>	A mechanism which ensures that the final transfer of a payment in one currency occurs if – and only if – the final transfer of a payment in another currency or currencies takes place. See also <i>exchange-for-value settlement system</i> .
<b>PE-ACH</b>	See <i>pan-European automated clearing house</i> .
<b>Personal identification number (PIN)</b>	A personal and confidential numerical code which the user of a payment instrument may need to use in order to verify his/her identity. In electronic transactions, this is seen as the equivalent of a signature. See also <i>electronic signature</i> .
<b>Physical delivery</b>	Settlement of a derivatives transaction through the delivery of the underlying asset in exchange for payment.
<b>PIN</b>	See <i>personal identification number</i> .
<b>Pledge</b>	The delivery of assets in order to secure the performance of an obligation by one party (the debtor) vis-à-vis another (the secured party). For the secured party, a pledge creates a security interest (a “lien”) in the assets delivered, while ownership of the assets remains with the debtor.
<b>Point-of-sale (POS) terminal</b>	A device allowing the use of payment cards at a physical (not virtual) point of sale. The payment information is captured either manually on paper vouchers or by electronic means. See also <i>EFTPOS terminal</i> .
<b>Position netting (advisory netting)</b>	Netting of orders in respect of obligations between two or more parties which neither satisfies nor discharges those original individual obligations. Also referred to as “payment netting” in the case of payment orders. Antonym: <i>netting by novation</i> .
<b>Postal order</b>	Money order in which the drawee is a postal institution.
<b>Prenotification</b>	In the field of direct debits, the advance notification provided by the creditor to the debtor as regards: 1) the amount of the next direct debit; 2) the date of collection.
<b>Prepaid card</b>	A card on which a monetary value can be loaded in advance and stored either on the card itself or on a dedicated account on a computer. Those funds can then be used by the holder to make purchases. See also <i>multi-purpose prepaid card</i> .
<b>Price risk</b>	See <i>market risk</i> .

Term	Definition
<b>Primary site</b>	The place where systems operators locate the infrastructure and/or staff necessary to run their normal daily business operations.
<b>Principal</b>	An entity that acts on its own behalf, with its own funds and at its own risk.
<b>Principal risk</b>	The risk that the seller of a financial asset (e.g. securities or currency) will deliver, but not receive payment, or the risk that the buyer will pay, but not receive delivery. In such a situation, the full value of the securities or funds transferred is at risk. See also <i>delivery versus payment, payment versus payment</i> .
<b>Processing</b>	The performance of all of the actions required in accordance with the rules of a system for the handling of a transfer order from the point of acceptance by the system to the point of discharge from the system. Processing may include clearing, sorting, netting, matching and/or settlement.
<b>Provisional settlement</b>	The discharging of an obligation by means of a transfer of funds and/or a transfer of securities which is dependent on the fulfilment of certain conditions and can therefore be rescinded by one or more parties. See also <i>settlement</i> . Antonym: <i>final settlement</i> .
<b>Provisional transfer</b>	A transfer order is provisional as long as it can be revoked by the originator or as long as it can be reversed subject to certain conditions. Antonym: <i>final settlement</i> .
<b>PvP</b>	See <i>payment versus payment</i> .
<b>Queue management</b>	Rules and procedures that determine the order in which transfer orders are released from the queue and processed – e.g. “first in, first out” (FIFO). Optimisation routines may or may not be used. See also <i>queuing, optimisation routine</i> .
<b>Queuing</b>	An arrangement whereby transfer orders are held in a queue by the sending participant or by the system until they can be processed in accordance with the rules of the system. In an RTGS system, payments are typically “queued” because of a lack of funds or insufficient access to intraday credit. In netting systems, payments are “queued” in order to prevent caps from being exceeded. See also <i>cap, real-time gross settlement (RTGS) system</i> .
<b>Reachability</b>	A credit institution is “reachable” if it can execute a credit transfer order and/or a direct debit instruction sent by any other bank in a particular currency area.

Term	Definition
<b>Realignment</b>	The transfer of assets from the account of one investor central securities depository (CSD) to the account of another investor CSD, both of which are held with the issuer CSD, in order to reflect the transfer of assets between participants in those investor CSDs. See also <i>investor CSD, issuer CSD</i> .
<b>Real-time gross settlement (RTGS) system</b>	A settlement system in which processing and settlement take place on a transaction-by-transaction basis in real time.
<b>Reconciliation</b>	A procedure to verify that two sets of records issued by two different entities match.
<b>Refund</b>	In the field of direct debits, a claim made by a debtor for the reimbursement of debits effected from its account (with or without a specific reason being indicated by that debtor).
<b>Refusal</b>	In the field of direct debits, an instruction issued by a debtor prior to settlement, for whatever reason, to the effect that the debtor bank should not make a direct debit payment.
<b>Registrar</b>	See <i>registry</i> .
<b>Registration</b>	The documenting of the ownership of securities in the records of the issuer, in a registry or in a central securities depository (CSD).
<b>Registry (registrar)</b>	An entity that records the ownership of securities on behalf of the issuer.
<b>Reject</b>	In the field of payments, a payment transaction whose normal execution is prevented by the payment service provider of either the payer or the payee prior to settlement.
<b>Relayed link</b>	A contractual and technical arrangement that allows issuer and investor central securities depositories (issuer and investor CSDs) to hold and transfer securities through an account with a third CSD (a “middle CSD”), which acts as an intermediary.
<b>Remote access</b>	Direct access by an institution established in one country to a system (e.g. a payment system, a securities settlement system or a central counterparty (CCP)) established in another country.
<b>Remote participant</b>	A participant in a system which operates from a country other than that in which the system in question is located.
<b>Remote payment</b>	A payment made from a distance, without the payer and payee being present at the same physical location. Antonym: <i>face-to-face payment</i> .
<b>Replacement cost risk</b>	The risk that, owing to a party to a transaction failing to meet its obligation on the settlement date, its counterparty may have to replace the original transaction at current market prices (“replacement cost”). See also <i>market risk</i> .

Term	Definition
<b>Repurchase agreement</b>	The process of borrowing money by combining the sale of an asset (usually a fixed income security) with the subsequent repurchase of that same asset for a slightly higher price (which reflects the borrowing rate).
<b>Retailer card</b>	A card issued by a merchant for use at specified merchant outlets.
<b>Retail funds transfer system</b>	A funds transfer system which typically handles a large volume of payments of relatively low value in forms such as cheques, credit transfers and direct debits.
<b>Retail payment</b>	A non-time-critical payment of relatively low value. These payments are typically made outside of the financial markets and are both initiated by and made to individuals and non-financial institutions. <i>Antonym: large-value payment.</i>
<b>Returns</b>	Funds sent back by the payee to the payer following settlement of the original payment instruction. The term “return” is used in connection with both direct debits and credit transfers.
<b>RTGS system</b>	See <i>real-time gross settlement (RTGS) system</i> .
<b>Safekeeping services</b>	The holding of physical securities on behalf of other parties.
<b>Same-day funds</b>	Funds which the recipient is entitled to transfer or withdraw from an account on the day of receipt. See also <i>intraday liquidity</i> .
<b>Scheduling</b>	Technique for managing payment queues by determining the order in which payments are accepted for settlement. See also <i>queuing</i> .
<b>Secondary site</b>	A location other than the primary site which systems can use to resume their business operations and other functions in the event of a disaster.
<b>Securities settlement system (SSS)</b>	A system which allows the transfer of securities, either free of payment (FOP) or against payment (delivery versus payment).
<b>Segregation</b>	A method of protecting a client’s assets by holding them separately from those of the custodian (or other clients, as the case may be).
<b>SEPA</b>	See <i>Single Euro Payments Area</i> .
<b>Settlement</b>	The completion of a transaction or of processing with the aim of discharging participants’ obligations through the transfer of funds and/or securities. A settlement may be final or provisional. See also <i>final settlement, provisional settlement, gross settlement, net settlement</i> .
<b>Settlement account</b>	An account held at a central bank or a central securities depository, or with a central counterparty or any other institution acting as a settlement agent, which is used to settle transactions between participants in a system.

Term	Definition
<b>Settlement agent (settlement institution)</b>	The institution across whose books transfers between participants take place in order to achieve settlement within a settlement system. See also <i>bilateral net settlement system, multilateral net settlement system, settling participant</i> .
<b>Settlement asset</b>	An asset or a claim on an asset that is accepted by a beneficiary in order to discharge a payment obligation.
<b>Settlement bank</b>	See <i>settling participant</i> .
<b>Settlement cycle (settlement interval)</b>	In the field of securities, the time period that elapses between the trade date and the settlement date.
<b>Settlement date</b>	See <i>settlement day</i> .
<b>Settlement day (settlement date)</b>	The day on which settlement actually takes place.
<b>Settlement failure</b>	The inability of a participant to meet its settlement obligations in a system. This inability may be temporary or permanent. See also <i>failed transaction, default</i> .
<b>Settlement institution</b>	See <i>settlement agent</i> .
<b>Settlement interval</b>	See <i>settlement cycle</i> .
<b>Settlement lag (payment lag)</b>	In a transfer system, the time lag between the acceptance of the transfer order by the system and its final settlement. In an exchange-for-value system, the time lag between entering into a trade/bargain and finally exchanging the financial asset for payment.
<b>Settlement obligation</b>	The requirement, as a result of the settlement process, that a participant in a settlement system effect payment or deliver assets.
<b>Settlement risk</b>	The risk that settlement in a transfer system will not take place as expected, usually owing to a party defaulting on one or more settlement obligations. This risk includes, in particular, operational risks, credit risks and liquidity risks.
<b>Settlement system</b>	A system used to facilitate the settlement of transfers of funds, assets or financial instruments. See also <i>funds transfer system, securities settlement system</i> .
<b>Settling member</b>	See <i>settling participant</i> .
<b>Settling participant (settlement bank; settling member)</b>	A participant which maintains one or more accounts with a settlement agent in order to settle funds or securities transfers on its own behalf or, potentially, for other market participants. See also <i>tiering arrangement, settlement agent</i> .
<b>Single Euro Payments Area (SEPA)</b>	A process initiated by European banks and supported, inter alia, by the Eurosystem and the European Commission with a view to integrating retail payment systems and transforming the euro area into a true domestic market for the payment industry.
<b>Smart card</b>	See <i>chip card</i> .

Term	Definition
<b>Specialised depository</b>	An entity, usually a credit institution, that provides international central securities depositories (ICSDs) with safekeeping and asset servicing for physical certificates (“individual notes”) that represent shares in international debt instruments (e.g. Eurobonds). See also <i>common depository</i> .
<b>SSS</b>	See <i>securities settlement system</i> .
<b>Standing facility</b>	A central bank credit facility available to counterparties at their own initiative. The Eurosystem offers two overnight standing facilities: the marginal lending facility and the deposit facility.
<b>Standing order</b>	An instruction from a customer to its bank to make a regular payment of a fixed amount to a named beneficiary.
<b>STP</b>	See <i>straight-through processing</i> .
<b>Straight-through processing (STP)</b>	The automated end-to-end processing of trades/payment transfers – including, where relevant, the automated completion of confirmation, matching, generation, clearing and settlement of orders.
<b>Substitution of securities</b>	A situation in which an institution which has provided securities as collateral recalls them and replaces them with other securities of equivalent market value.
<b>“Survivors pay”</b>	A loss-sharing arrangement which, in the event of a participant’s inability to settle, requires losses to be borne by the other (non-defaulting) participants in accordance with a predetermined formula. Antonym: “ <i>defaulter pays</i> ”.
<b>Systemically important payment system</b>	A payment system which has the potential to trigger systemic risks in the event of it being insufficiently protected against the risks to which it is exposed.
<b>Systemic risk</b>	The risk that the inability of one participant to meet its obligations in a system will cause other participants to be unable to meet their obligations when they become due, potentially with spillover effects (e.g. significant liquidity or credit problems) threatening the stability of or confidence in the financial system. That inability to meet obligations can be caused by operational or financial problems.
<b>T2S</b>	See <i>TARGET2-Securities</i> .
<b>TARGET2</b>	The real-time gross settlement system for the euro. TARGET2 settles payments in euro in central bank money and functions on the basis of a single IT platform, to which all payment orders are submitted for processing. This means that all payments are received in the same technical form. TARGET2 is legally structured as a multiplicity of RTGS systems (TARGET2 component systems).

Term	Definition
<b>TARGET2-Securities (T2S)</b>	The Eurosystem's single technical platform enabling central securities depositories (CSDs) and national central banks to provide core, borderless and neutral securities settlement services in central bank money in Europe. T2S is scheduled to go live in 2013.
<b>Three-party card scheme</b>	A card scheme involving the following stakeholders: 1) the card scheme itself, which acts as issuer and acquirer; 2) the cardholder; 3) the accepting party. This contrasts with a four-party card scheme, where the issuer and the acquirer are separate entities and are separate from the card scheme itself. See also <i>card scheme, four-party card scheme</i> .
<b>Tiering arrangement</b>	An arrangement whereby indirect participants in a system require the services of direct participants in order to carry out their transactions. See also <i>indirect participant, settling participant</i> .
<b>Trade confirmation</b>	See <i>confirmation</i> .
<b>Transaction reference number (TRN)</b>	A unique reference number used to identify individual payment or securities settlement instructions (e.g. SWIFT payment messages or credit card authorisations).
<b>Transfer order</b>	An order or message requesting the transfer of assets (e.g. funds, securities, other financial instruments or commodities) from the debtor to the creditor. See also <i>payment</i> .
<b>Transfer system</b>	A set of legal, technical and procedural arrangements for the transfer of assets such as money or securities.
<b>Tri-party repo</b>	Repurchase agreement in which a third party (e.g. a custodian bank, a clearing house or a central securities depository (CSD)) is responsible for the management of the collateral during the life of the transaction.
<b>TRN</b>	See <i>transaction reference number</i> .
<b>Truncation</b>	A procedure in which a paper-based transfer order or other financial instrument is replaced, in whole or in part, by an electronic record of the content of that instrument for the purposes of further processing and transmission.
<b>Underlying asset</b>	The asset (i.e. the financial instrument or security) upon which a derivatives contract is based.
<b>Unwind</b>	The process used to recalculate obligations in some net settlement systems where transfers between the accounts of participants are provisional until all of them have finally discharged their settlement obligations. If a particular participant fails to settle, some or all of the provisional transfers involving that participant are deleted from the system and the settlement obligations of the remaining participants are recalculated. See also <i>zero-hour rule</i> .

Term	Definition
<b>Value date</b>	The date on which it is agreed to place a payment or transfer at the disposal of the receiving user. The value date is also used as a point of reference for the calculation of interest on the funds held on an account.
<b>Variation margin</b>	Profits and losses calculated on a daily basis in open futures contracts and options, resulting in the counterparty to the bilateral trade making a payment to the relevant clearing house or vice versa.
<b>Vostro account</b>	See <i>loro account</i> .
<b>Wholesale funds transfer system</b>	See <i>large-value funds transfer system</i> .
<b>Zero-hour rule</b>	A provision in the insolvency law of some countries whereby the transactions conducted by an insolvent institution after midnight on the date the institution is declared insolvent are automatically ineffective by operation of law. See also <i>unwind</i> .

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