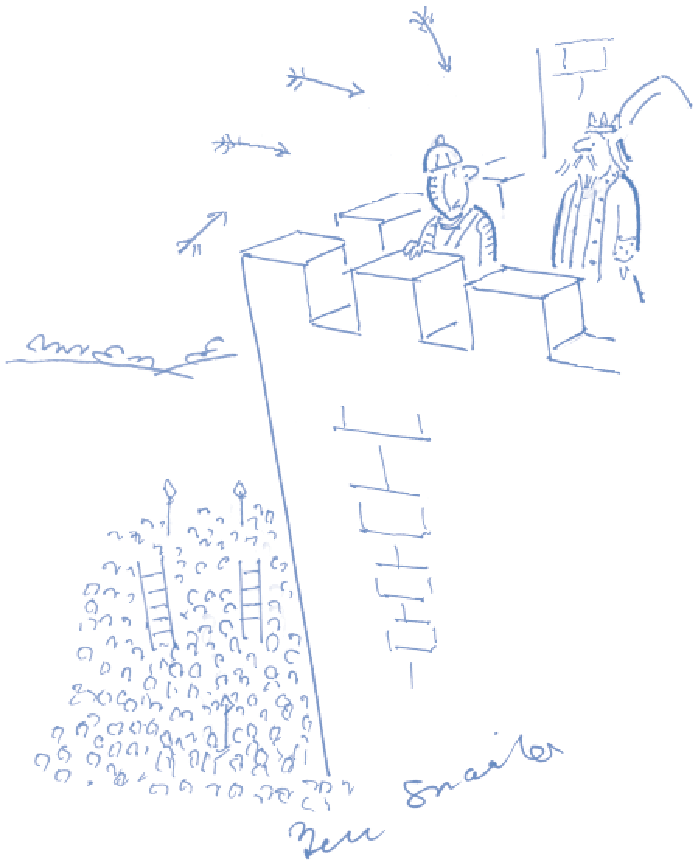
Practical issues arising from the €euro

June 1999

Bank of England

Practical issues arising from the euro



"THEY NOW SEEM FULLY PREPARED FOR ENTRY . . . ."

Practical issues arising from the euro

June 1999

Cartoons by Basil Hone

INTRODUCTION

1 This, eleventh, edition of *Practical Issues* is the first since the launch of the euro on 4 January. Our intention in this and future editions is to focus on two main themes: first, euro developments, drawing on the depth and breadth of expertise available in the London market to describe and explain them; and second, preparations for possible UK entry at a later stage, giving particular attention to the financial sector and its role in relation to the real economy.

2 The first five Chapters of this edition are concerned with euro developments.

- Chapter 1 gives a brief assessment of the conversion weekend at the end of last year, and the immediate aftermath. The conversion weekend was one of the biggest logistical operations that the London market has ever undertaken, and could hardly have been a greater technical success.
- Chapter 2 assesses London's position as international financial centre for the euro. There is quiet confidence among international market firms that London has been maintaining its market share since the launch of the euro.
- Chapter 3 describes briefly the monetary policy operations of the Eurosystem, before discussing the structural changes taking place in the euro markets, in particular: the money and foreign exchange markets; and the debt and equity capital markets.
- Chapter 4 is concerned with the euro infrastructure. Since the launch of the euro, there has been a major change in the wholesale payment landscape in Europe. This has raised issues, of concern to bank treasurers, about liquidity and collateral management. Potential changes in the settlement infrastructure, and exchanges, in Europe are also considered.
- Chapter 5 contains a brief review of some recent surveys on the use of the euro in the UK economy beyond the City.

3 The second theme of *Practical Issues* is about preparations for possible UK entry. Chapter 6 contains: a report by a City working party on the changeover from sterling to the euro in wholesale financial markets, if the UK were to join; and also a review of the changeover experience so far in first-wave countries, focusing on the financial sector.

4 *Practical Issues* is available on the Bank's website, and copies may be obtained from the Bank's Public Enquiries Group (tel no: 0171-601 4012; fax no: 0171-601 5460). Comments are also welcome, and should be addressed to John Townend, Director for Europe, Bank of England, Threadneedle Street, London EC2R 8AH (fax: 0171-601 5016 or e-mail: john.townend@bankofengland.co.uk). We plan to continue publishing *Practical Issues* on a semi-annual basis in future.

SOME INTERNET ADDRESSES

Official

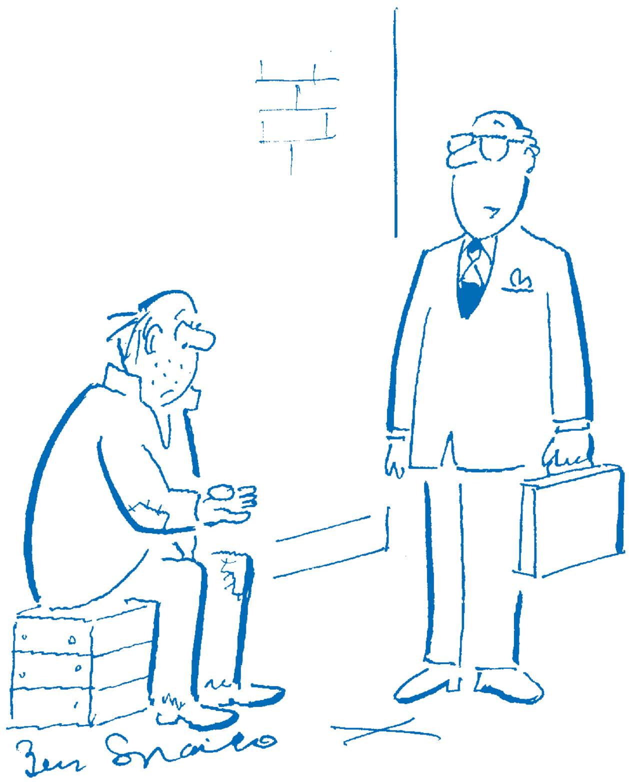
Bank of England: *euro*	http://www.bankofengland.co.uk/euro.htm
Bank of England: *Practical Issues*	http://www.bankofengland.co.uk/piq.htm
DTI: *euro*	http://www.dti.gov.uk/public/frame10.html
ECB	http://www.ecb.int
ECB: *List of useful websites*	http://www.ecb.int/change/colist.htm
EFC Group on EU government bills and bonds	http://europa.en.int/comm/dg02/EFC
European Commission	http://europa.eu.int/comm
HM Treasury: *euro*	http://www.euro.gov.uk
Inland Revenue	http://www.inlandrevenue.gov.uk

Payment and settlement

APACS (incl CHAPS euro)	http://www.apacs.org.uk
Cedelbank	http://www.cedelgroup.com
CRESTCo	http://www.crestco.co.uk
EBA	http://www.abe.org
Euroclear	http://www.euroclear.com
S.W.I.F.T.	http://www.swift.com

Exchanges and market associations

BBA	http://www.bba.org.uk
DTB	http://www.exchange.de/index.html
EBF	http://www.fbe.be
FIA	http://www.fiafii.org
ISDA	http://www.isda.org
LIFFE	http://www.liffe.com
LSE	http://www.stockex.co.uk/index.htm



"WE'RE TRYING TO ENCOURAGE A WIDER AWARENESS OF THE EURO"

CHAPTER 1: THE CONVERSION WEEKEND AND AFTERMATH

1 The preparations for the conversion weekend were set out in detail in previous editions of *Practical Issues*. The conversion weekend is now history, but it is right to record that it was a great technical success. This Chapter gives a brief assessment of the conversion weekend and the immediate aftermath, and draws a number of lessons. The continuing development of the euro markets and the euro infrastructure in the period since the conversion weekend is discussed in Chapters 3 and 4 respectively.

The conversion weekend

2 The conversion weekend between 31 December 1998 and 4 January 1999 was one of the biggest logistical operations that the London market has ever undertaken. An estimated 30,000 people were at work in London during the weekend. In addition to normal end-of-year processing, market firms had to activate changes in their systems to enable them to trade in euro, and to make and receive payments in euro, from 4 January. Many cash balances in participating national currencies had to be converted, and a large number of (mainly government) securities holdings had to be redenominated, using slightly different methods for different participating countries. Because of this, the conversion weekend was even more complex for the London market, given its international role, than for financial centres in the euro area.

3 Despite the scale of the exercise, the conversion weekend in London went well. Key market firms all completed their changeover operations in good time. There were no significant problems in London, nor within the euro area. The key parties kept in contact with one another about progress throughout the weekend. Given the unprecedented nature of the undertaking, it was important that contingency planning arrangements were in place, both at the level of individual market firms, and among the authorities in case systemic issues arose. But in the event, they did not have to be used.

4 There are three main reasons why the conversion weekend was so successful.

- First, and most important, the providers of the financial infrastructure and key market firms had all made extensive prior preparations for the introduction of the euro over a long period. As much detailed information as possible about the changeover was provided through *Practical Issues*. Market associations set out best practice for their members after consulting them. Market firms generally kept close central control over their preparations: by setting minimum standards, monitoring results, and providing a route for bringing major problems to the attention of senior management. This helped to avoid duplication and minimise the impact of any local delays. Particular attention was given to firms' dependencies on external relationships. And in the run-up to the conversion weekend, market firms all undertook a succession of dress rehearsals to train staff and to test systems, both internally, and externally with clients and with the payment and settlement infrastructure. In the event, the conversion of live data over the weekend proved easier to handle than test data beforehand.

- Second, activity over the conversion weekend was kept to the minimum necessary, in two ways. First, it was agreed in advance that securities should not all be redenominated, and cash balances should not all be converted, over the weekend. Most government securities in participating national currencies were redenominated, and equity prices were converted. But most non-government debt was not redenominated, and outstanding transactions were generally allowed to run off in national currency. Second, trading volumes were reduced in the run-up to the conversion weekend. This meant that there was a much lower level of pending trades outstanding over the weekend than usual for the time of year. As a result, the workload for market firms was less, and they were able to complete the changeover more quickly, than they had been expecting.
- Third, all the infrastructure providers and key market firms recognised that good organisation and communication during the weekend itself was vital. In advance of the weekend, many of them set up ‘war rooms’ to control their operations and to establish clear communication lines internally, and externally where necessary. They also took the precaution of building spare capacity into their timetables for the weekend as a contingency. The fact that the weekend consisted of three full days gave them scope to do so. Some posted their progress during the weekend on their websites, both to enable their counterparties to monitor this and to reduce the need for telephone contact. Finally, they all recognised that they needed to be ready, not just to carry out the changeover during the weekend, but to conduct normal business in euro from 4 January. As a result, most of their war rooms stayed in being until some time after euro trading had begun.

5 Although the conversion weekend was a success, the task for market firms would have been less onerous if definitive technical information about the changeover in a number of participating countries had been made available earlier. It would also have been simpler in London if a single method of redenomination had been used throughout the euro area. But given that this did not prove possible, market firms still needed to know as early as possible, and for each participating country: which issuers planned to redenominate and reconvention; what methods they would use; how price sources would change; and whether all national holidays (other than Christmas Day and New Year’s Day) would be business days. While much of this information ultimately became available in sufficient time, there was genuine market anxiety about the remaining information gaps until a late stage.

6 What market firms missed most was a single and authoritative source of information about individual securities to be redenominated and reconventioned, including worked examples. A number of infrastructure providers and individual market firms helpfully made available website lists of securities to be redenominated. But given the lack of a single official source on which to rely, it is not surprising that they did not prove to be wholly accurate or comprehensive. Some of the inconsistencies between the website lists can be attributed to differences in the frequency with which they were brought up-to-date. Greater consistency in updating procedures would have led to greater consistency between the data. In addition, notice periods for redenomination were often too short. Where bonds do not contain a notice period, market associations and some CSDs have now recommended 30 days’ notice as a minimum. All these questions need to continue to be addressed in the case of non-government securities that are due to be redenominated during the first-wave transition period.

The aftermath

7 Since the conversion weekend, trading in the euro markets has been smooth and orderly. Initially, volumes were very low, but turnover and liquidity in the market subsequently increased, although not to the levels experienced before the euro was launched. The conventions and benchmarks being used in the euro wholesale markets include the following.

- The wholesale markets began immediately to trade in euro rather than in the previous national currencies, and from the outset wholesale foreign exchange transactions in euro have been almost universally quoted on the basis of the agreed convention of ‘certain for uncertain’, including for the euro against sterling and the US dollar.
- The euro money and foreign exchange markets are based on two days’ settlement, though same-day settlement has also been available in the London market from the outset.
- EONIA is being widely used in the euro overnight market in London, as well as in the euro area.
- Both euro LIBOR and EURIBOR-based short-term interest rate futures contracts are being traded in London on LIFFE. Liquidity focused quickly on the EURIBOR contract, particularly after LIFFE gave market participants the option in January to convert outstanding contracts from euro LIBOR to EURIBOR.
- Conventions for interest day-counts on new euro issues have been, as expected, actual/360 in the money market and actual/actual in the bond market, though there was some initial confusion about the correct formula to use for actual/actual.
- For the majority of euro swaps (ie ordinary interest rate swaps), the day-count convention being used is 30/360. But for the minority of euro swaps with fixed payments designed to match cash-flows on bonds, actual/actual is being used.
- The bund is being widely used as a benchmark in the euro bond market, though OATs are a strong competitor in some short maturities.
- A variety of EU-wide and euro-area indices, including FTSE Eurotop, Dow Jones STOXX and MSCI, continue to be widely used by fund managers as benchmarks in the equity market, and for equity derivatives.

8 Teething problems in the aftermath of the conversion weekend were in general less than the market had feared. In particular, there was a low level of failed securities trades. This can partly be attributed to preparatory work by market firms in cross-checking positions and transactions in the run-up to the conversion weekend. As a result, some market firms reported that the number of ‘fails’ in the weeks after the conversion weekend was lower than they would have expected in the normal course of their business. They experienced problems only in the case of one or two local custodians in the euro area. As they were well prepared, market firms were able to focus their resources on clearing up the few problem cases outstanding.

9 The most significant problem immediately following the conversion weekend related to delayed and misdirected euro payments. Although CHAPS euro worked efficiently from the outset, there were some significant interruptions elsewhere in TARGET, and the ESCB did not always communicate effectively to the market extensions to the TARGET operating day. Whilst there were some initial technical problems with the payment systems themselves, a more

significant issue was the misunderstanding of payment conventions by some banks in the euro area, which resulted in their systems misrouting a substantial number of payments.

10 It was anticipated that the introduction of a single currency with a wide variety of payment routes would complicate the task for bank treasurers after the conversion weekend (September 1998 *Practical Issues*, pages 57-59). And a concerted effort was made ahead of the weekend to ensure that there was a market consensus on payment conventions (December 1998 *Practical Issues*, pages 79-85). Even so, the messages on a significant number of euro payments straight after the conversion weekend were not correctly formatted. So, for example, some payments due from banks in the euro area to banks in London were credited instead to the London bank's account in the euro-area bank's own books.

11 This problem was speedily addressed by the global clearing banks most heavily involved in using the new euro payment routes, in a series of meetings of the Heathrow Group. As a result, all the major global clearing banks agreed to follow the Heathrow conventions, and a S.W.I.F.T. message to this effect was broadcast on 8 January. Some banks subsequently had to adjust their systems for making payment instructions. This took time. But once the S.W.I.F.T. broadcast had been made, misdirected payments and payment delays began significantly to diminish. The ECB's decision temporarily to set a narrow corridor between the interest rates on its standing deposit and lending facilities, helped to reduce the cost to banks of making mistakes. And guidelines agreed among the banks for the payment of compensation were followed in many cases, though it took time for some early claims to be processed.

12 In general, the market has experienced fewer problems with new standard settlement instructions in euro than might have been expected. Even so, a number of market participants consider that the formal adoption of market standards on the content and use of SSIs would have reduced the risk of confusion. And there has been market interest in consolidating nostro accounts and converting residual national currency balances, particularly now that many national currency transactions outstanding at the time of the conversion weekend have already run off.

13 Finally, it is noteworthy that there have been no significant legal problems arising from the conversion of the participating national currencies into euro in wholesale markets over the conversion weekend or since. The euro Regulations are effective under English law, to the extent relevant given that sterling is not a participating currency. In particular, the principle of continuity of contracts under English law has not been questioned. In London to date, any disputes have been settled, as normal, between market participants themselves. No disputes, and no cases of fraud, arising from the introduction of the euro have been reported to the Bank.

The roles of the Bank and the market

14 In addition to making its own systems euro-compliant, the Bank co-ordinated the market's prior preparations for the euro in London, to the extent that co-ordination was required.

15 During the conversion weekend itself, the Bank maintained contact with many market firms in London whose changeover activities were critical to the weekend's success, so as to monitor progress; and with the FSA, the ECB and fellow national central banks, in case any systemic issues arose. As a result of these contacts, the Bank was able to report by early afternoon on 3 January London's readiness to start trading the euro from the following day's market opening.

16 Throughout the preparations in London for the introduction of the euro, the Bank intervened only where it judged co-ordination to be necessary: on the one hand, seeking a consensus among market firms on how to resolve technical problems, where a common approach made sense, disseminating the results and providing as much reliable and up-to-date information as possible to the market as a whole through *Practical Issues*; whilst, on the other hand, recognising that the preparations were ultimately the responsibility of the market firms themselves.

17 Although the Bank played a co-ordinating role in this way, much the most important contribution in the run-up to, and through, the conversion weekend was made by market firms, their associations and the providers of the euro infrastructure. It would simply not have been possible successfully to introduce the euro in London without the commitment of the key people involved in the London market, from continental European, American and Asian as well as UK-owned firms. Throughout, the commitment they gave was outstanding. It has served both to keep their own market firms competitive, and to maintain the competitiveness of London as a whole.

ABN·AMRO Bank

Bank of America

Bankers Trust

THE BANK OF NEW YORK

BANK OF SCOTLAND

BNP BANQUE NATIONALE DE PARIS

BARCLAYS

CAZENOVE

CHASE

CITIBANK

COMMERZBANK

CREDIT SUISSE FIRST BOSTON

Deutsche Bank

Dresdner Kleinwort Benson

Goldman Sachs

HSBC

ING BARINGS

Lazard

LEHMAN BROTHERS

Lloyds TSB

MERCURY ASSET MANAGEMENT

Merrill Lynch

JPMorgan

MORGAN STANLEY DEAN WITTER

NatWest Group

NOMURA

PARIBAS

N M ROTHSCHILD & SONS

The Royal Bank of Scotland

SALOMON SMITH BARNEY
A member of citigroup

Schroders

SG

Warburg Dillon Read

CHAPTER 2: LONDON AS INTERNATIONAL FINANCIAL CENTRE FOR THE EURO

Introduction

1 The Bank intends to maintain regular contact with international market firms in London to discuss how the euro markets are developing, and how their businesses are changing in response. The content of discussions with individual market firms is of course confidential. This Chapter gives an overview of the discussions that the Bank has held this year to date. It does not necessarily represent the view of every firm, and consists only of a snapshot in an evolutionary process. But the broad picture that emerges is as follows.

Location of euro financial activity at present

2 There is quiet confidence among international market firms that London has been maintaining its market share since the launch of the euro. The amount of statistical evidence about activity in different financial centres since 4 January is limited at this early stage. And in some markets it is increasingly difficult to define the location of particular financial activities, because transactions frequently involve market firms in different centres, different offices of the same firm, and remote access from one centre to another. But market firms have not seen evidence of any net shift of activity from London as a result of the introduction of the euro.

3 Some market firms do, however, report an increasing focus of activity, within the euro area, in the major financial centres at the expense of other euro-area centres. These firms consider that focusing on a single centre within the euro area enables them to take advantage of the economies of scale which a single currency brings. But the picture is not uniform. A few Continental firms are repatriating many of their wholesale activities to head office, even where it is not in a major euro-area financial centre.

4 The best measure of financial activity, in the view of most market firms, is where their management and staff are located. This is where most value is added. In the case of many market firms operating in the wholesale euro markets, the centre of their European trading, associated risk management activities and professional services, such as M&A and fund management, is in London. Since the launch of the euro, there appears also to have been a shift in trading activity in Europe towards the major market firms, many of which are based in London.

5 If they were going to maximise efficiency, some of these market firms would concentrate all their trading activities in London, because in many markets that is where liquidity is most readily available. But there are some remaining regulatory and tax restrictions in the euro area which make concentration of all a market firm's activities in London impracticable. Market firms also consider that there are advantages in keeping sales and M&A staff locally, close to their customer base.

6 In addition, many market firms based in London maintain direct access to payment and settlement systems and exchanges across the euro area, as well as by remote access from London. But the location of their trading activities is not dictated by the location of the

exchanges, settlement systems or benchmarks that they use. For example, there is considerable trading in the bund contract on Eurex by remote access from London, and interest rate contracts based on EURIBOR (ie the price source for the euro area) are overwhelmingly traded on LIFFE.

Structural changes to which market firms are responding

7 All market firms accept that the introduction of the euro is not the only factor responsible for structural change in wholesale financial markets in Europe. The others include: technological change, especially electronic trading; global competition; the Single Market in financial services; and consolidation in the financial services sector in Europe. But in many cases, the euro is acting as a catalyst for change. For example, there is now greater emphasis on: the analysis of credit risk, and not just market risk; the issuance of corporate bonds in place of some bank financing; and equity portfolio rebalancing.

8 Increasingly, market firms are organising their businesses by type of activity across Europe as a whole, rather than by country. They welcome the prospect of a pan-European financial infrastructure, not just in wholesale payments, but in securities settlement and a common trading platform for equities, because this will reduce costs and increase market access across Europe. Many of them consider that there is effectively a pan-European over-the-counter market already. Increasingly, they also use pan-European measures of investment performance (eg stock and bond indices) and organise their research staff, and sometimes also their trading staff, on a pan-European rather than a country basis.

9 On the other hand, market firms recognise that the changes they expect are not certain to materialise, and that in any case they will take time. It will take time for bank treasurers to master the variety of euro payment systems now available. There are conflicting views about the best way of linking securities settlement systems. The common trading platform for equities is a concept whose practical development, among eight exchanges, is complicated by the legacy of different national systems and conventions. There are also some restrictions on the Single Market in financial services that still need to be removed, and investment limits on the management of specific funds that need to be changed.

10 Some of the more ambitious estimates last year of early portfolio shifts in the euro markets appear to have been greatly exaggerated. That does not mean that portfolio shifts will never happen. But market firms are more realistic about the timescale over which these changes will take place, and the need to explain concepts, such as the management of credit risk, to their clients, who are not all familiar with them. Added to this, although euro bond issuance has been high, secondary market activity is lower than the levels experienced before the launch of the euro in the money, foreign exchange and bond markets across Europe as a whole, and not just in London.

Influences on the location of market firms in future

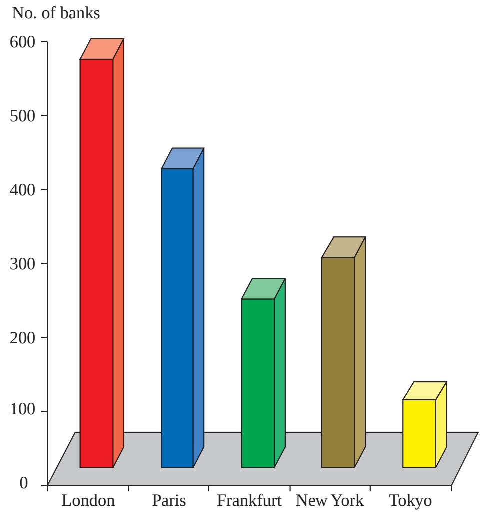
11 Market firms are clear about the factors that will determine whether they maintain and increase their commitment to London in the future. They can be summed up in the word 'competitiveness', and include: the critical mass of financial markets, firms and professional support services in London already; the innovative, skilled and large labour force; the efficient technological infrastructure; the level playing field for foreign firms; low personal and

corporate taxation; flexible labour laws; English as the language of international finance; and an attractive environment in which to live. All of these factors are important in determining the commitment that market firms make to London at the moment, and they will continue to be important in the future.

12 But market firms also draw attention to the increasing importance of regulatory arbitrage between financial centres. This means that they expect regulators to be able to respond quickly to complex issues. And they expect to be able to approach the Inland Revenue informally for guidance on tax, as they may now in some other countries. Some market firms also emphasise that, whilst the UK is ‘out’ of EMU, perceptions are important, and a positive attitude to the euro may help win business. Ultimately, though, they consider that the best advertisement for London is the recommendation represented by the wide range of international market firms based there.

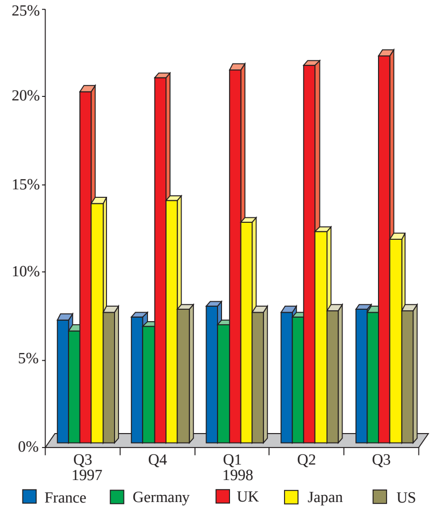
LONDON AS AN INTERNATIONAL FINANCIAL CENTRE

NUMBER OF FOREIGN BANKING INSTITUTIONS



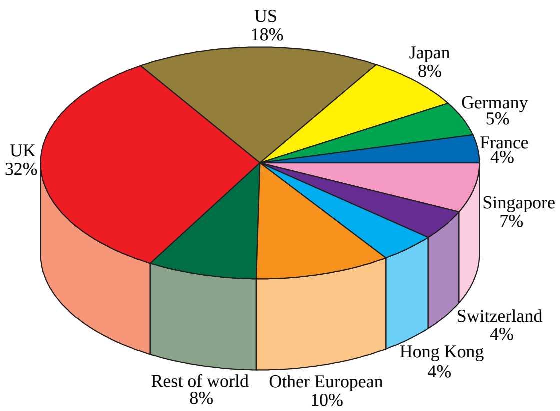
Source: Bank of England (1998)

MARKET SHARE OF TOTAL INTERNATIONAL BANK LENDING



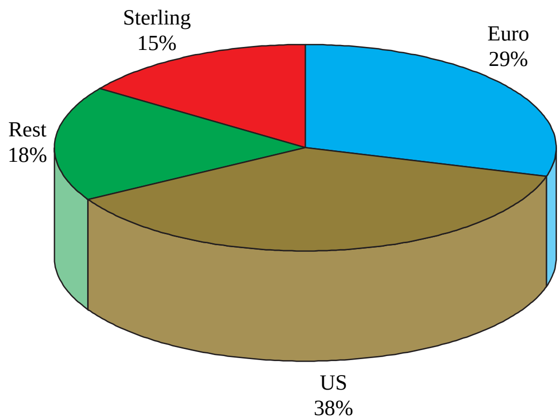
Source: Bank for International Settlements

MARKET SHARE OF GLOBAL FOREIGN EXCHANGE TURNOVER



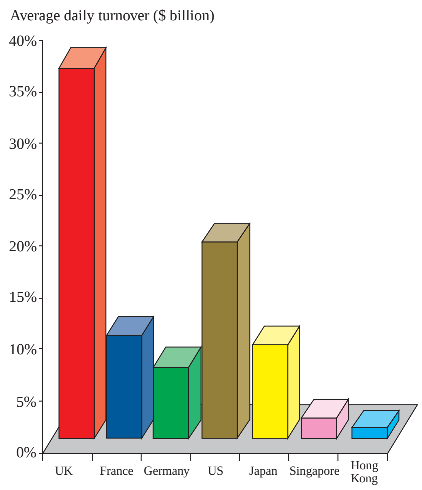
Source: Bank for International Settlements (October 1998)

UK BANKS' BUSINESS WITH NON-RESIDENTS



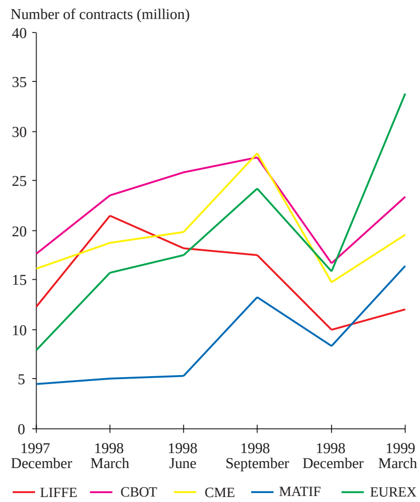
Source: Bank of England (end-March 1999)

SELECTED OTC DERIVATIVES MARKET ACTIVITY: % SHARE



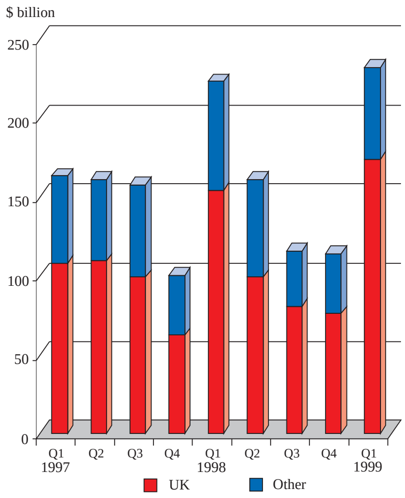
Source: Bank for International Settlements (October 1998)

DERIVATIVES CONTRACT TURNOVER ON SELECTED EXCHANGES



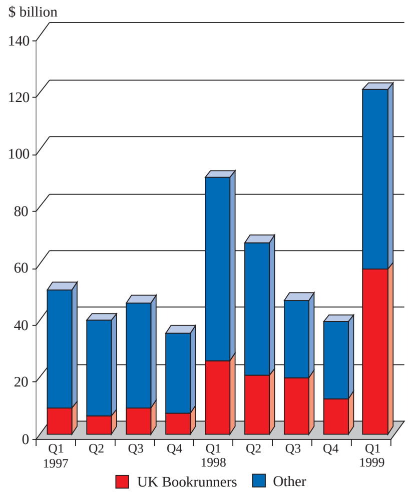
Source: Futures Industry Association/exchanges

TOTAL EUROBOND ISSUANCE



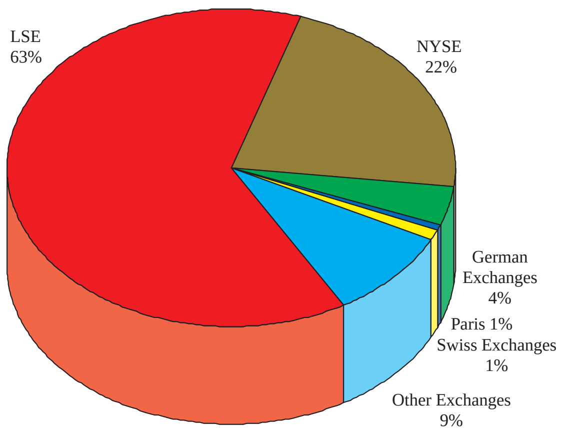
Source: Capital DATA Bondware

EURO-DENOMINATED EUROBOND ISSUANCE



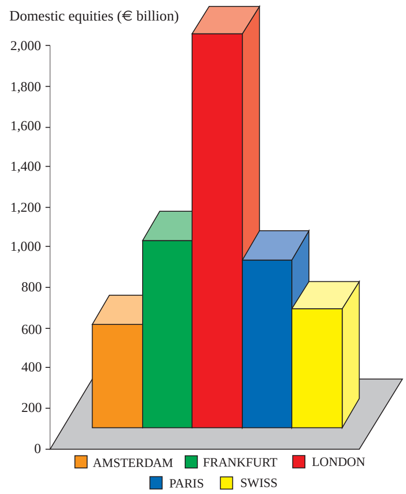
Source: Capital DATA Bondware

MARKET SHARE OF FOREIGN EQUITY TURNOVER ON SELECTED EXCHANGES



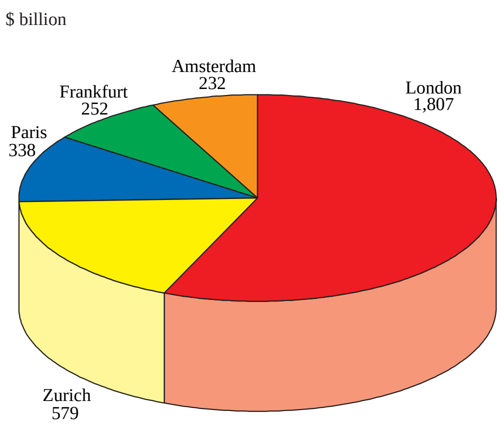
Source: London Stock Exchange and other major exchanges (end-1998)

MARKET CAPITALISATION ON SELECTED EUROPEAN STOCK EXCHANGES



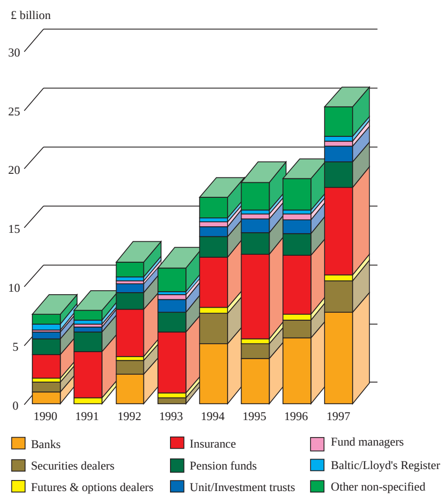
Source: Federation of European Stock Exchanges (end-1998)

HOLDINGS OF INSTITUTIONAL EQUITIES IN TOP FIVE EUROPEAN CITIES



Source: Technimetrics International Target Cities Report (1998)

NET OVERSEAS EARNINGS OF UK FINANCIAL INSTITUTIONS



Source: British Invisibles/ONS/Bank of England

CHAPTER 3: THE EURO MARKETS

A MONETARY POLICY OPERATIONS OF THE EUROSYSTEM

1 This section provides a summary of the Eurosystem's monetary policy strategy, monetary policy operations and the evolution of operating techniques since the introduction of the euro. The Eurosystem comprises the ECB and the 11 euro-area national central banks (NCBs).

Monetary policy strategy

2 Consistent with the EC Treaty, the primary objective of the Eurosystem is to maintain price stability. The ECB Governing Council has defined this as a year-on-year increase in the Harmonised Index of Consumer Prices (HICP) for the euro area of below 2%. In pursuit of this objective, the Governing Council has adopted a monetary policy strategy, setting a quantitative reference value (an annual rate of $4^1/_2$%) for the growth of a broad euro-area monetary aggregate, M3. The reference value will be reviewed in December. In parallel with the analysis of monetary growth in relation to the reference value, a broadly-based assessment of the outlook for price developments and the risks to price stability in the euro area also plays a major role in the Eurosystem's strategy.

Monetary policy operations

3 All credit institutions established in the euro area (including branches of overseas banks) are subject to minimum reserve requirements, have access to Eurosystem overnight standing facilities and are eligible to participate in Eurosystem open market operations. The ECB takes monetary policy decisions centrally, but operations are decentralised. A credit institution's relationship is with the NCB of the country in which it is located.

4 The ECB published, on 18 September 1998, *The General Documentation on ESCB Monetary Policy Instruments and Procedures.* This is the definitive guide for counterparties to Eurosystem monetary policy operations. It sets out the timetable for Eurosystem monetary policy tenders for 1999.

Minimum reserves system

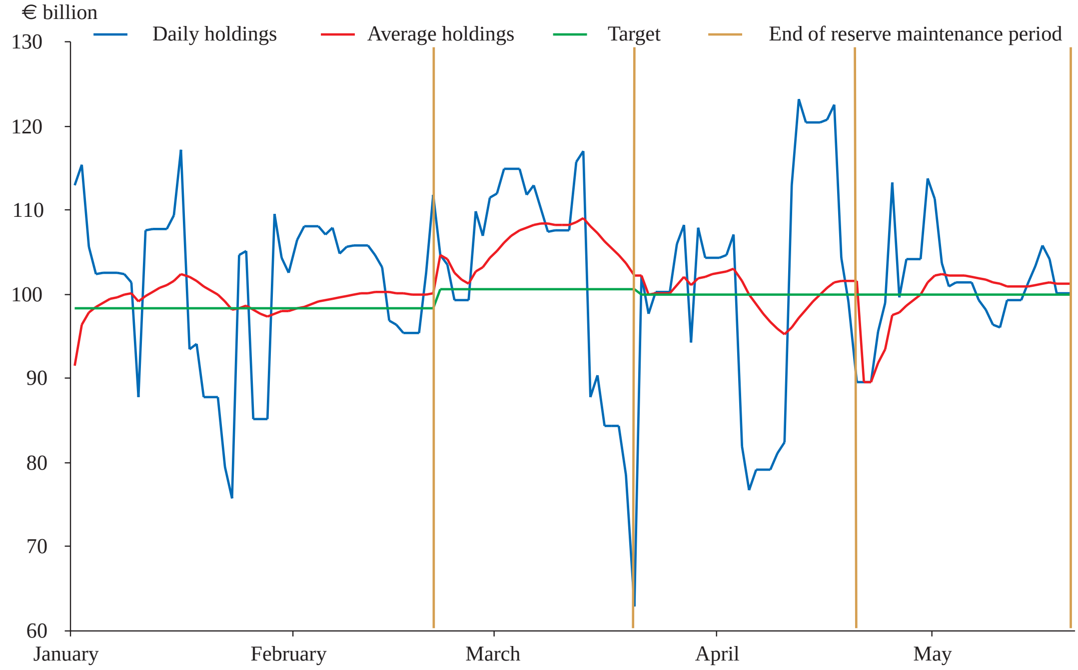
5 With the aim of stabilising market interest rates, credit institutions in the euro area are required to hold minimum reserve balances (set at 2% of all deposits and debt issued with a maturity of less than two years, excluding repos and interbank liabilities) with their local NCB.

6 The requirement must be met on average, rather than each day, during the reserve maintenance period. Normally, maintenance periods run from the 24th of one calendar month to the 23rd of the next. But the first maintenance period was extended to almost two months to smooth the transition at the start of Stage 3. The reserve account has to be zero or positive at the end of each day. Holdings of required reserves are remunerated at the average of the ECB repo rate over the period. Any reserve holdings in excess of the requirement at the end of the period are not remunerated, but the overnight deposit facility is available at the deposit rate (which is

lower than the repo rate). There are penalties for any failure to meet the reserve requirement by the end of the maintenance period.

7 Normally, the reserve requirement is based on credit institutions' balance-sheet data for the end of the month preceding the reserve maintenance period. For smaller credit institutions, it is calculated quarterly. For the first maintenance period, required reserves were based on figures for 1 January. The ECB publishes an estimate of the aggregate level of required reserves for the euro area as a whole in the first few days of the maintenance period and a definitive level near the end of the period. It also publishes daily the actual current account holdings for the previous day and a rolling average of actual current account holdings to give an overview of the liquidity situation across the euro area. Chart A shows the reserve requirement, the daily current account holdings and rolling average for the first four maintenance periods.

RESERVES WITH THE EUROSYSTEM: DAILY HOLDINGS, ROLLING AVERAGE AND TARGET **CHART A**



Source: ECB

8 The breakdown of reserves data for the first three maintenance periods is shown in Table 1. The current account holdings figures show the amount of funds placed on average each day with NCBs. To calculate the actual reserves, 'burnt reserves' and holdings not eligible for reserves are subtracted from the current account holdings. Burnt reserves are any excess funds credit institutions may have on their reserve account which cannot count towards their reserve requirement for that maintenance period (they can arise when credit institutions exceed their reserve requirement for the maintenance period). The ECB monitors the level of burnt reserves and increases its supply of liquidity commensurately. In addition, some funds held with NCBs do not count towards reserve requirements, but are related to participation in payment systems. The daily current account balance published by the ECB includes all these amounts. Comparing actual reserves against the required level for the first three maintenance periods, there were modest deficiencies.

TABLE 1: RESERVES WITH THE EUROSYSTEM						
€ million Daily averages	**Current account holdings (a)**	**Excess (burnt) reserves (b)**	**Holdings not eligible for reserves (c)**	**Actual reserves (d) = (a)-(b)-(c)**	**Required reserves (e)**	**Reserve deficiencies (f) = (e) - (d)**
1 January – 23 February	100,183	1,051	894	98,239	98,345	105
24 February – 23 March	102,211	948	685	100,578	100,628	51
24 March – 23 April	101,103	629	436	100,039	100,067	27

Source: ECB

Open market operations

9 Although the Eurosystem has a wide range of operations available to steer interest rates and to manage liquidity, so far it has undertaken only weekly main refinancing operations (MROs) and monthly longer-term refinancing operations (LTROs). All institutions subject to reserve requirements are eligible to participate in these operations.

Main refinancing operations (MROs)

10 MROs are conducted each week, normally on Tuesdays (announced on Mondays and settled on Wednesdays), and provide two-week funds. Because some settlement systems were closed on Wednesday, 6 January, the first operation was settled on Thursday, 7 January and was only for 13 days. The MRO is conducted via fixed-rate tenders with the ECB using it to steer two-week euro market rates. On 22 December 1998, the Governing Council announced that MROs would be conducted at 3%. The Governing Council usually meets on the first and third Thursdays each month to review the rate and to set it for the next two weekly MROs. One rate change has been announced this year, on 8 April, when the Governing Council announced that it would lower its main refinancing rate by 50 basis points to 2.5% with effect from the next MRO.

11 The amount provided at each MRO is determined by the ECB, depending on the needs of the system at the time of each tender. Table 2 shows the results of the MROs to the end of May.

12 The main feature of the MROs has been the extent of overbidding. The first tender on 7 January had an allocation of over 15%, but this was the highest level until late March, when expectations of a euro rate cut started building and the amounts bid fell. In the absence of any prior indication of the scale of liquidity which the Eurosystem intends to allot at a tender, it is hard for banks to gauge their bids. Also, institutions need only have sufficient collateral to match the successful portion of their bid, and so are not actively discouraged from making larger bids.

TABLE 2: MAIN REFINANCING OPERATIONS

Settlement date	Refinancing rate %	Maturity days	Total bids € billion	Number of bidders	Average bid € billion	Amount allotted € billion	Allotment level %	Net liquidity impact € billion
7 Jan	3.0	13	482	944	0.51	75	15.6	-
13 Jan	3.0	14	563	1,068	0.53	48	8.5	-18
20 Jan	3.0	14	593	966	0.61	59	9.9	-16
27 Jan	3.0	14	689	1,038	0.66	69	10.0	21
3 Feb	3.0	14	758	998	0.76	62	8.2	3
10 Feb	3.0	14	911	1,041	0.88	65	7.1	-4
17 Feb	3.0	14	896	914	0.98	62	6.9	0
24 Feb	3.0	14	919	983	0.94	78	7.9	13
3 Mar	3.0	14	1101	965	1.14	67	6.1	5
10 Mar	3.0	14	950	928	1.02	75	7.9	-3
17 Mar	3.0	14	335	665	0.50	44	13.1	-23
24 Mar	3.0	14	373	554	0.67	102	27.4	27
31 Mar	3.0	14	119	403	0.29	39	32.9	-5
7 Apr	3.0	14	67	302	0.22	67	100.0	-35
14 Apr	2.5	14	782	841	0.93	67	8.6	28
21 Apr	2.5	14	612	713	0.86	50	8.2	-17
28 Apr	2.5	14	755	743	1.02	78	10.3	11
5 May	2.5	14	656	648	1.01	42	6.4	-8
12 May	2.5	14	709	662	1.07	78	11.0	0
19 May	2.5	14	639	687	0.93	43	6.7	1
26 May	2.5	14	784	687	1.14	96	12.2	18

Longer-term refinancing operations (LTROs)

13 LTROs are conducted on the first Wednesday of a reserve maintenance period (announced the previous day and settled the day after the tender). The first three operations were actually conducted on 13 January (the second Wednesday of the long first maintenance period). The repos are normally for three-month money, but on the first occasion, one, two and three-month money was offered. Each LTRO has provided €15 billion to the market and the ECB has announced it will continue to provide €15 billion each month until September, thus maintaining a total provision through this facility of €45 billion.

14 Monthly repos are at variable rates set by the tender. The marginal rates have in practice been very close to the refinancing rate. The LTROs conducted in January and February were variable-rate tenders using a single rate, or 'Dutch auction' allotment method, under which all successful bidders paid the same interest rate (the marginal rate at which the tender became covered). The main reason initially for using this method was to assist smaller institutions to bid for funds without being penalised for potentially knowing less about the market than larger institutions. However, the Governing Council announced on 4 March that the LTRO tenders for settlement from 24 March onwards would use a multiple rate, or 'American', auction allotment method, under which successful bidders pay the rate they bid.

15 The Governing Council also announced on 20 May that it would bring forward the maturity of the 29 September three-month tender from 30 December to 23 December, with a similar adjustment to the start date for the December tender.

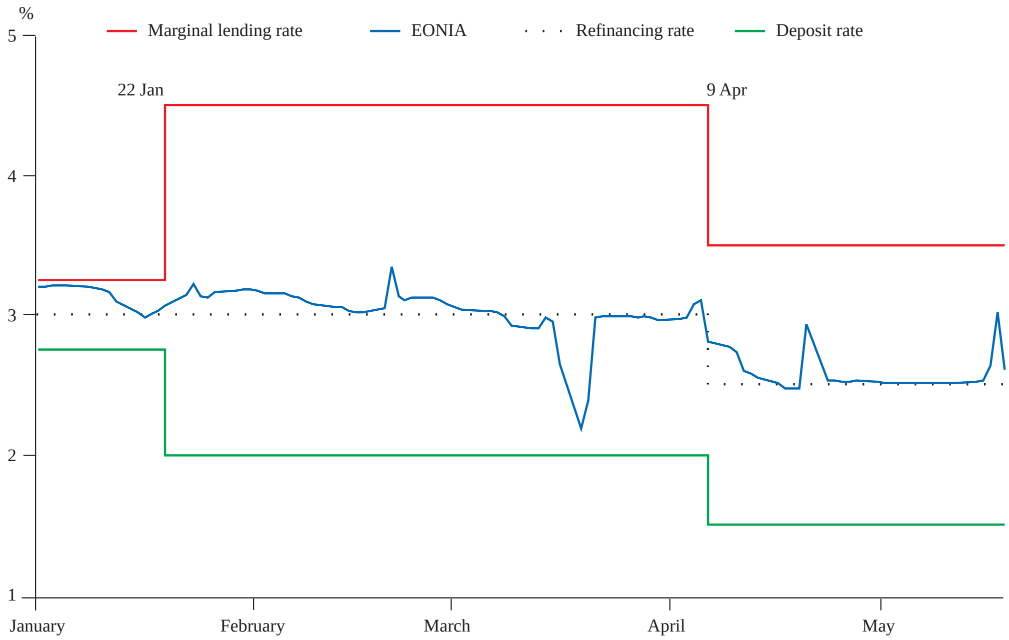
Standing facilities

16 The refinancing operations provide two-week or three-month funds. Standing facilities are used to provide and absorb overnight money, thus effectively setting bounds to the overnight interest rate. Collateralised overnight money is available to all credit institutions without limit, through the marginal lending facility.

17 In December, the ECB announced that the marginal lending facility rate would be 4.5%, 150 basis points above the main refinancing rate. The deposit facility rate was set at 2%, 100 basis points below the main refinancing rate. But to smooth the introduction of the euro, for the period from 4 to 21 January the marginal lending and deposit rates were set at 3.25% and 2.75%. When the ECB announced on 8 April the reduction in its main refinancing rate, it also adjusted its standing facility rates to 3.5% and 1.5%. The corridor defined by the standing facilities is thus now symmetric around the main refinancing rate.

18 Chart B shows the standing facility lending and deposit rates for the first four maintenance periods of the year, together with overnight euro market interest rates, measured by the Euro Overnight Index Average (EONIA) - an index published daily by the EBF using observations across the euro area. EONIA has tracked the ECB main refinancing rate for much of the year. The four occasions when EONIA diverged significantly from the refinancing rate all occurred at the end of a maintenance period.

EUROSYSTEM RATES AND EONIA **CHART B**

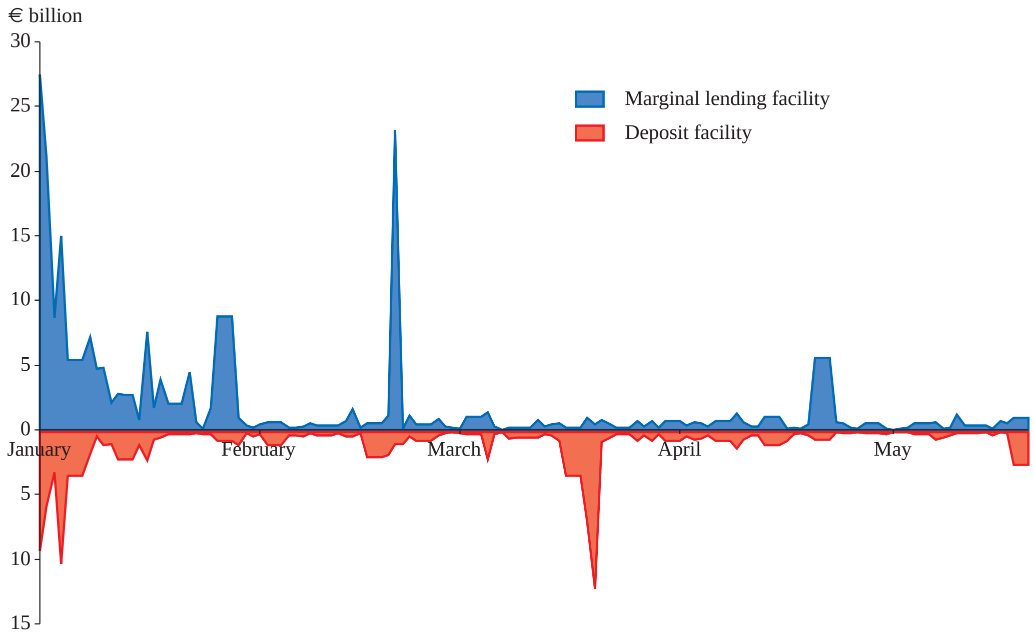


Source: ECB and EBF

19 Chart C shows usage of the standing facilities for the first four maintenance periods. The high usage during the first three weeks of January is not surprising given the teething problems with payment systems and the narrow corridor constraining the overnight rate then. The €8.7 billion borrowed on 29 January over the weekend was related to the problems encountered that day by the TARGET system. The €23 billion borrowed on 23 February reflected the end that day of the reserve requirement maintenance period. The ECB provided excess funds in the

maintenance period ending on 23 March, which meant use of the deposit facility increased during the middle of March: €12 billion was placed in the deposit facility on the final day of the period. Lower usage of the standing facilities in the third and fourth maintenance periods may be indicative of the new system settling down.

USAGE OF EUROSYSTEM STANDING FACILITIES **CHART C**



Eligible assets

20 As described above, the Eurosystem provides liquidity against eligible assets, using repos or secured loans. The ECB publishes on its website a full list of the assets eligible for use in Eurosystem monetary policy operations, identifiable by individual ISIN. The list comprises Tier 1 and Tier 2 assets, and is updated weekly. Any euro securities meeting harmonised criteria set by the ECB are eligible for Tier 1. These criteria include that they are debt securities meeting high credit standards, the issuer is established in the EEA, and the security is deposited with an NCB or securities depository in the euro area. Additional assets proposed by individual NCBs and accepted by the ECB are eligible for Tier 2. All eligible assets can be used in all Eurosystem operations, with the exception of any foreign currency Tier 2 assets, which are restricted to operations with the NCB that has proposed those assets. A bank can use assets located in another euro-area CSD or ICSD to obtain credit from the NCB in the country where it is located. For such cross-border transactions, NCBs act as each other's custodians.

21 Margin requirements and 'haircuts' are standardised for all Tier 1 securities but haircuts for Tier 2 assets are higher (significantly in some cases). Tier 1 securities are subject to the same initial margins (1% for intraday and overnight, 2% for longer operations) and haircuts against market risk (0% for assets with a residual maturity of under one year and FRNs, 1.5% for 1-3 years, 2% for 3-7 years, 3% for over 7 years, and 5% for over 7 year zero coupon bonds and strips). The formula linking the liquidity extended to the value of the assets provided is:

$$(1+m)L \leq (1-h)C$$

where m = initial margin, L = liquidity extended, h = asset haircut and C = value of collateral.

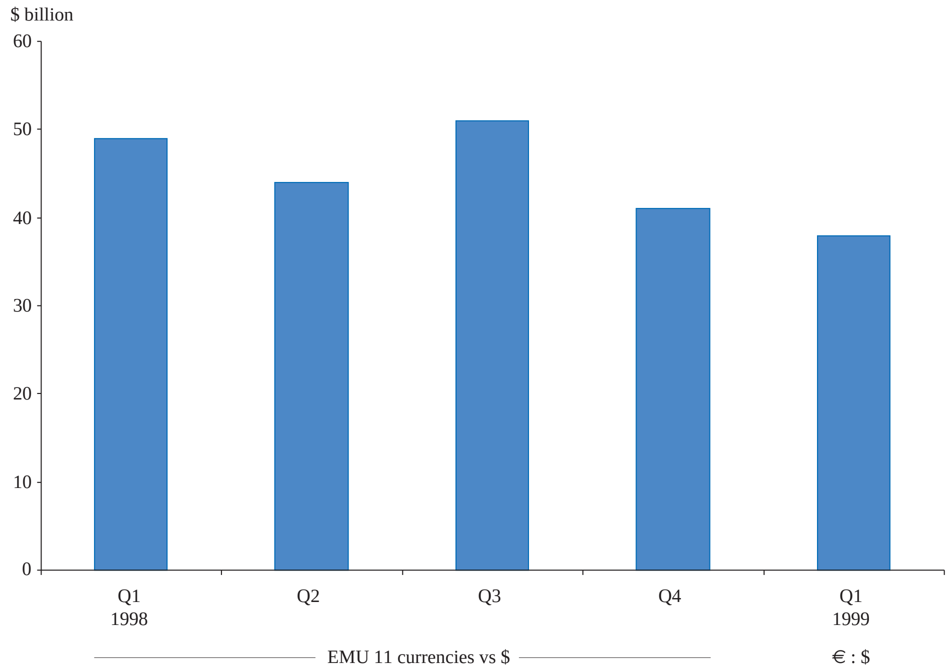
B MONEY AND FOREIGN EXCHANGE MARKETS

Money and foreign exchange trading

22 In the money and foreign exchange markets, volumes have been relatively low since the launch of the euro, though London has maintained its market share.

- Average daily volume in spot €/$ foreign exchange in EBS averaged $38 billion in the first quarter of 1999, compared with an average daily volume in the former national currencies against the dollar of $46 billion in 1998 (see Chart D). EBS is estimated to account for around one-third of the spot €/$ foreign exchange market, and €/$ transactions represent around 50% of total average daily foreign exchange volume in EBS. London's market share of global euro spot transactions in the first quarter of 1999 is estimated at a third, the same as its share of national currency transactions in 1998.
- Total average daily turnover, both broked and non-broked, in the overnight euro deposit market is estimated by the WMBA at €80 billion, of which London's market share is about 25%; and average daily turnover in the overnight euro indexed swaps market is €100 billion per day, of which London's market share is around 20%.

DAILY €/$ FOREIGN EXCHANGE VOLUMES IN EBS **CHART D**



Source: EBS

23 Low trading volumes were expected in the immediate aftermath of the conversion weekend, when new systems were being tried, and teething problems were being experienced in payment routing. But volumes have only picked up to a limited extent since, both in the money and foreign exchange markets and in the secondary markets more generally. Market firms give a number of reasons for this.

- First, as a result of the introduction of the euro, spot deals, hedging activity, spread plays and anomalies in forward market arbitrage amongst the 11 constituent currencies have disappeared.
- Second, short-term interest rates have been historically low, and the yield curve has been relatively flat.
- Third, many market firms, investors and hedge funds have cut back trading activity in response to the market retreat in the third quarter last year, while others have tied up funds in longer-term maturities to avoid the need to deal in the euro markets at the outset.
- Fourth, the banking sector is consolidating, reducing the number of counterparties and volumes in the interbank market.

24 The other main developments in the structure of the foreign exchange market since the launch of the euro can be summarised as follows.

- The euro has been quoted for wholesale transactions from the outset on a 'certain for uncertain' basis, including against sterling (eg €1 = £0.6750).
- Liquidity in the euro has been robust, with a good spread of market makers. On days of moderate activity, €/£ has traded down to a 2 points spread (eg €1 = £0.6749-51), equivalent to the 8 point spread typical in the old £/DM market, and €/$ has traded at the same margin, equivalent to a 4 point spread in the old $/DM market. On days when activity is light, even finer prices are common.
- In the foreign exchange swap market, average ticket size is higher than before conversion, liquidity is better and there is a very buoyant overnight market.

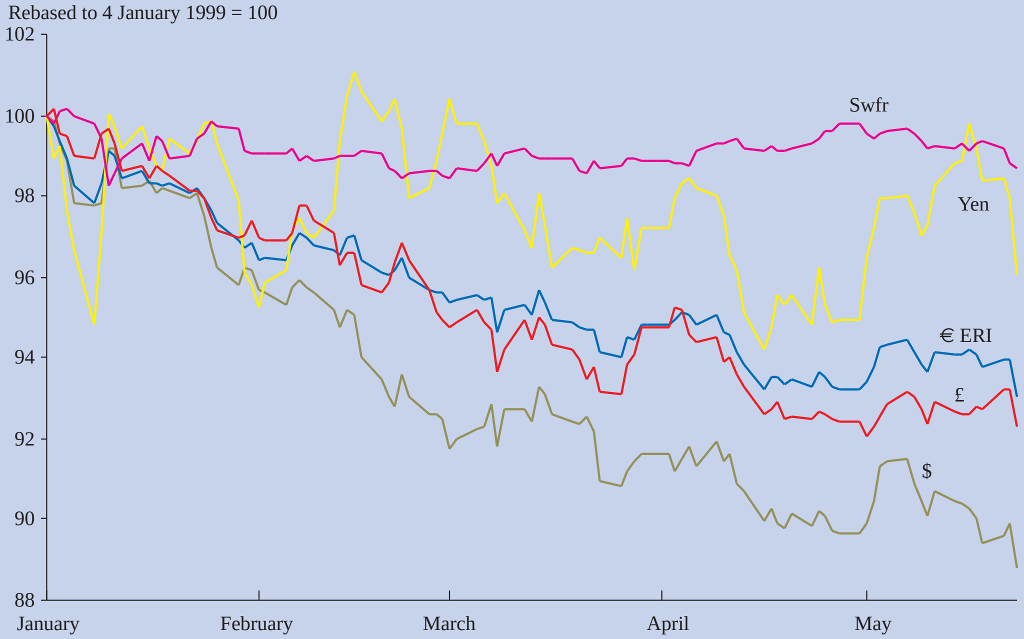
THE BANK'S € EFFECTIVE EXCHANGE RATE INDEX

Since 11 May, the Bank of England has published a daily effective trade-weighted exchange rate index for the euro area. It is compiled on the basis developed and used by the IMF, as with the other effective exchange rate series published by the Bank, and has 1990 as its base year. The weights reflect the pattern of trade between the euro area as a whole and countries outside the euro area. (Trade between countries within the euro area is excluded.) Sterling has the biggest weight, with the US dollar the next largest.

The index is calculated by weighting together the individual exchange rates of the 11 euro-area countries against non-euro area currencies; so it represents an effective index for the 11 euro area countries as a group, rather than for the euro as a currency. This allows the index to be calculated for the period before 31 December 1998, using 'synthetic' euro exchange rates.

The index is calculated daily using closing rates in London. Monthly and quarterly data will be published in the Bank's *Monetary and Financial Statistics:* historic data from January 1975 are available. The May *Quarterly Bulletin* describes the calculation of the index in more detail. The Bank will continue to publish individual trade-weighted indices for the individual countries of the euro area, which are now best thought of as indices of national competitiveness.

THE € AGAINST OTHER CURRENCIES



25 The main developments in the structure of the wholesale deposit market since the launch of the euro can be summarised as follows.

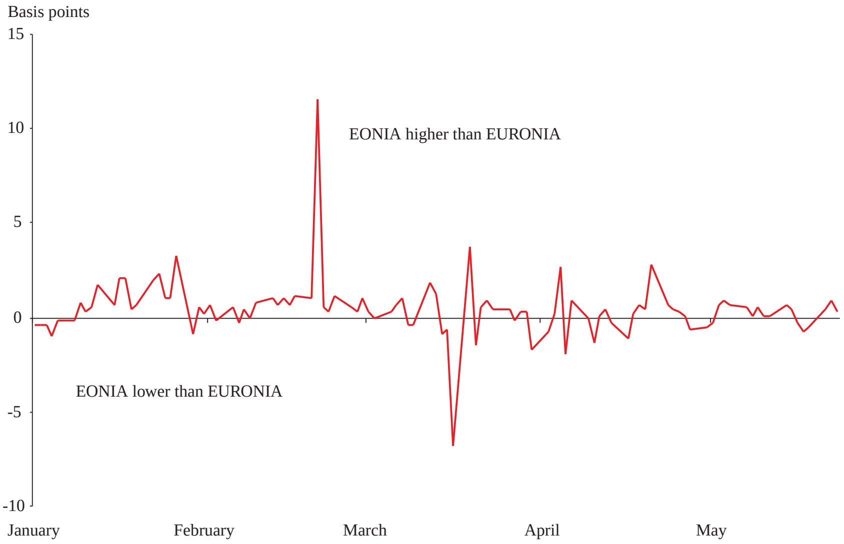
- The market has been denominated in euro rather than in the old national currencies from the outset. National currency deposits are still quoted, but only by banks to their customers 'on request'. The interest rates quoted are normally identical to those on equivalent euro deposits.
- Liquidity has improved since conversion in all maturities. The overnight market is very liquid indeed. Trading continues until the TARGET deadlines on most days. On a day ending a reserve maintenance period, there is uncertainty in the short dates. In March, the overnight rate was extremely volatile ahead of the deadline, trading between 1.95% and 3.05%. But when the ECB announced its rate cut on 8 April, market prices were available immediately and spreads quickly returned to normal.
- The average ticket size is much higher than in national currencies before conversion across all maturities, but especially in the short dates. Placements in excess of €150 million are common, trades of €1 billion are not unusual, and some trades of up to €5 billion have been reported. Spreads are tighter than before conversion: typically, spreads of 1-3 basis points across the curve. Credit tiering, which was a notable feature of the ECU cash market, has largely vanished.
- The euro CD and commercial paper markets are growing.

Price sources

26 In the overnight market, EONIA is widely used as an overnight reference rate in London, as in the euro area. The spread between EONIA and EURONIA (the equivalent index measured in London) is shown in Chart E: the biggest differences have been at the end of the reserve maintenance periods and even these have been relatively small. The differences beyond

overnight between euro interest rates measured in London (euro LIBOR) and within the euro area (EURIBOR) have also been very small, typically well within 1 basis point.

DIFFERENCE BETWEEN EONIA AND EURONIA **CHART E**



27 EURIBOR is widely used in London as the preferred price source for derivatives contracts, both in the OTC market and on LIFFE. In the cash market, EURIBOR and euro LIBOR are both used extensively. The BBA estimates that, in the first four months of 1999, about two-thirds of syndicated loan transactions in the EU used EURIBOR as a price source.

SHORT-TERM INTEREST RATE ('STIR') CONTRACTS ON LIFFE

Since the launch of the euro, LIFFE has preserved its dominant share of the European STIR derivatives market, in part by providing a series of opportunities for members to convert existing European STIR contracts into either euro LIBOR or EURIBOR equivalents. These opportunities have so far taken the form of two voluntary conversions and one mandatory conversion.

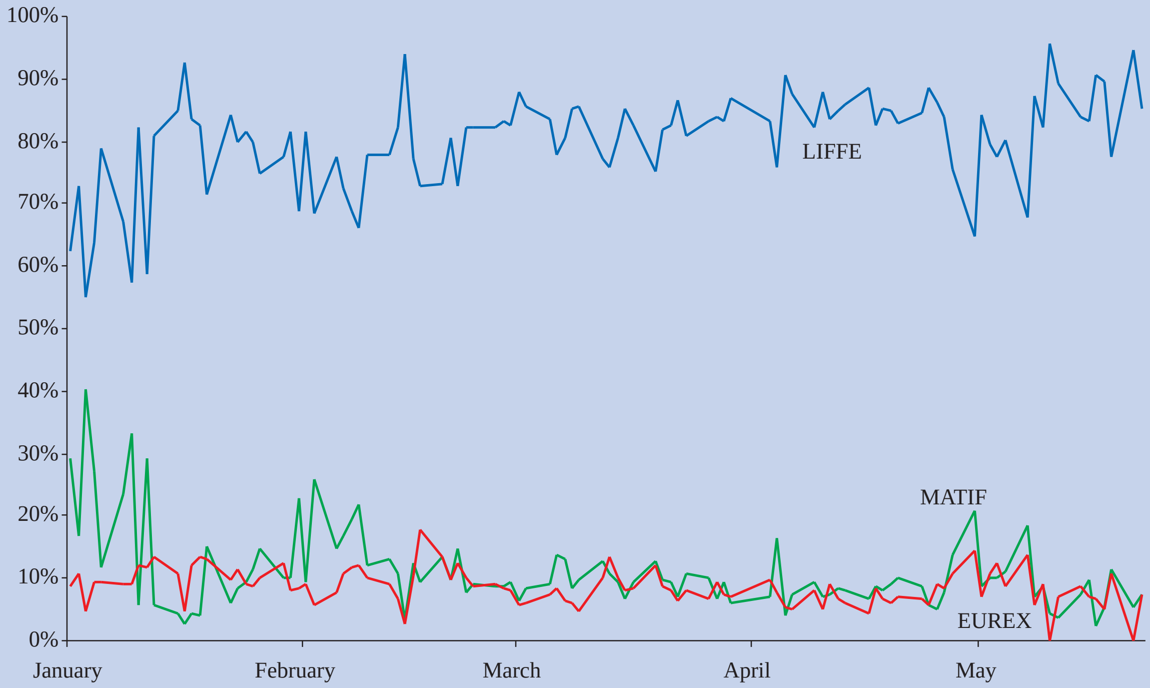
- On 13 January, LIFFE announced that a voluntary conversion facility for its customers and their clients would take place on 19 January. This initially focused on the conversion of open interest in Euromark futures across the first eight delivery months into EURIBOR futures contracts and adopted a confidential central auction process to establish the market spread price, per delivery month, between the two contracts and the number of positions converted.

- This was then followed on 23-24 January by LIFFE's mandatory conversion process, under which all remaining open interest positions in Euromark and Eurolira futures and options on LIFFE were converted into euro LIBOR positions. Positions in the Euromark and Eurolira contracts were marked to market at the Friday closing price and replaced by new positions in the euro contract at the fixed conversion rate.

- The popularity of its EURIBOR contract encouraged LIFFE to announce on 9 February the offer to its members of a second voluntary conversion facility on 17 February, this time enabling translation of euro LIBOR into EURIBOR products on a one-for-one basis.

The second voluntary conversion further consolidated LIFFE's position as the leading market for European exchange-traded STIR derivatives. LIFFE's market share of major European STIR futures volumes has been steadily over 75%, and currently stands at over 85%. At the end of May, open interest in LIFFE's EURIBOR contract was twice as large as its euro LIBOR contract and some seven times larger than the comparable contract on Eurex.

MAJOR EURO STIR FUTURES: PROPORTIONS OF TOTAL TURNOVER ON LIFFE, EUREX AND MATIF



BANK OF ENGLAND EURO BILLS

On 5 January, the Bank of England announced that during the course of 1999 it would supercede HM Treasury as the issuer of euro bills. The details of the programme and the 21 market makers were subsequently set out in the Bank of England *Euro Bill Information Memorandum* published on 6 April. Apart from the change in issuer, there are no other changes to the main features of the euro bill programme. Those bills issued in the first few months which have the same maturity as existing HM Treasury euro bills will still be HM Treasury bills. The first six-month Bank of England euro bills were auctioned on 13 April and the Bank will have fully taken over the programme from HM Treasury by October.

HM Treasury will replace that part of the financing of the Government's foreign exchange reserves, which was previously provided by euro Treasury bills, by foreign currency swaps out of sterling. The additional sterling financing requirement which this will create has been taken into account by HM Treasury and the DMO in setting their sterling financing plans for 1999/2000. HM Treasury will continue to issue three-year euro Treasury notes.

This year, euro bills have been issued (by both HM Treasury and Bank of England) at a spread of 15-20 basis points below EURIBID.

C DEBT CAPITAL MARKETS

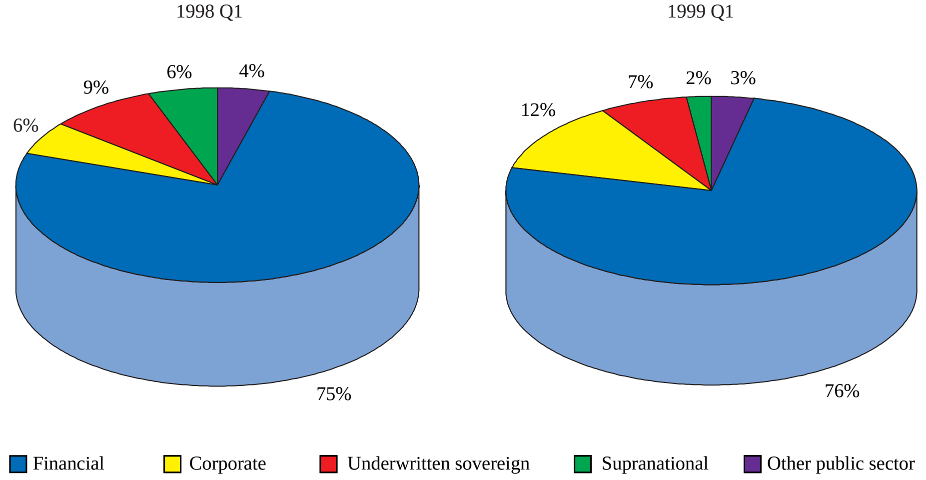
Trends in euro-denominated bond issuance

28 Underwritten euro-denominated bond issuance in all markets during 1999 Q1 totalled €254 billion, according to data from Capital DATA Bondware (CDB). This represents an increase of almost 40% over the level of previous EMU11 national currency issuance in 1998 Q1 - the seasonally equivalent quarter for comparison. Some of the growth may have been accounted for by a bunching of issues in the early days of the new currency, with issuers reluctant to issue in the final weeks of the previous national currencies and keen to establish themselves in the new euro market. Moreover, while there may have been an increase in issuance directly associated with the launch of the euro, there was also significant growth in bond issuance in other currencies over this period. The next few paragraphs and charts analyse recent data for the underwritten debt market more fully. Previous national currency data for 1998 are expressed in equivalent euro amounts. Data for government bonds issued through auctions are discussed later.

Euro-denominated bond issuance by issuer type

29 The primary market for underwritten issues remains dominated by financial sector issuance, which in 1999 Q1 amounted to €192 billion (76% of the total). Within the financial sector, new issues of Pfandbriefe totalled €103 billion (up from €72 billion in 1998 Q1) and represented 40% of total underwritten euro-denominated bond issuance. One of the most significant developments has been the increase in non-financial corporate issuance, which represented 12% of total issuance in 1999 Q1 (€31 billion), up from just 6% (€10 billion) a year earlier. By contrast, there was a 50% fall in euro-denominated bond issuance by supranationals to just €5 billion in 1999 Q1. Some market firms argue that this fall may reflect the fact that euro funding opportunities for supranationals are currently more expensive than those in dollars and sterling, where swap spreads have remained wider.

EURO-DENOMINATED BOND ISSUANCE BY ISSUER TYPE **CHART F**

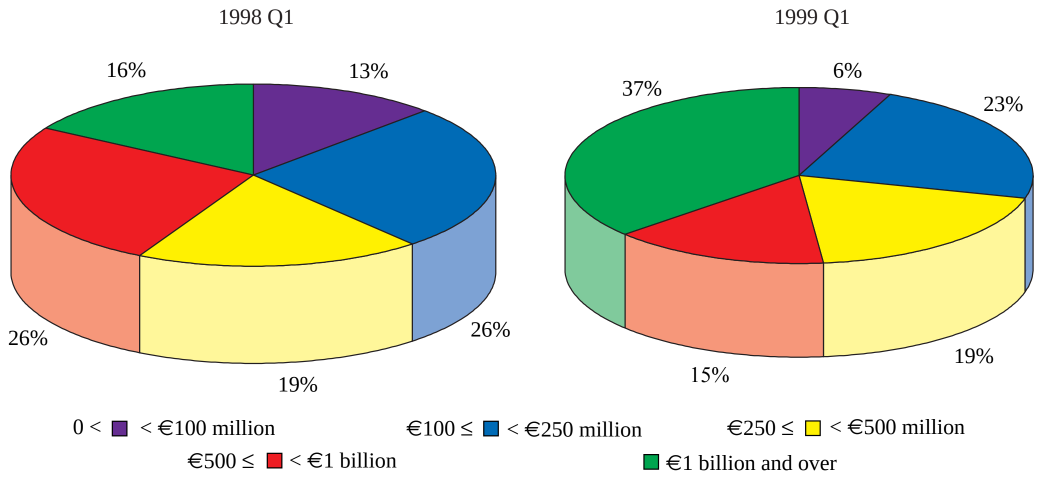


Source: CDB

New issue size in the euro-denominated bond market

30 There has been a considerable rise in the average issue size in the euro bond market in 1999 Q1 relative to the equivalent quarter last year. Whereas the issuance of new bonds of €1 billion and over amounted to €31 billion (or 16% of the total) in 1998 Q1, it rose to €93 billion (or 37% of the total) in 1999 Q1. This increase in average issue size is thought to reflect competition by issuers for benchmark status and their desire to meet investors' growing preference for greater liquidity.

EURO-DENOMINATED BOND ISSUANCE BY ISSUE SIZE **CHART G**

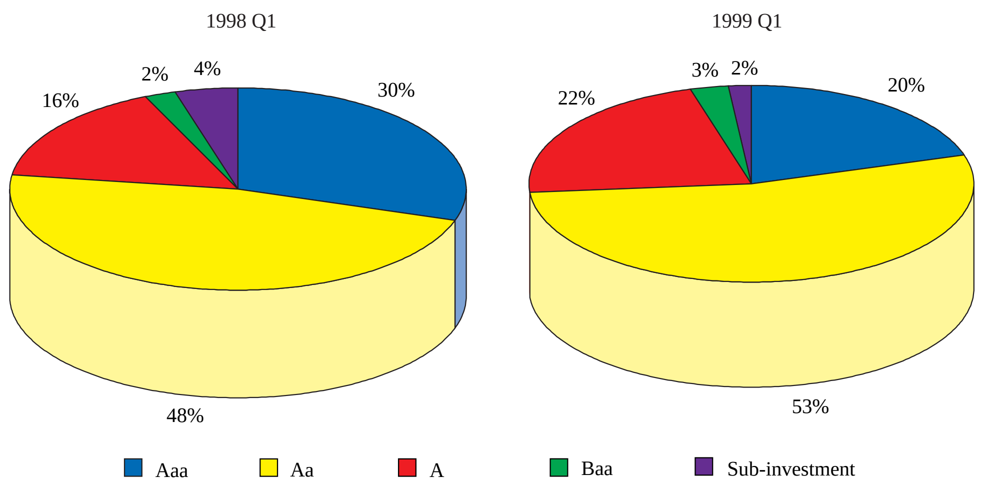


Source: CDB

Credit composition of euro-denominated bond issuance

31 Issuance by Aaa and Aa-rated issuers taken together fell as a proportion of total underwritten issuance, from 78% in 1998 Q1 to 73% in 1999 Q1, based on issues recorded by CDB with a Moody's rating. While there was a rise in Aa-rated issuance to €108 billion in 1999 Q1, issuance by Aaa-rated issuers fell slightly in absolute terms, to €42 billion. There was also a marked increase in single A-rated issuance, from €25 billion in 1998 Q1 to €44 billion in 1999 Q1. Further down the credit curve, though, issuance by sub-investment grade borrowers (ie issues rated by Moody's lower than Baa), which has been widely expected to increase following the introduction of the euro, actually fell to €4 billion in 1999 Q1 from €7 billion in 1998 Q1, perhaps reflecting greater caution over credit following the Russian crisis.

EURO-DENOMINATED BOND ISSUANCE BY CREDIT RATING **CHART H**



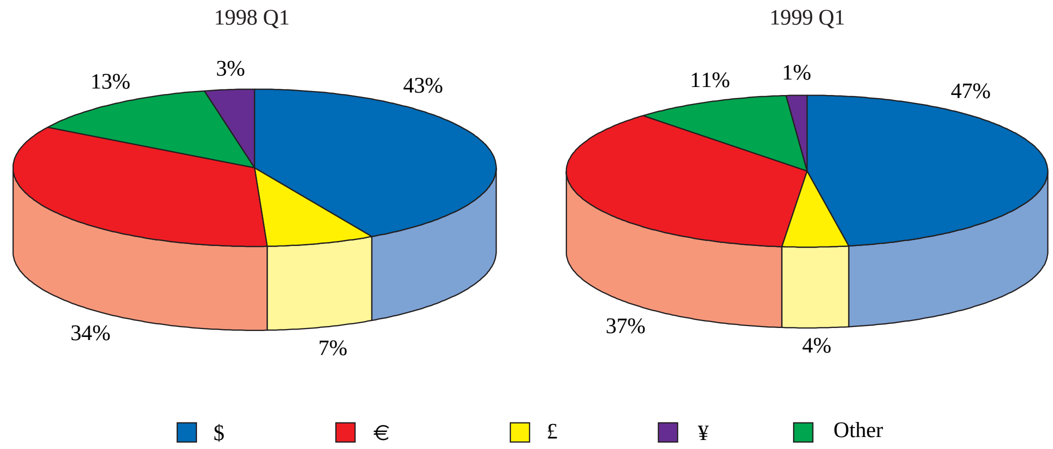
Source: CDB

Currency competition in non-domestic currency bond issuance

32 International issuance of bonds denominated in a currency other than the issuer's own domestic currency fell in total from €174 billion in 1998 Q1 to €141 billion in 1999 Q1. Since total bond issuance was significantly higher in 1999 Q1 than in the equivalent quarter last year, issuers have clearly been issuing far more in their domestic currency. This partly reflects the introduction of the euro. Issuance by a European issuer in a different European currency than its own would have been included in the 1998 Q1 data as non-domestic currency issuance. By contrast, issues by EMU11 borrowers in euro are now counted as domestic.

33 The dollar remained the most popular currency for non-domestic currency issuance, increasing as a proportion of the total from 43% in 1998 Q1 to 47% in 1999 Q1. However, euro-denominated issuance also represented a higher share of such issuance (37%) in 1999 Q1 than that accounted for by previous national currency issues in 1998 Q1 (34%). By contrast, non-domestic currency issuance in all other currencies, including sterling and yen, fell both in terms of value, and as a share of the overall total.

NON-DOMESTIC CURRENCY BOND ISSUANCE BY CURRENCY **CHART I**



Source: CDB

Underwriting versus auctioning of sovereign issuance

34 Underwritten sovereign euro-denominated bond issuance (as captured by Chart F) increased slightly to €18 billion in 1999 Q1. The increase in interest in the use of underwriting for sovereign issues is marked among some of the smaller European sovereigns, such as Belgium, Austria and Portugal, whose auctions may not always be as well supported by international investors as those of larger countries. In many cases, where the syndicate includes international banks, underwriting makes it easier for such governments to diversify their investor base and reduce their reliance on what was previously a small local debt market. However, most of the smaller countries have announced that they intend to maintain an auction programme as well.

35 More generally, government issuance in the euro area remains dominated by auctions. Indeed, Barclays Capital calculates that auctioned issuance by euro-area sovereign borrowers rose from €143 billion in 1998 Q1 to €165 billion in 1999 Q1, despite the lower borrowing requirements of governments constrained by the terms of the Stability and Growth Pact. This first quarter rise in auctioned issuance can be attributed particularly to Italy as a result of a heavy redemption schedule and some front-loading within 1999. Sovereign issuers may have been encouraged to front-load both by initial 'europhoria' and by a desire to take advantage of low yields.

Bond benchmarks

36 The introduction of the euro has led to intense competition for benchmark status in the euro bond market. The characteristics of a benchmark are that it should be of very high credit quality, liquid and widely traded. Larger issues at each maturity tend to be preferred as benchmarks, as they are more liquid. The main candidates for benchmark status at present are bunds and OATs/BTANs. Market firms currently tend to use bunds as the benchmark in 10 and 30 year maturities. But in shorter maturities, the OAT/BTAN market is a significant competitor.

37 Some market firms expect the swaps curve to emerge as the preferred benchmark, although to date it is not widely used, partly because of its lack of familiarity to many end-users. The swaps curve shows for each maturity the fixed interest rate at which banks can receive euro funds in exchange for floating-rate euro payments. The advantage of the swaps curve as a benchmark is that it is a smooth curve based on the creditworthiness of high-quality banks in general and therefore does not have the issue-specific distortions sometimes associated with sovereign benchmarks. However, since the curve reflects the cost of funds to banks rather than governments, it may be less suitable where a benchmark of government quality is needed.

38 The bond indices for investment performance measurement published by some of the main index providers are shown in Table 4.

Credit ratings

39 The credit ratings of governments in the euro area are shown in Table 3 below. Now that the ECB is responsible for the issue of currency in the euro area, instead of each national government, the domestic currency (ie euro) ratings of euro-area governments and their foreign currency ratings are in each case the same. It is now possible for non-government issuers in the euro area to be rated above their national governments, in those cases where government issuers are not rated as AAA. Table 3 gives the up-to-date sovereign ratings and also shows the yield spread of sovereign debt against the 10 year bund. It is important to remember that this spread can be affected by liquidity and by issue-specific, as well as credit, factors.

TABLE 3: LONG-TERM DEBT RATINGS OF GOVERMENTS IN THE EURO AREA

	S&P	Moody's	Fitch-IBCA	Spread vs 10 year bund as at 26 May
Germany	AAA	Aaa	AAA	-
Austria	AAA	Aaa	AAA	+9
Belgium	AA+	Aa1	AA-	+29
Finland	AA	Aaa	AAA	+23
France	AAA	Aaa	AAA	+14
Ireland	AA+	Aaa	AAA	+2
Italy	AA	Aa3	AA-	+30
Netherlands	AAA	Aaa	AAA	+17
Portugal	AA	Aa2	AA	+33
Spain	AA+	Aa2	AA	+28

TABLE 4: SOME EURO AREA AND BROADER EUROPEAN BOND INDICES[1]

Index provider	Barclays Capital	Lehman Brothers International	Merrill Lynch	JP Morgan	MSCI	Reuters	Salomon Smith Barney
Index	Euro Government Bond Index	a) Euro Aggregate Index b) Euro Aggregate 500+ Index c) Pan-Euro (Euro Aggregate and Non-Euro European Currencies) Index d) Pan-Euro High Yield Index	a) EMU Direct Government Bond Index b) EMU Broad Market Index c) European Currencies High Yield Index d) EMU Large Cap Index e) Pan-Europe Broad Market Index	a) EMU Government Bond Index b) European Government Bond Index	a) EMU11 Sovereign Debt Index b) Euro Credit Index (ECI)	a) GOVTOP Euro Government Bonds Index b) PFANDTOP Euro Pfandbriefe Bond Index c) EMTOP Euro Emerging Markets Bond Index	a) EMU Government Bond Index (EGBI) b) Euro Broad Investment Grade Bond Index (EuroBIG)
Description	Sovereign fixed rate bond index	a) , b), c) Investment grade fixed rate bond index d) Sub investment grade b) Market capitalisation greater than €500mn	a) Sovereign fixed rate bond index b) Investment grade fixed rate bond index c) Non investment grade fixed rate bond index d) Market capitalisation greater than €500 mn and no unrated bonds e) Combines EMU, Sterling Broad Market with Swedish, Danish, and Swiss Governments	Sovereign fixed rate bond index	a) Sovereign fixed rate bond index b) Investment grade fixed rate bond index	a) Euro-denominated government bonds from EMU countries b) Euro-denominated Jumbo Pfandbriefe from issuers in the euro area c) Euro-denominated bonds from emerging market countries	a) Sovereign fixed rate bond index b) Investment grade fixed rate bond index
Country coverage of issuers	EMU11 excluding Luxembourg	Any	a) EMU11 b), c), d), e) Any	a) EMU11 excluding Austria and Luxembourg b) EU15 excluding Austria, Finland, Greece, Ireland, Luxembourg and Portugal	a) EMU11 excluding Luxembourg b) Any	a) EMU11 excluding Luxembourg b) All Pfandbriefe from issuers in euro area c) Institute of International Finance (IIF) countries	a) EMU11 b) Any
Number of issuers	10	a) 417 b) 167 c) 512 d) 28	a) 10 b) 364 c) 34 d) 132 e) 534	a) 9 b) 9	a) 10 b) 204	a) 10 b) 63 c) 40	a) 10 b) 155
Number of issues	340	a) 6,709 b) 1,092 c) 7,250 d) 45	a) 288 b) 5,222 c) 44 d) 816 e) 5,852	a) 229 b) 253	a) 306 b) 1,030	a) 346 b) 210 c) 63	a) 286 b) 856

1 In addition, indices are published by Bloomberg (which calculates EFFAS indices), Datastream and ISMA. For all indices here, components must be in euro, ECU or any participating national currency. The information on each company in the Table was provided by the firm itself.

Corporate bond issuance

40 Non-financial sector corporate bond issuance in euro rose from the equivalent of €10 billion in 1998 Q1 (for the 11 former national currencies combined) to €31 billion in 1999 Q1, according to data supplied by CDB. This is a considerably faster rate of growth than that seen for international capital market corporate issuance in other currencies, and represents one of the most significant trends to emerge in the euro capital markets to date. Market firms also point to a marked increase in average individual issue size in the euro corporate bond market as important in helping to improve liquidity.

41 By country, France was the largest source of corporate issuance in euro in 1999 Q1, but non-euro area issuers, especially US and UK companies, were also active. In contrast to last year, when corporate issuance was dominated by AA-rated borrowers or above, there has been a marked increase in issuance of a single A credit rating, representing some extension along the credit curve. There has been relatively little activity to date in the high-yield area.

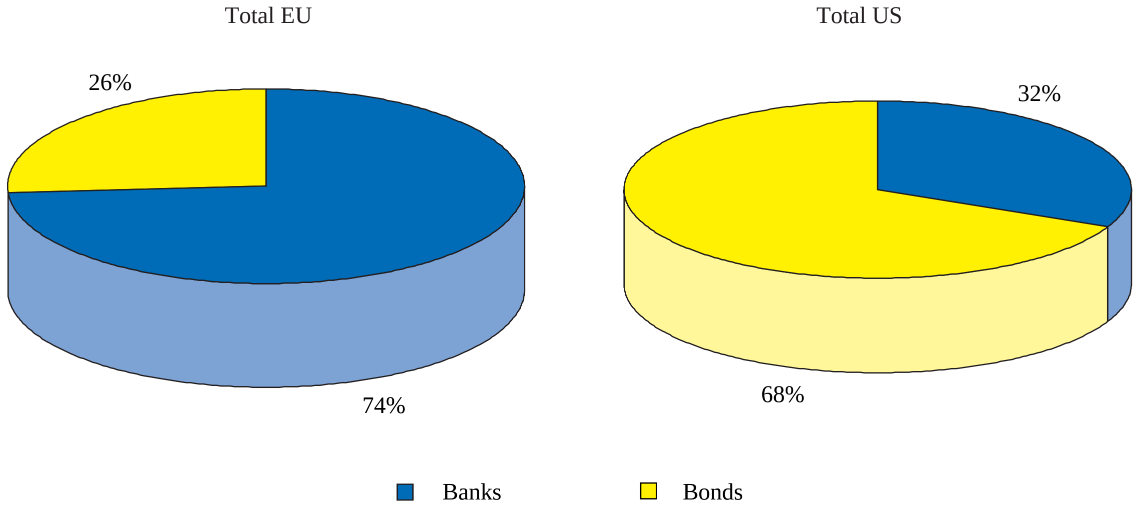
42 Until recently, a significant proportion of total corporate issuance in the EU was by non-rated companies – in many cases well-known names, with the paper placed largely with local investors familiar with the brand. Over time, many market firms believe it likely that the increased importance of the corporate bond market as a source of company funding, and the trend towards cross-border distribution of corporate issues, will increase the importance of official credit ratings for European companies. JP Morgan calculates that, whereas most S&P 500 companies in the US have ratings from the main credit agencies, less than a third of FTSE 350 companies in the UK and of SBF 120 companies in France, and less than a fifth of DAX 100 companies in Germany, have such ratings to date.

43 Several factors in corporate finance and in the equity market are identified by market firms as likely to increase the propensity for companies to issue bonds.

- European companies still for the most part rely on traditional funding from banks, whereas US companies now meet the majority of their financing needs through bonds, medium-term notes and commercial paper. There is a general expectation that, by creating a deeper and more liquid corporate bond market, the introduction of the euro will encourage more widespread disintermediation away from the banking system in Europe as companies seek to diversify their sources of funding.
- During the high real-yield period up to 1997, many European companies focused primarily on de-gearing and maximising free cash-flow. This priority is now changing for many companies, with historically low interest rates and bond yields making debt more attractive again.
- The pressure from the investment community for higher ROE and ROCE, and increased focus on shareholder value, encourages companies, *ceteris paribus*, to re-leverage their balance-sheets and to substitute debt (the interest on which is tax deductible) for equity.
- Share buy-back legislation has been changed over recent years in several European countries – progressively easing the restrictions on companies retiring equity. Some market firms expect that companies may now issue bonds more often to fund the purchase of their own shares, as has been fairly common practice in the US.

- The intense M&A activity in many sectors may also increase the tendency for companies to have recourse to the corporate bond as well as the syndicated loan market in order to fund acquisitions.

SOURCES OF COMPANY FINANCING **CHART J**



Source: JP Morgan (1997)

Changing investment patterns

44 The combined impact of the removal by EMU of intra euro-area currency asset/liability matching restrictions and of historically low yields on bonds is thought likely by market firms to reinforce three distinct but interrelated trends in investment:

- geographic diversification from local domestic to pan-European markets;
- in those countries where there has traditionally been a very heavy weighting invested in bonds, a gradual shift in asset-category focus from bonds to mixed equity/bond and equity holdings; and
- a gradual shift within the bond component of portfolios towards credit as a separate asset category and in particular towards investment in corporate bonds.

45 Although there has already been some rebalancing of portfolios between asset categories in countries such as the Netherlands, there remain very marked differences in the relative allocations to bonds and equities, given widely differing starting points. For example, the WM Company calculates that, whereas in 1997 pension funds in Germany had an average bond/equity split of 75%/9%, the equivalent figures for the Netherlands were 52%/37% and for the UK 16%/72%. Many market firms and pension fund consultants expect these different allocations to converge gradually towards an equity weighting significantly higher than has been common in many Continental countries but perhaps not as high as the recent equity weightings in UK pension funds.

46 Despite lower bond yields and short-term interest rates, many investors have relatively stable cash-flow expectations from their funds. At the same time, some products in the euro area (eg some life assurance products) have return guarantees. As a result, many bond fund managers are looking for comparable absolute returns to those available before in their domestic government bond market. The yield pick up desired is likely to entail taking on either more

maturity risk or more credit risk. The increased interest in credit risk is thought by many market firms to imply greater demand, in particular, for emerging market government debt and for corporate bond issues with a credit rating of single A or below. Moreover, the increased interest in euro-area credit risk appears to be as much a feature of international bond funds run on behalf of US ERISA, UK and Dutch pension funds as it is of the many euro-area savings products with guaranteed return objectives. Now that the government bond convergence play is seen as largely over in most EU markets, many active bond fund managers seeking to outperform their benchmarks are competing with each other by playing credit spreads.

47 The increased focus on credit is necessitating a rapid build-up of expertise among many investment firms in analysing credit risk effectively and in pricing it appropriately. Some market firms are transferring expertise from US fixed income teams that already have this capability, while others are developing a specifically European risk analysis infrastructure.

D EQUITY CAPITAL MARKETS

Trends in investment behaviour

48 Many market firms and pension fund consultants argue that, by providing a radical break in the investment environment, EMU is acting as a catalyst for the sort of shifts in the asset allocation strategies of euro-area investors which may have been advisable in any case. For example, the discontinuity implied by EMU in data series generally, and in domestic inflation, bond and equity risk premium series in particular, is causing some market participants to make a fundamental reappraisal of the correct split between bonds and equities. As discussed above, in those countries like Germany where there has traditionally been a very high proportion of bond holdings, an increase in the percentage held in equities is sometimes considered appropriate.

The redefinition of 'domestic'

49 Within the equity portion of portfolios, EMU may imply a reduction in home-country bias. This is because, in many important respects, the introduction of the euro redefines the concept of 'domestic' for investors as well as for companies and consumers within the euro area. For investors in participating countries, EMU has removed the exchange rate risk of diversification out of national markets to other euro-area markets, and such diversification should no longer be constrained by currency-based asset/liability matching rules. As a result, market firms expect to see an acceleration of the portfolio rebalancing from national to pan-euro area or pan-European equity holdings that was already evident in the lead up to the launch of the euro. In a survey of continental European fund managers in April by Merrill Lynch/Gallup, some 25% of managers claimed already to have completed the restructuring of portfolios they deemed necessary by the end of 1999 Q1, while some 62% expected to have done so fully by the end of 1999.

50 While the general trend towards a reduction in the home-country bias of equity portfolios seems to be well established, there is considerable variation in the speed and depth of the rebalancing process and in the techniques used to effect it. Some types of investor in the euro area remain reluctant to undertake a major rebalancing of their portfolios within a short period for a variety of reasons. Domestic investment managers may prefer to stick to their home markets where they may have a comparative analytical advantage. There may also be fiscal and political reasons in some cases for retaining a home-country bias. For taxable investors with

large unrealised capital gains, it may be more attractive to invest new flows of funds outside their domestic market than to rebalance existing holdings. Similarly, in the mutual fund area most existing funds cannot rebalance without cumbersome changes in mandate, but new funds are more often focused on pan-Europe or pan-euro area investments. Some institutional investors who do wish to diversify their portfolio exposure out of their home market are using either exchange-traded futures/options or OTC index swaps to implement their decisions rather than trading equities directly. These techniques can be helpful for political and fiscal as well as investment reasons because they leave the underlying portfolio of assets still firmly national. Investors may also simply take the view that rebalancing is not time-critical and can take place gradually as experience builds in the new euro market.

51 The same rebalancing issues might face the UK investment community if the UK were to join EMU, since diversification within the euro area would then be without currency risk. Some rebalancing of UK pension fund holdings of UK equities in favour of other euro-area equities might even occur before UK entry, once it looked sufficiently certain. Likewise, investors in other euro-area countries might rebalance funds into the UK (either in anticipation of, or following, UK entry), although there would be no certainty that such portfolio inflows would exactly correspond in size or timing to any UK outflows associated with rebalancing. The WM Company calculates that in 1998 some 71% of the equity portion of UK segregated pension funds in aggregate was invested in the UK, with around 14% invested in other European markets. Those UK firms which think that EMU would make some rebalancing towards other European investments advisable, sometimes also argue that it would make sense to pool exposure to the UK and Continental equity markets. In some firms this has already been foreshadowed by the related trend towards a cross-border sector-by-sector approach to research and trading. Nevertheless, a full integration of UK and other European investments, and of the respective investment teams, would in many cases still represent a major change.

Country versus sector

52 The increasing globalisation of product and capital markets has for some time encouraged many market firms to place greater emphasis on global or regional sector-based research. EMU has accelerated this process in Europe. In a November 1998 survey of major investment institutions around the world by ABN AMRO/NOP, some 75% said they were likely to have a ‘cross-border sector-by-sector’ approach to investment within Europe after the beginning of 1999. This probably does not imply a decision to ignore country risk totally post-EMU, but rather an upgrading of the importance of a sector focus within a matrix-based approach. The abolition of national exchange rates and independent monetary policy does not remove all relevant country factors for investors. Indeed, some commentators have argued that a ‘one-size-fits-all’ monetary policy may make certain kinds of asymmetric country shocks more persistent unless there is adequate fiscal and supply-side flexibility in the various economies. At the same time, national economies and stock markets in the euro area seem bound to continue to be affected by essentially national tax, regulatory and labour market factors as well as by national differences in investor and corporate behaviour.

53 In addition to the trend towards sector-based research, a number of market firms are also considering switching to pan-European trading and sales with a sector approach, and some have already done so. Once again though, firms are often concerned to retain the benefit of local knowledge particularly of different national investment approaches and client bases. The speed

TABLE 5: SOME EUROPEAN EQUITY MARKET INDICES[1]

	Broad/narrow[2]	Derivatives contracts	Country coverage	Pan-European/euro area	No of companies	No of economic groups/ broad sectors	No of sectors/ industry groups	% market capitalisation targeted/covered
Dow Jones								
Dow Jones STOXX 50	Narrow	Yes	16	Pan-European	50	9	19	32
Dow Jones EURO STOXX 50	Narrow	Yes	10	Euro	50	9	19	43
Dow Jones STOXX	Broad	No	16	Pan-European	650	9	19	80
Dow Jones EURO STOXX	Broad	No	10	Euro	320	9	19	80
Dow Jones STOXX ex UK	Broad	No	15	Pan-European ex UK	470	9	19	80
Dow Jones STOXX ex euro	Broad	No	6	Europe ex euro	330	9	19	80
FTSE International								
FTSE Eurotop 100[3]	Narrow	Yes	15	Pan-European	100	10	39	45
FTSE Eurobloc 100	Narrow	Yes	10	Euro	100	10	39	68
FTSE Eurotop 300	Mid	Yes	15	Pan-European	300	10	39	80
FTSE Eurotop 300 ex UK	Mid	Yes	14	Pan-European ex UK	300	10	39	80
FTSE Eurobloc 300	Mid	No	10	Euro	150	10	39	80
FT/S&P -A Europe	Broad	No	15	Pan-European	713	10	39	85
FT/S&P -A Eurobloc	Broad	No	10	Euro	337	10	39	85
FT/S&P -A Europe ex UK	Broad	No	14	Pan-European ex UK	514	10	39	85
MSCI								
MSCI EMU	Broad	No	10	Euro	343	8	38	60
MSCI Europe	Broad	No	15	Pan-European	599	8	38	60
MSCI Europe ex UK	Broad	No	14	Pan-European ex UK	465	8	38	60
MSCI Europe ex EMU	Broad	No	5	Europe ex euro	256	8	38	60
MSCI Euro	Narrow	Yes	10	Euro	130	8	38	Approx 54
MSCI Pan-Euro	Narrow	Yes	15	Pan-European	236	8	38	Approx 54
S&P								
S&P Euro Index	Mid	Pending[4]	10	Euro	158	11	N/A	70-75
S&P Euro Plus	Mid	Pending[4]	14	Pan-European ex UK	200	11	N/A	70-75
Salomon Smith Barney (SSB)[5]								
SSB BMI Eurozone	Very broad	No	10	Euro	1,016	10	35	100[6]
SSB PMI Eurozone	Mid	No	10	Euro	210	10	35	80[6]
SSB BMI Europe	Very broad	No	15	Pan-European	1,874	10	35	100[6]
SSB PMI Europe	Mid	No	15	Pan-European	346	10	35	80[6]

Notes

1 This list includes broad market indices and large capitalisation indices. It excludes indices which are mid and small capitalisation sub-indices of a broad market index.
2 Broad/narrow classification reflects the capitalisation range of companies covered by the index.
3 FTSE Eurotop 100 is a fixed basket in stock weighting terms.
4 Derivatives contracts on this index were announced as under development on 4 March 1999.
5 SSB indices are float-weighted; BMI - Broad Market Index; PMI - Primary Market Index.
6 Target market capitalisation coverage of all companies with float > $100 million.

Source: Russell/Mellon Analytical Services of the change to pan-European trading is likely to be affected by the speed with which European stock exchanges forge successful alliances and develop a common trading platform. It is also generally considered likely that trading in large capitalisation stocks will become pan-European sooner than that in small and mid-capitalisation stocks.

Equity benchmarks

54 The rebalancing of formerly national equity portfolios, the increasing interest in pan-European sector-based investment and market anticipation of an eventual common trading platform have all encouraged a significant proliferation of new equity indices over the last two years (see Table 5). While there is fierce competition between the index providers for benchmark status, market firms think it unlikely that a single dominant benchmark will emerge that is considered appropriate across the European investment and stockbroker industry. There are a number of different factors which are crucial in determining which benchmarks gain most support.

- The choice of provider reflects not only differences in the products themselves, and in the techniques used to compile them, but may also be influenced by the historical pattern of national preferences for different providers.
- The indices vary in how narrow or broad is their stock coverage. An index narrowly focused on a small number of blue-chip stocks may appeal to the creators and users of derivatives products because of the greater liquidity of the underlying stocks, and it may also gain favour as a banner reference in the retail market. By contrast, the institutional fund management industry aiming for the most part to invest without an in-built large-capitalisation bias may prefer a wider benchmark for performance measurement on the grounds that it is more representative of the market as a whole.
- Investors in the euro area, when moving away from local market benchmarks, have a choice between euro-area only and pan-European indices. Those euro-area managers rebalancing to pan-European rather than euro-area benchmarks often cite two reasons: first, that the euro-area indices may be relatively underweight in certain sectors (eg, in pharmaceuticals, which are particularly heavily represented in non-euro area markets – the UK and Switzerland); and, secondly, they may anticipate early UK entry into EMU and desire not to have to rebalance twice.

EURO EQUITIES TRADING ON THE LSE

The importance in London of international equities trading means that about 42% of LSE turnover has been traded in 1999 Q1 in euro, compared with about 32% in sterling.

The LSE stands ready to convert domestic UK equities from sterling to euro trading. It will do so if its criteria, first published in 1998, relating to market demand for euro trading, issuers' views and market readiness, are satisfied. Irish equities have traditionally been regarded as 'domestic' equities, and so their prices were not converted to euro trading at the start of 1999, unlike other equities from 'in' countries.

Demand for trading in domestic UK equities in euro is currently low. Even so, it is possible that some domestic equities will meet the LSE criteria in the near future. Since some Irish equities are already trading more in euro than in sterling, the LSE is preparing to convert at least some Irish equities to euro, possibly as early as July.

Some companies are exploring ways of obtaining a euro price while also keeping the sterling price for their domestic equities, for example through the issue of a euro depository receipt.

Many international equities moved to euro trading on the LSE at the start of the year and have been trading successfully since. But some LSE members may nevertheless not yet have had any exposure to euro trading and settlement. The LSE will shortly test firms to ensure that they are all capable of trading in euro, before any domestic equity is converted. In parallel, the SFA has been consulting the market on best-execution regimes, where investors wish to trade domestic equities in sterling whilst the LSE is forming prices in euro.

EU PENSION FUND REFORM AND CAPITAL MARKETS

It is widely acknowledged that pension reform is needed in many EU countries in order to avoid future fiscal crises. The relevant data are summarised in the Table. Columns 1-3 show the projected demographic development in the EU. There is expected to be a sharp increase in the proportion of the population aged 65 and over. This increase links mainly to a decline in fertility to below that needed to maintain a constant level of the population in most EU countries; it also relates to an increase in average life expectancy and a low level of net migration. With an unchanged retirement age, such a demographic shift will naturally lead, in the context of pay-as-you-go pension systems, to an increase in the scope of transfers. The problem is, however, compounded by the scope and generosity of public pension systems in the EU. As shown in column 5, social security pension promises even for higher earners are extremely generous in a number of EU countries. For example, the net social security replacement rates (pension/earnings at retirement) are more than 50% even for those on twice average earnings, except in Denmark, the Netherlands, Ireland and the UK – the countries where funding is most developed (columns 7-8).

Combining these elements of demography and the structure of social security systems gives rise to projections of pension expenditure which feature sharp increases in a number of EU countries. As shown in column 6, the OECD projected in 1996 that the share of GDP accounted for by social security pension costs would be 14% or more in 2040 in all EU Member States featured except Denmark, the Netherlands, Ireland and the UK. Although some reforms have taken place since 1996, this overall picture is considered still to hold. It is apparent that increases in public expenditure of this magnitude could not be sustained without considerable, possibly unbearable, strain on public finances and the rest of the economy. Policy options for reform include reduction of benefits, increases in retirement age and/or introduction of pre-funded pensions.

The EMU context enhances pressure for reform on public pension systems. First, the fiscal convergence criteria of the Maastricht Treaty have put a much greater focus on public finance issues. Under the Stability and Growth Pact, governments have less scope to run large deficits when ageing becomes an acute burden on social security, even as part of a package of reforms aimed at financing a transition from ‘pay-as-you-go’ to funding. Contribution rates may have to be adjusted to match closely benefit payments at all times, thus forcing governments to look more carefully at their social security obligations at an early stage. Second, financial markets in general and rating agencies in particular may put an increasing focus on general government obligations, of which pension liabilities are the largest part. Those governments retaining generous unfunded social security systems in the face of a deteriorating demographic situation may, *ceteris paribus*, face higher long-term interest rates. Third, in the context of EMU there will be more price transparency in terms of differences in prices and costs, eg due to non-wage labour costs, and at the same time there will be enhanced capital mobility. These elements may arguably tend to put countries imposing high taxes on employers for social security purposes under greater pressure to adapt their systems, as high taxes would otherwise lead firms to relocate their activities to countries where such taxes are lower.

PENSION INDICATORS FOR THE EU

	Population 65 and over as % of population 15-64			Net social security replacement rates (1993)*		Projected pension costs 2040	Private pension assets 1996		Adjustment required to reach US level	
	1990	2010	2030	% of		% of GDP	$ billion	% of GDP	$ billion	% of GDP
				1x ave earnings	2x ave earnings					
	1	2	3	4	5	6	7	8	9	10
Austria	22.4	27.7	44.0	70*	70*		3	1.1	139	61.3
Belgium	22.4	25.6	41.1	80	62	15.0	11	4.3	148	58.1
Denmark	22.7	24.9	37.7	77	48	11.6	38	22.2	69	40.2
Finland	19.7	24.3	41.1	60*	59*	18.0	18	14.4	59	48.0
France	20.8	24.6	39.1	83	73	14.3	69	4.5	893	57.9
Germany	21.7	30.3	49.2	69	55	18.4	137	5.8	1,341	56.6
Greece	21.2	28.8	40.9	114	99		4	2.8	74	59.6
Ireland	18.4	18.0	25.3	62	35	2.9	32	43.3	14	19.1
Italy	21.6	31.2	48.3	89	94	21.4	32	2.5	777	59.9
Luxembourg	19.9	25.9	44.2	77	65		0	0.2	9	62.2
Netherlands	19.1	24.2	45.1	67	37	12.1	349	88.9	-103	-26.5
Portugal	19.5	22.0	33.5	98	103	15.2	10	10.7	50	51.7
Spain	19.8	25.9	41.0	98	97	16.8	22	4.1	317	58.3
Sweden	27.6	29.1	39.4	63*	50*	14.9	38	32.7	34	29.7
UK	24.0	25.8	38.7	59	39	5.0	966	75.6	-168	-13.2
EU	21.4	25.9	40.3				1,730	20.9	3,435	41.5
United States	19.1	20.4	36.8	71*	45*	7.1	4,763	62.4		

* Gross pensions as percentage of gross earnings (1997)
Sources: World Bank, Eurostat, OECD, European Federation for Retirement Provision

A switch to funding as a possible policy response would clearly increase the scope of pension fund investment in the EU. Even in advance of reforms, individuals in countries with generous pay-as-you-go systems are increasing their long-term saving via mutual funds and life insurers, owing to expectations of future difficulties and consequent reform, and are thereby already boosting the institutionalisation of capital markets. Columns 9-10 indicate the enormous scope for pension-fund asset accumulation which would be involved if EU countries were to converge on US levels of funded pension provision (itself somewhat below that obtaining in the Netherlands and the UK). Past experience in countries such as the UK, the US and Chile suggests that among the implications of such a development are:

- growth in money, bond and equity markets;
- a corresponding decline in bank-loan financing; and
- a shift of corporate governance towards a more Anglo-Saxon, shareholder-based approach.

These changes may interact strongly with autonomous effects of EMU on banking and securities markets to generate a broader shift in financial structure and behaviour than would occur from pension funding alone. The precise effects will, however, vary with the divergent portfolio strategies of different national pension funds, as discussed above. One underlying factor is portfolio regulations, which tend to enforce holdings of bonds and have tended to limit international diversification, eg by requiring currency matching of assets and liabilities. The advent of the euro has reduced the incidence of intra euro-area diversification limits as currency matching is now viable across the whole euro area. However, the separate limits on equity holdings remain a matter of concern both from the point of view of the cost of pension funding and because they limit the potential benefits that could be provided to capital markets by increased investment in equities. The European Commission has proposed liberalisation measures in the past, but has as yet been unsuccessful. On 11 May, it set out in its Communication on supplementary pensions a series of initiatives including a possible Directive on prudential rules which could liberalise remaining portfolio restrictions.

CHAPTER 4: THE EURO INFRASTRUCTURE

A WHOLESALE PAYMENT SYSTEMS

Overview

1 Since the launch of the euro, there has been a major change in the wholesale payment landscape in Europe. Before then, payments in a given national European currency could only be settled with finality by transfers across accounts at a single central bank in one location. But now, euro payments can be settled across accounts at any of the 15 EU NCBs and, in the case of certain payments, at the ECB. All euro-denominated real-time gross settlement (RTGS) systems in the EU are linked together through TARGET. This is the only decentralised RTGS system in the world operating across a range of countries. It is central to pan-European payments, as all euro clearing activities ultimately depend on TARGET for final settlement.

2 Before this year, large market players generally had access to one (or, in a few cases, two) systems for making same-day large-value payments in a national currency. Now, many banks involved in making wholesale euro payments are able to choose between a number of competing payment routes. Each EU country has its own RTGS system for euro transactions; and there are five non-RTGS payment systems, four national (EAF in Germany, PNS in France, POPS in Finland and SEPI in Spain) and one pan-European (EURO1, run by the EBA).

3 The technical implementation by the ESCB of TARGET, and also the transformation by the EBA of its ECU system into a high-volume euro system, have in general been very successful. Inevitably, TARGET has not been entirely trouble free but, given the scale and unique nature of the undertaking, it has functioned remarkably well. Where problems have occurred, they have been of two kinds.

4 First, some originated from the incorrect application of the agreed formatting rules for using the system. The mistakes consisted predominantly of incorrect or incomplete inputting of addresses. In some cases, instructions were unclear. In others, validation standards differed. These mistakes have been correctly characterised as 'teething problems'. Banks quickly adjusted their patterns of behaviour – S.W.I.F.T. and the Heathrow Group in particular helped to clarify and resolve issues – and the early disruption has largely been resolved. In addition, the December 1998 *Information Guide for Credit Institutions Using TARGET* was revised and has just been reissued by the ECB.

5 Second, there have been technical problems, though generally with individual RTGS systems rather than with the interlinking. These have led to numerous temporary halts to payment flows, which are obviously disruptive and not conducive to a fully-efficient system. But any problems have been transitory, and liquidity is flowing sufficiently freely around the system so as not to allow interest rate differentials to open up between different financial centres within the euro area.

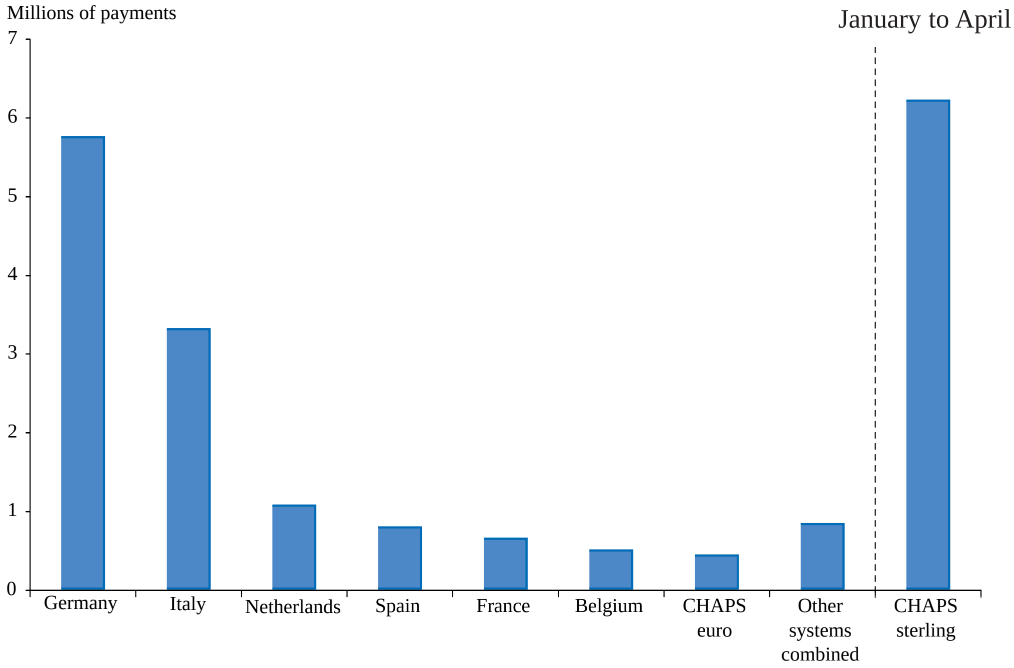
6 This section of Chapter 4: explains the absolute and relative use which has been made so far of the competing euro payment systems; identifies some technical issues arising from the

first few months' operation of TARGET; and sets out a number of behavioural issues, primarily for liquidity and collateral management, to which the new euro payment landscape gives rise for many bank treasurers.

Payment flows through different payment systems

7 Chart K compares monthly payment volumes (measured by the number of payments sent) for the 15 EU euro RTGS systems during the first four months of 1999. The data include for each system both domestic flows and those cross-border through TARGET. Because the euro is the domestic currency of the euro area but not the domestic currency of the UK, the Chart includes comparative data for CHAPS sterling.

COMBINED DOMESTIC AND CROSS-BORDER EURO RTGS PAYMENT MONTHLY VOLUMES — CHART K

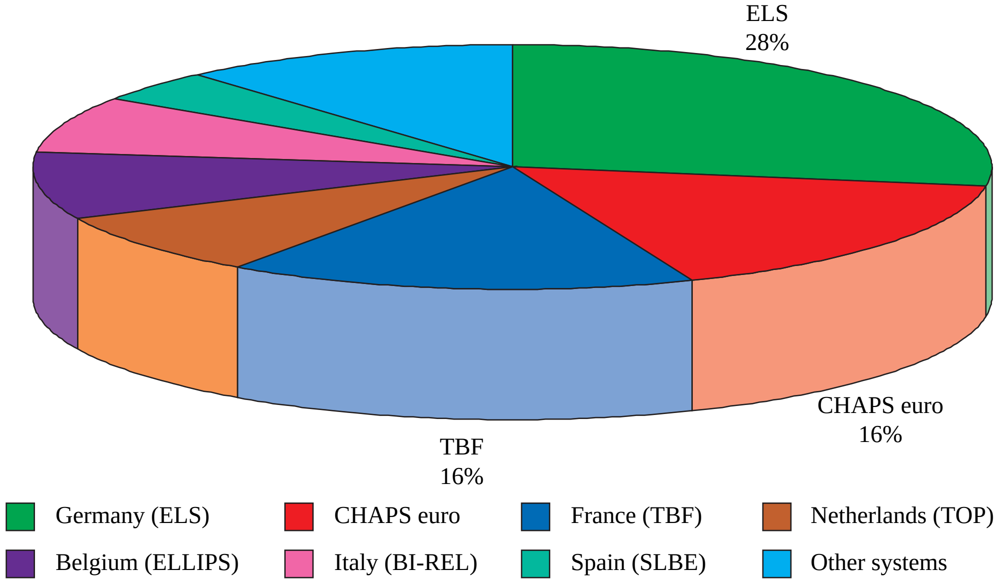


Source: ECB and APACS

8 Chart L focuses on cross-border payments alone. It shows the proportion of cross-border payments sent by euro RTGS systems in the EU in the first four months of 1999, based on aggregated payment values. CHAPS euro accounts on average for 16% of these payments, a significant proportion considering that the euro is a foreign currency in the UK and that UK banks are heavy users of other euro payment systems (such as EURO1).

AGGREGATE CROSS-BORDER EURO RTGS PAYMENTS BY VALUE — CHART L

January to April



Source: ECB

9 Table 6 shows daily averages for cross-border euro payment values sent via RTGS for the first four months of 1999 and the respective use being made of the main euro RTGS systems.

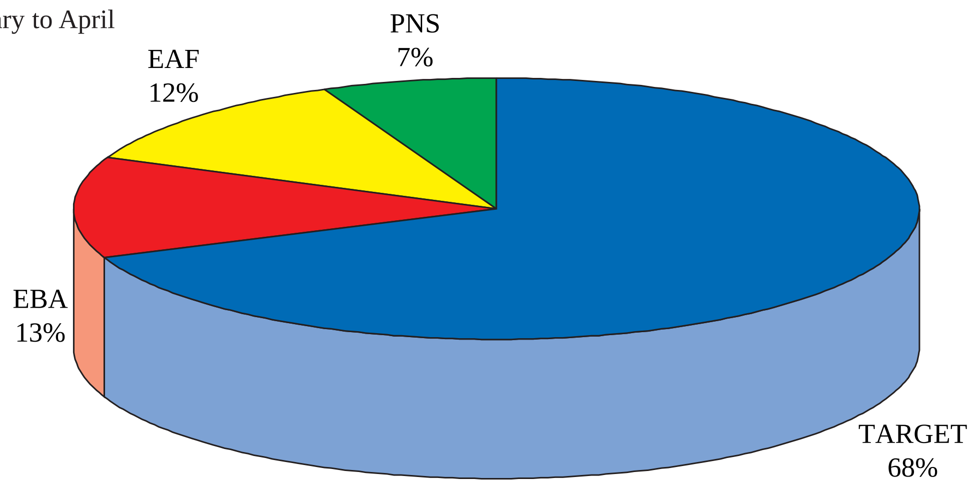
TABLE 6: VALUE OF CROSS-BORDER EURO RTGS PAYMENTS SENT

€ billion	Daily average							
	January	*% of total*	February	*% of total*	March	*% of total*	April	*% of total*
Germany (ELS)	100	*29*	96	*28*	86	*26*	91	*27*
UK (CHAPS euro)	51	*15*	53	*16*	57	*17*	60	*18*
France (TBF)	49	*14*	56	*16*	56	*17*	55	*16*
Netherlands (TOP)	32	*9*	28	*8*	26	*8*	28	*8*
Belgium (ELLIPS)	31	*9*	31	*9*	29	*9*	29	*9*
Italy (BI-REL)	27	*8*	25	*7*	26	*8*	25	*7*
Spain (SLBE)	14	*4*	16	*5*	14	*4*	13	*4*
Other systems	39	*12*	37	*11*	39	*12*	38	*11*
Total	343	*100*	342	*100*	333	*100*	339	*100*

Source: ECB

10 Chart M and Table 7 show the comparative use being made of the competing RTGS and non-RTGS euro payment systems, using data for the overall value of payments sent through each system, during the first four months of the year.

COMPARATIVE USE BY VALUE OF RTGS AND OTHER MAIN EURO PAYMENT SYSTEMS — CHART M



Source: ECB

TABLE 7: TOTAL VALUE OF DOMESTIC AND CROSS-BORDER EURO PAYMENTS SENT

€ billion	**Daily average**							
	January	***% of total***	**February**	***% of total***	**March**	***% of total***	**April**	***% of total***
RTGS								
TARGET	1,041	*68*	943	*69*	913	*68*	924	*69*
Non-RTGS								
EBA	172	*11*	173	*13*	178	*13*	172	*13*
EAF (Germany)	200	*13*	159	*12*	158	*12*	148	*11*
PNS (France)	102	*7*	87	*6*	82	*6*	96	*7*
SEPI (Spain)	8	*1*	4	*0*	4	*0*	3	*0*
Total	1,523	*100*	1,366	*100*	1,335	*100*	1,343	*100*

Source: ECB

DESCRIPTION OF THE MAIN EURO PAYMENT SYSTEMS

Key features

- TARGET consists of one RTGS system in each of the 11 Member States participating in the euro area, plus the ECB payment mechanism (EPM) and the interlinking. The euro RTGS systems of non-euro area Member States are also connected to TARGET via the interlinking. Almost all EU credit institutions, and hence their account holders, can be reached via TARGET. This process has been simplified by use of (some 30,000) BIC addresses listed in the TARGET directory published in March.
- CHAPS euro is the UK euro RTGS system, linked through TARGET to all the other EU RTGS systems and the ECB.
- The EBA same-day large-value payment system (EURO1) is complementary to TARGET. It covers all EU Member States, and focuses on cross-border euro business. Under the EBA Clearing's legal framework (the Single Obligation Structure), each member bank has only one payment obligation or claim on all the other members, at any given time during the day. Each member bank has both a multilateral debit and credit limit. These are binding throughout the day. At close of business, 'short' banks settle their single obligation by making a TARGET payment to the ECB, as settlement service provider, and the ECB – on instructions from EBA – transmits the requisite funds to the 'long' banks.
- The German non-RTGS system (EAF) runs frequent batch settlements through the day, across special accounts at the Bundesbank. Banks hold an amount on their EAF accounts which serves as a limit to the excess of queued outgoing over incoming payments that can be settled in a particular batch settlement. Any payments that cannot be settled in a particular batch settlement will be held over to the next; in the meantime, a member bank may decide to transfer more liquidity across from its main Bundesbank RTGS account. The French non-RTGS system (PNS) has recently begun to use a similar, but more frequent, batch settlement during the day. In both EAF and PNS, liquidity bridges with their local RTGS system mean that collateral available for the RTGS system can also be used to provide intraday liquidity for the non-RTGS system.

Membership

- TARGET is open to all banks in the euro area. Some 5,000 credit institutions have direct access to one of the 15 euro RTGS systems in the EU, and – via the TARGET interlinking – to each other.
- In CHAPS euro, access is on a two-tier basis, as with CHAPS sterling. There are currently 19 direct bank members (including two direct members with remote access from outside the UK), and approximately 100 indirect members, known as 'participants'. These participants can input payments directly into CHAPS euro via remote terminals. A direct member can set limits on a participant's use of the system in order to control its exposure.

- The EBA currently has 65 members spread across the euro area (of which 11, the largest country group, are based in the UK). Another three European members are expected in July and perhaps up to eight more in September. EAF has 67 direct members, half German-based.
- Only a relatively small number of banks has direct access to more than one euro payment system. But many more have indirect access to more than one system, or use correspondent banking.

Collateral requirements

- Payments in TARGET can be made only from cleared balances or balances generated by the (intraday) pledge or repo of collateral with the relevant NCB. The lists of euro-area Tier 1 and Tier 2 eligible collateral acceptable by all 15 NCBs are on the ECB's website, which is updated weekly. For other collateral with more restricted eligibility, information can be obtained from the local NCB. 'In' NCBs can provide euro intraday liquidity against UK Government securities and Bank of England euro bills; and UK Government euro-denominated securities and the Bank of England euro bills also count as Tier 1 eligible collateral for open market operations.
- In the EBA, the sum of all short positions taken during the day exactly matches the sum of all long positions, because the EBA is a closed system. To help ensure end-of-day settlement, all members contribute equally to a cash balance of €1 billion which the EBA holds with the ECB (remunerated at the ECB repo rate less 25 basis points). This cash effectively collateralises the largest potential individual short position. However, members do not fully collateralise their own short positions.
- In EAF and PNS, no collateral is required on top of cash balances held in the system. In SEPI, each member has to place an amount equal to 7% of its largest bilateral credit limit granted. Net debit caps ensure this is sufficient to cover the failure of the single largest net debtor (similar to EBA).

TIMETABLE FOR PAYMENT SYSTEMS

All times CET	TARGET and CHAPS euro	EBA	EAF
Opening	07.00	07.30	07.00
Customer cut-off (a): Inputs Debits	17.00 by 17.07:30		
Interbank cut-off (b): Inputs Debits	18.00 by 18.07:30	16.00	16.00
Reconciliation/settlement complete	Around 18.30	Around 16.45	16.30

Note: (a) S.W.I.F.T. MT100 or equivalent national message format; (b) S.W.I.F.T. MT202 or equivalent national message format.

Intraday credit in CHAPS euro

The arrangements for the provision of intraday credit in CHAPS euro, agreed with the ECB Governing Council, are as follows.

- The Bank of England deposits approximately €3 billion in its TARGET accounts with the ESCB early each morning and withdraws the same amount at the end of each day, investing the funds in the market overnight.
- This liquidity is to finance drawings of intraday credit from the Bank by members of CHAPS euro, but not to participants or remote members. Drawings must be collateralised, and repaid to the Bank before the end of the TARGET day.
- Within the intraday credit ceiling of approximately €3 billion, a maximum of €1 billion may be allotted to any one member. (The total facility is under 5% of the average daily value of transactions in CHAPS euro.)
- Members of CHAPS euro may draw under their credit facility with the Bank of England between 07.00 and 17.00 CET (one hour earlier than for members of 'in' RTGS systems). Thereafter, payments may be made from a member's own resources, once existing drawings from the Bank have been repaid.
- The early cut-off for the provision of further credit at 17.00 CET is followed by a 20 minute period during which both direct members and indirect participants may continue to make interbank settlement payments. After 17.20 CET, only CHAPS euro direct members are permitted to make such payments.
- Member banks may keep overnight balances with the Bank of England, any remuneration (up to the ceiling of approximately €3 billion for the UK) being at the ECB deposit rate.
- Member banks failing to repay drawings of intraday credit by the close of TARGET are charged a penalty rate, which starts at 5% over the ECB's marginal lending rate and increases with each 'offence'. Repeated offences may lead to the member being barred from access to intraday credit and, ultimately, to the member's expulsion from the system.
- These penalties give member banks sufficient incentive not to treat overdrafts in the system even as a residual source of funding. Since the first week of TARGET's operation, when teething problems made control of liquidity difficult throughout TARGET, no CHAPS euro member has been short at the end of any day.

In addition, in common with members of other RTGS systems in the EU, CHAPS euro members are obtaining intraday liquidity via other routes:

- by arranging to raise intraday credit from a branch or subsidiary in the euro area and remitting the funds to their CHAPS euro account; or
- by arranging 'liquidity swaps' with another bank, where liquidity in a non-RTGS system is swapped for liquidity in TARGET.

Technical issues

11 At the end of March, the ECB distributed a questionnaire, seeking TARGET users' views on the operation of both TARGET as a whole and their local RTGS system. In responding to the questionnaire, the UK and other EBF user groups proposed a number of improvements, which are referred to below. They also requested more detailed information about TARGET service levels - possibly in the form of a Service Level Agreement; and sought stronger guidance from the ECB on business practices. The revised *Information Guide*, which is much more detailed than the December 1998 version, goes some way to meeting these demands, and provides explicit support for business practice guidelines developed by the industry. The ECB is now considering the specific points made by the user groups for further improving the system.

12 No technical issues were raised by members of CHAPS euro about the specification or functioning of the CHAPS euro system itself: a high level of satisfaction was expressed with the service provided.

Transaction times

13 Payments sent cross-border via TARGET take slightly longer to process than domestic payments, because two RTGS systems are involved, connected by the interlinking, rather than just one system. It is not, however, possible to know with certainty the average length of time for a TARGET transaction, as there is no mechanism for processing time-stamps from end-to-end, and the length of time varies, depending on which NCBs are involved. The total time elapsed from the sending of an instruction by a direct member of one RTGS system to receipt by another bank in a different RTGS system is normally five to ten minutes, but may be 20 minutes or more. (The equivalent time for euro payments between two CHAPS euro members is under one minute.)

14 Many user groups support the introduction of electronic time-stamping of payments through TARGET. This would involve time-stamping by the NCBs of both the sending and receiving banks. Time-stamping would allow users to monitor the speed of payments through the system more accurately, and also provide useful evidence in the event of compensation claims for late payment.

The last hour in the payment day

15 The *Information Guide* sets out the position on giving value for transfers received:

> 'A payment received before 18.00 CET [for interbank payments; 17.00 CET for customer payments] must be accepted and same-day value must be given to a receiving participant. A payment received after 18.00 CET [for interbank payments; 17.00 CET for customer payments] must be accepted but it will be the decision of the RTGS participant whether to apply same-day value to a receiving participant.'.

16 In principle, only interbank payment orders (ie only S.W.I.F.T. MT202s or equivalent national message formats) can be sent in the last hour in the payment day. But it is not possible for TARGET management to know the content of any payment message, as their full details are available only to the banks which send and receive them. It is therefore difficult for the authorities to monitor use of the last hour. Moreover, the distinction between interbank and

customer payments is not always clear in practice. Banks may be recipients of funds as indirect members of an RTGS system via their payment bank, of which they are a customer.

17 While the ECB guidelines restrict payments in the last hour to 'interbank' transactions, the EBF guidelines on *Liquidity Management in the Framework of TARGET* suggest a more restrictive definition: 'The only payments received after 17.00 CET should be payments for the credit of the receiving RTGS system Settlement Member itself, excluding payments in favour of third parties.'. Some banks have suggested that, if customer payments are sent later than 17.00 CET, the receiving bank should have the right not to give value that day. The Heathrow Group has agreed in principle to disciplines which should bring greater certainty to the treatment of payment flows between 17.00 and 18.00 CET. Early agreement is expected on the final text, which will be published on the EBF website. It is hoped that these disciplines will be adopted by the market as a whole over time.

'Stop sends'

18 'Stop sends' are requested by the management of a national RTGS system when problems are experienced during the day. An RTGS system with a problem is expected to transmit a 'stop sending' message to other NCBs and the ECB, and to communicate to its direct participants 'stop sending' requests made by other NCBs. In the first five months of operation of TARGET, there have been over 100 official 'stop sends' (ie on average around one each business day). 'Stop sends' tend to be associated with some of the larger systems, as heavy volumes can cause problems. But less than 3% of the 'stop sends' have originated from the UK.

19 System managers have increasingly been persuaded of the advantages of requesting a 'stop send' as soon as a problem occurs, so as to avoid liquidity being caught in the system with the problem. Depending on the exact nature of the problem causing the 'stop send', the liquidity of banks within that RTGS system may be blocked until the problem is resolved. But if other NCBs stop sending payments to the system with a problem, then no more liquidity will be locked in that system, making the liquidity available for use elsewhere in TARGET. When a 'stop send' is given, members of other RTGS systems with payment orders in favour of the system with a problem can either queue those orders or cancel them. In the latter case, they can input them again later, using their payment system liquidity for other payments in the meantime, or they can send the payments via an alternative route.

20 If a 'stop sending' problem is not resolved until near the end of the day, the time taken to reinput previously cancelled payments may result in a bunching of transactions late on, and could cause further problems. In some national RTGS systems, including CHAPS euro, there is an enhancement to the 'stop sending' process, known as a 'stop debit'. This temporarily freezes a payment order – until the 'stop sending' problem is rectified – allowing liquidity to be used elsewhere until the order is reactivated automatically at the appropriate time. Members of CHAPS euro believe this enhancement would be beneficial throughout TARGET.

21 The ECB is exploring ways of informing members of all 15 national euro RTGS systems more quickly when there is a problem. TARGET users welcome this initiative. Information is likely to be communicated both via the wire services and using other routes such as S.W.I.F.T. messages. But not all payment units have access to wire services, and dealers are not always on the look-out for payment system messages. In the UK, if the Bank of England becomes aware of

a problem somewhere in TARGET, it immediately notifies CHAPS management, which in turn sends pager messages to its contacts in the member banks, alerting them to listen to a recorded message explaining the situation as fully as possible. The Enquiry Link and the S.W.I.F.T. system are also used on some occasions.

22 Banks would also welcome some clarification about the circumstances in which an NCB should post a 'stop sending' message. NCBs are required to do so in the case of 'serious' problems; but 'serious' is not defined. NCBs have taken different approaches to the length of time a problem is likely to last before issuing a 'stop sending' message. If a problem is likely to take more than a matter of minutes to resolve, banks and their customers may wish to explore alternative routes for sending the delayed payments – particularly if the problem occurs near the end of the day. In fact, most problems occur in the early part of the week, since modifications to systems tend to be made over the weekend. As the ECB is responsible for alerting all members of the TARGET system when any relevant modifications are to be undertaken, it is essential that the ECB is informed quickly of such changes. The ECB has also suggested that more testing should be undertaken before modifications are to be introduced.

End-of-day extensions

23 Apart from the first week of TARGET's operation, there have been only four end-of-day extensions to the normal 18.30 CET closing time. On two occasions they lasted beyond 20.00 CET. Some banks originally read the *Service Level* document (July 1998) and the *Information Guide* (December 1998) to imply that extensions beyond 20.00 should never happen. There are staffing and systems implications of such extensions – some bank systems have been designed on the assumption that TARGET will never run beyond 20.00. In practice, decisions to extend beyond 20.00 were taken pragmatically because, on those occasions, the enforced closing procedures could have caused more problems than waiting for the affected NCB to recover. Accordingly, the *Information Guide* (May 1999) has been clarified to read: 'Only in extraordinary circumstances will the ECB decide to extend the delayed closing beyond 20.00 CET.'.

24 The ECB will base any further decisions relating to extensions on the basis of best practice for the TARGET system as a whole. This procedure is intended to strike a balance between the need for an orderly close-down, and the desire to avoid systems closing so late as to put in question the punctual start of the following day's banking business.

Returned payment messages

25 The *Information Guide* states that returned payment messages should be received by 12.00 CET the following day. In general, this guidance is being followed, although not in every case. Delays could be a result of banks taking time to adjust to the way that TARGET operates. But the more widely such a guideline is accepted, the more helpful it would be for all concerned. In many cases it is impossible for a sending bank to know for certain that a payment order has been successful in reaching the ultimate beneficiary. Even if a sending bank is informed by its NCB of a positive acknowledgment from the receiving NCB, this only establishes that it has reached the right TARGET member bank, not necessarily that a payment has been properly applied. It is therefore important that returned payment messages are made as quickly and accurately as possible.

Liquidity management

Intraday payment imbalances

26 Some imbalance in the timing of payment flows between banks is inherent in any payment system. This is particularly true of RTGS systems, where an imbalance between the central bank and settlement banks is natural: it is the central bank's net injection of liquidity which helps settlement banks cope with the imbalance in payments between them. This injection of liquidity imposes a cost on the settlement banks, as they need to hold eligible collateral in the right location in order to obtain it.

27 The December 1998 *Practical Issues* pointed to the potential for new imbalances arising with the introduction of the euro as a result of the extended choice of systems for routing payments. This makes it harder for bank treasurers to have always available the right amount of liquidity in the right place. They therefore aim to minimise intraday imbalances to avoid the risk of having to hold more liquidity than necessary, or of delays in payments.

Reasons for intraday imbalances

28 There are two main reasons why intraday imbalances arise. One reason is that many banks manage their euro liquidity from a single location. Instead of obtaining intraday credit exclusively from their local NCB, they do so from more than one NCB, using their collateral held in that centre or mobilising their collateral cross-border. They then pool the liquidity in the centre where their treasury management operations are located. The resulting cross-border inflows, often at the start of the day, and compensating outflows towards the end of the day, represent transfers of liquidity obtained from an NCB, rather than customer payments.

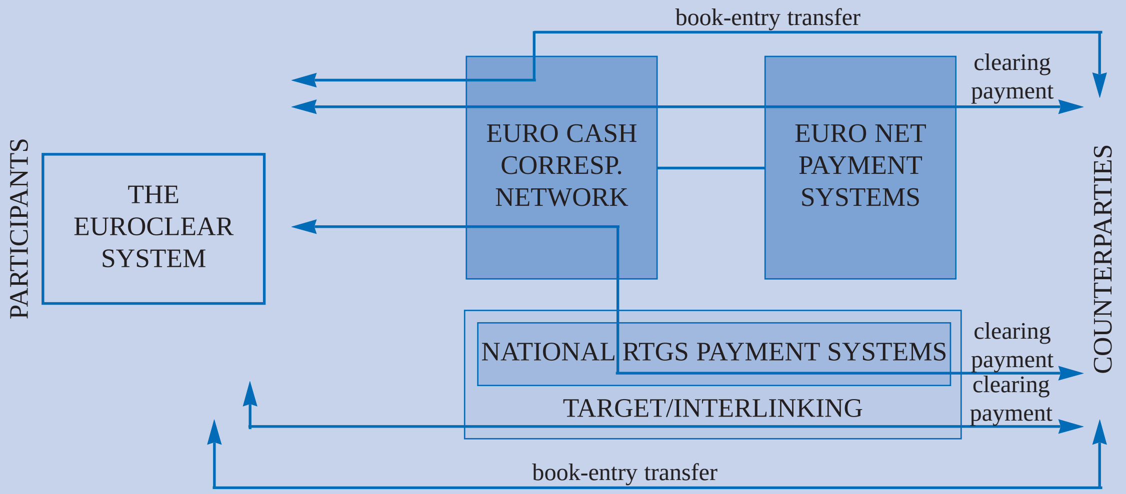
29 In addition, under the arrangements agreed for the provision of intraday liquidity, 'out' NCBs themselves conduct daily liquidity transfers. Thus, the Bank of England brings just over €3 billion liquidity from the euro area into the UK each morning, and returns it at the end of the day. All these inflows represent the use, by both banks and the Bank, of their own assets, and therefore do not serve to drain liquidity from other financial centres.

30 APACS bank treasurers have examined their payment flows through CHAPS euro. The results of their April survey show that, adjusted for liquidity transfers and intra-group traffic, the cumulative values of payment inflows and outflows between CHAPS euro and TARGET are quite closely matched on an hourly basis through the day.

31 The other reason for intraday imbalances is that, to varying extents, different banks use different systems. So, for example, Bank A may prefer to pay Bank B in EBA; Bank B may prefer to pay Bank C in EAF; and Bank C may prefer to pay Bank A in TARGET. The result is a separation, across a number of systems, between each bank's payments and its receipts. The continued use of correspondent banks can also be a factor (see box).

EUROCLEAR PAYMENTS AND RECEIPTS

The diagram summarises Euroclear's payments and receipts, as an example of the use of different systems. Thus banks in the UK may make payments to one of Euroclear's correspondent banks in Frankfurt, using EBA. The correspondent may transfer the receipts to Euroclear's account in Belgium, using TARGET. But Euroclear generally makes its payments to banks in the UK directly through TARGET, as it does not have any correspondent bank in the UK or any other 'out' country.



32 In deciding which payment systems to use, banks are guided by a number of influences. In user surveys, the most important mentioned include: reliability; the availability or cost of liquidity; and collateral requirements. Transaction costs are also clearly important, though comparing costs of different systems can be difficult, as membership fees differ and tariffs often vary according to the volume of usage.

33 Banks are also influenced by their use and experience of different systems prior to the introduction of the euro. For example, some countries had no netting system, and EBA may have been a natural choice as an alternative to the local RTGS system. Many banks in Germany were already heavy users of EAF, so it was their natural choice for making euro payments. It is too early to say how long these influences will persist.

34 Customer requirements are generally a less important factor in banks' choice of payment systems. In most cases, customers are indifferent to the payment route chosen, provided that funds end up in the right place by the close of business on the identified day, and that the service is efficient and cost-effective. However, when payments are linked to securities or foreign exchange trades, the timing may be more important and the customer may request a real-time payment. But even this may not determine the precise route, if the settlement bank and its branches and affiliates are members of more than one euro RTGS system.

What can be done to keep imbalances to the minimum?

35 The authorities' main focus is to ensure that liquidity management by the banks should not impair the implementation of monetary policy, and should not give rise to systemic risk. Beyond

that, their role is limited to encouraging the market to implement best practice. There has already been some improvement in market practice since the beginning of the year, and as a result, banks' liquidity requirements have been reduced. But a number of issues still need to be addressed to help keep imbalances to the minimum, and so enhance payment system efficiency, in future.

- *Make payments as early as possible*. It is generally accepted by users of payment systems that the most pressing issues are to achieve timely flows through each system, and an orderly end-of-day closure. The EBF guidelines on *Liquidity Management in the Framework of TARGET* recommend early intraday submission of payments in TARGET, and procedures for any payments late in the day. The Heathrow Group has agreed in principle enhancements to these guidelines. Some banks also consider that there is a case for extending the EBF guidelines to include other euro payment systems.
- *Monitor performance levels*. Neither the TARGET system in general, nor CHAPS euro in particular, has as yet any specific performance level targets (ie targets for throughput by specific times during the day). It would be premature to set targets until there is sufficient experience of payment flows, and to be effective any such standards would need to be monitored. A number of banks are holding bilateral discussions with some counterparties in order to seek more balanced payment flows between them, both in their timing during the day and between different systems. Most CHAPS euro members are also members of CHAPS sterling, which does have specific performance level targets, and the APACS Treasurers' Group survey in April indicates that payment throughput in CHAPS euro closely mirrors that in CHAPS sterling.
- *Leave choice of routing to the payer bank*. The Heathrow Group conventions recommend that the payer bank decides the payment route, subject to whatever bilateral agreements there may be, but must deliver to the precise bank branch specified by the recipient. A unilateral requirement to be paid by a specific route can make it more difficult for banks to achieve intraday balance in individual systems. The choice of payment route is being made a condition for some money market transactions; but there does not appear to be a sense in the market that this underlying Heathrow convention needs to change.
- *Consider the impact of large transactions on system flows*. The ECB has recommended that large value transactions be settled in TARGET. It is not clear whether this recommendation is being observed universally, or whether there is an agreed definition of what constitutes a 'large' transaction.
- *Ensure customer instructions are clear and timely*. Banks look to their customers: to deliver their payment instructions in good time; to use published S.W.I.F.T. BICs to identify banks, where possible; not to include the NCB as a party to a transaction, when it is simply the operator of a clearing system; and to leave the choice of payment route to the bank, wherever possible. For their part, banks should give their customers appropriate cut-off times to enable payment systems to close on time at the end of the day. Self-evidently, they should also ensure that payments with agreed value dates are made on the relevant day.

Liquidity swaps

36 Liquidity swaps provide a way of managing intraday imbalances by moving liquidity between payment systems: eg EBA and TARGET (see box). By helping to smooth payment

flows, liquidity swaps can reduce risk. But like foreign exchange swaps, liquidity swaps inevitably involve an element of settlement risk, as they cannot be perfectly synchronised. The settlement risk arises from the interval between the acceptance of payments by EBA and the RTGS system: however, in principle, this interval should not be more than a few minutes.

EBA/TARGET LIQUIDITY SWAPS

In anticipation of banks experiencing intraday euro liquidity imbalances between their positions in EBA and in TARGET, a mechanism was formally agreed last year whereby banks could engage in bilateral payment system swaps to overcome these imbalances. The swap mechanism enables Bank A, which is close to, or at, its EBA debit cap (and so is having its outgoing EBA payments queued), but which has 'surplus' euro liquidity on its RTGS account at its NCB, to identify Bank B in the opposite liquidity position (ie short of RTGS liquidity, but with headroom under its EBA debit cap). Once identified, Banks A and B can agree to swap an agreed amount of euro liquidity, with the first bank paying in TARGET and the second paying through EBA. Equally, Bank C may be up against its EBA credit cap (ie unable to receive further incoming EBA payments) and therefore seeking a swap with Bank D, which is prepared and able to receive an EBA payment and send RTGS funds.

Liquidity swaps tend to be conducted between 12.00 and 15.30 CET. (The latest closing time for non-RTGS systems is 16.00.) Before 12.00, treasurers tend to be less certain of their liquidity needs, as positions can change very rapidly. EBA has established a dedicated Reuters page on which member banks can indicate their respective EBA and TARGET positions. But it appears this is not being extensively used, as many banks have a narrow set of specific counterparties which they prefer to contact to arrange such a swap. EBA estimates that there are around 20 such liquidity swaps on average per day, with a total daily value of around €8 billion; some banks believe the total number of liquidity swaps may be much higher. Banks which are up against their debit caps sometimes find it simpler to withdraw payments from the EBA central queue and send them through TARGET – rather than look for a swap counterparty and then make a TARGET swap payment.

Collateral management

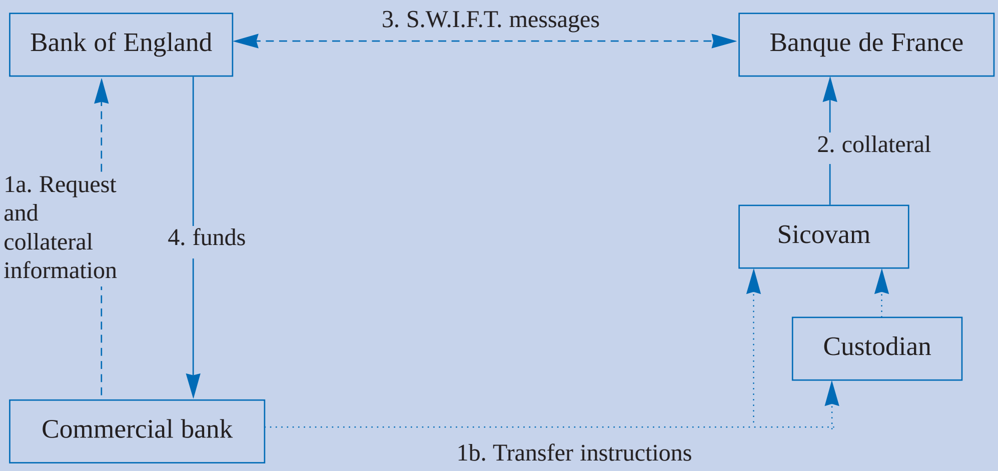
37 The correspondent central banking model (CCBM) is designed to facilitate the cross-border use of banks' collateral: it allows TARGET users to offer securities held in one country's settlement system as collateral for credit granted in another country, provided that the lending NCB agrees. Each NCB acts as correspondent to the others for the delivery of securities in its local market (see box). This is intended to boost the liquidity of the system by allowing the collateral pool to be used more flexibly.

38 The delivery or return of securities using the CCBM process typically takes around two hours; this length of time is required because, for most NCBs, the exchange of S.W.I.F.T. messages is not subject to a standard level of automation. It is unlikely that such automation could be introduced before this September's moratorium on system updates ahead of the year 2000; and, in any case, the CCBM has from the start been seen as an interim solution until a more sophisticated, private-sector solution – such as improved links between national CSDs,

whether direct or via ICSDs – has been implemented. Without automation, it is unlikely that the CCBM process could be much faster than 30-40 minutes; but it can be – and often is – longer.

THE CCBM

If a bank in London wishes, for example, to borrow intraday liquidity from the Bank of England using French government securities as collateral, it transfers the securities in Sicovam from its own account to the account of the Banque de France, acting as correspondent for the Bank of England, and advises the Bank of England accordingly. The latter sends a S.W.I.F.T. message to the Banque de France seeking confirmation of this, and of the valuation of the securities. Once the Banque de France has verified the transfer and the valuation, it sends a return S.W.I.F.T. message to the Bank of England, which then releases the funds.



Notes

1a The borrowing bank requests funds (either intraday credit or in an OMO round), and at the same time (1b) instructs the custodian where the securities are held to transfer the securities to the local NCB, acting as correspondent for the lending NCB.

2 The securities are transferred.

3 The lending NCB seeks confirmation from the other NCB as to the transfer and value of the securities, and receives the appropriate information (this may take 20 minutes or so).

4 The lending NCB credits the account of the borrowing bank.

39 To facilitate the CCBM's use in obtaining regular payment system liquidity, securities can be pre-deposited with the relevant NCB. A 'standing order' is placed with the lending NCB that the bank wishes to borrow intraday against those securities every day until further notice. There is still a need for a securities revaluation daily. But, with pre-deposited securities, intraday liquidity can be provided from the very start of the TARGET operating day. A number of banks make use of the CCBM in this way.

40 For instance, a CHAPS euro member may pre-deposit a portfolio of bunds with the Bundesbank, in favour of the Bank of England: this initial process may take two hours. Subsequently, each morning the Bundesbank informs the Bank of England of the previous day's market value of the portfolio; and this valuation is used for providing intraday liquidity the following morning when TARGET opens. The borrowing bank does not need to send any messages on a daily basis. Nor does the Bank of England need to contact the Bundesbank.

41 For those banks which use securities for trading as well as for collateral purposes, pre-depositing securities to facilitate regular intraday use of the CCBM may be costly. Some of these users consider that the CCBM takes too long to be relied upon for resolving unanticipated intraday liquidity problems. There may well be demand for a more sophisticated service.

Other issues

42 *Compensation for late payments*. It is important that compensation guidelines for late payments give the right incentives to banks to take all due care with payments and avoid being responsible for fails. This requires fair reimbursement of the costs or benefits incurred when payment errors are made. A substantial number of claims arose in the first two weeks of January, mainly when payments were credited to nostro accounts in the same country rather than sent through TARGET to the requested location. As a result, a special compensation structure was agreed retrospectively, to cover the period from 4 to 17 January. The original Heathrow Group guidelines, as agreed in December, have been operative since 18 January, and are being increasingly applied.

43 *An intraday euro money market*. Within RTGS systems, intraday credit from the appropriate NCB, or a liquidity transfer from balances in another linked RTGS system, and queuing, provide means of liquidity management. Within non-RTGS systems, liquidity is managed by a combination of credit and debit caps, and queuing. As yet there is no sign of an intraday interbank market developing; and as long as there is plenty of collateral within the system, there is no obvious need for such a market, as members of the RTGS systems can borrow from their NCBs at zero marginal intraday cost at present. 'Out' banks have only limited access to intraday credit, and in theory might find an intraday market useful. But thus far they have not in fact been collateral or liquidity-constrained.

44 *Same-day settlement*. A considerable amount of short-dated (overnight to one month) trading is now undertaken on a same-day basis. Longer-dated trading is currently still undertaken on a one or two-day (ie spot) settlement basis. But the increasing use of same-day settlement in short dates makes efficiency in payments and collateral usage all the more important.

45 *Standards and SSIs*. Standards have improved as a result of the 8 January S.W.I.F.T. broadcast, the S.W.I.F.T. *Bulletin* in March on standards-related issues, and the S.W.I.F.T. guide to different ways of completing and interpreting euro transactions. (Details can be found on the S.W.I.F.T. website.) But many banks consider that two further improvements are needed.

- All TARGET payment messages are identified using published S.W.I.F.T. BICs. If bank names or unpublished BICs are used, payments are rejected. Customers should use published S.W.I.F.T. BICs in payment instructions to their own banks.
- The exact format of SSIs varies from one bank to another. The BBA and S.W.I.F.T. have developed a standard format; it is likely that fails will be reduced if this is widely adopted.

46 *Nostro account rationalisation*. Most market firms have maintained some nostro accounts in the previous national currencies, whilst outstanding transactions in these currencies run off. Most such transactions will have run off by the middle of this year. Some market firms have

suggested that, at that point, there should be a mini conversion weekend to convert any remaining national currency transactions to euro. But most market firms would prefer to continue to convert these transactions bilaterally, when the parties wish to do so. In any event, a complete rationalisation of nostro accounts may even at that point not be possible because some corporates are still undertaking transactions in previous national currencies.

B SECURITIES SETTLEMENT SYSTEMS

Securities settlement

47 There are currently around 30 central securities depositories (CSDs) in the EU: transactions in the securities held there are processed through book entries. Most national CSDs serve only their domestic securities markets. Euroclear and Cedelbank (the ICSDs), based in Belgium and Luxembourg respectively, act as depositories for international securities, and have their own account (in their own name or that of a custodian intermediary) in most national CSDs in Europe and beyond. This enables their members to settle securities held in those systems. Many national systems also have links to other CSDs that enable their members to hold securities cross-border. There are currently 37 operational direct links established by CSDs in the EU, including links from both Euroclear and Cedelbank to the Central Gilts Office (CGO).

Forces for change

48 Many of the forces changing the settlement infrastructure are the same as those changing the structure of equity and derivatives exchanges.

- The increasing integration of European capital markets, following the introduction of the euro, means that more institutional investors are expected to hold securities cross-border. Any increase in cross-border investment and trading will require an increase in cross-border custody and settlement.
- Mergers and acquisitions amongst major market participants mean that there is an increasing identity between users of different elements of the market infrastructure in different countries (and indeed, where trading, clearing and settlement systems are mutually owned, this represents an identity between owners of the systems).
- Equally, sufficiently powerful technology now exists to allow a real-time settlement system to service a much wider cross-section of the financial markets (although it is likely to be some time before any single system could provide real-time settlement for all European trades). And all market participants share a desire to drive down costs, and to benefit from reasonable economies of scale.
- Finally, although the integration of securities settlement systems is still constrained to a large degree by the different legal structures that are applied to securities transactions in different jurisdictions, there is progress towards the development of a common body of securities law across the EU. The Settlement Finality Directive, which is due to be implemented in all Member States by December, was originally conceived as a means to address systemic risk in payment and settlement systems, but also contains provisions to clarify aspects of the law governing the cross-border use of collateral.

Domestic consolidation

49 One effect of these forces for change is to encourage CSDs in the same country to merge, largely to gain competitive advantage from economies of scale and to provide a better service to investors. Eight of the 15 Member States in the EU still have multiple settlement systems. For example, in Spain there are six (CADE, SCL, Espaclear, SCLBilbao, SCLBarcelona and SCLValencia). Two of them, SCL and Espaclear, have announced their intention to merge.

50 CREST, the settlement system for UK and Irish equities, has taken over from the Bank of England the operation of CGO, and is preparing to take over the Central Moneymarkets Office (CSD for UK money market instruments). The intention is that the systems should merge to provide a single settlement system for UK securities. This is being facilitated by parallel moves to bring settlement of transactions in all UK securities under a single body of law.

Cross-border mergers and consolidation

51 However, the most prominent effect has been that investors are increasingly requiring access to securities deposited in multiple CSDs. There are already several means by which a counterparty in one country might hold a security in a CSD in another country, even without any cross-border links or system consolidation: taking out remote membership of the foreign CSD; or engaging the services of a private sector custodian (either a global custodian which has links, directly or indirectly, to all the relevant markets, or a local custodian in a particular market).

52 But these methods are not available (or attractive) to all investors. For instance, the use of custodians may not be cost-effective for retail investors, whilst remote membership is relatively costly for users and requires familiarity with the rules and procedures of the systems concerned. As such, the natural trend is for CSDs to consolidate some or all of their functions.

53 There are a number of possible forms that might be taken by a future European settlement infrastructure, following some degree of consolidation. One, already partially in place, is a structure in which CSDs are linked – in other words, an investor holds securities cross-border by virtue of the fact that a CSD of which it is a member has a link to a foreign CSD. Links could involve one CSD taking out membership of another, and holding securities in that CSD on behalf of its own participants; or building real-time links between the systems to facilitate the cross-border delivery of securities against cash. Membership links may be direct (where the domestic CSD has an account in the foreign CSD) or indirect (where the domestic CSD uses a custodian intermediary to access the foreign CSD), and may be one-way or bilateral.

54 Some market participants see links as a stepping stone to the creation of a single European CSD. This would certainly maximise cost savings and operational efficiencies. But there are hurdles to the development of such a structure, in the following areas.

- *Legal*. There are still significant national differences in the legal basis for holding securities, so there may be a risk of conflict of laws involved in any cross-border holding of securities.
- *Political*. The location, ownership and governance of a pan-European CSD could prove contentious. And since regulation of the market infrastructure is still conducted on a national basis, there is no obvious structure for its supervision.

- *Technical*. None of the CSDs is currently capable of handling the volumes of transactions that would be required of a single European CSD. A CSD handling all European settlements would take on a much greater degree of operational risk than any national CSD.
- *Corporate actions*. The single CSD would need to possess the relevant expertise to administer corporate actions under each separate legal jurisdiction in the EU. Currently, most CSDs administer under only one.
- *Cost*. Although there would be some degree of cost savings in the long term, the initial development costs would be likely to be relatively high.

Possible models for cross-border consolidation

55 Given these constraints, there are in the medium-term a number of possible structures that could evolve. In July 1997, for instance, the European Central Securities Depositories Association (ECSDA), a grouping of 15 European national private sector CSDs, published proposals for a standard model for links between its members. The principle is that an investor should be able to hold securities issued into any participating CSD, using any CSD as a point of access. The initiative was conceived in part as a means of reducing risk and increasing efficiency in ESCB operations involving the cross-border use of collateral, but it will be available for all types of transaction, and ECSDA intends that the model be used eventually by systems outside the EU. Initially, ECSDA proposes that the model will be used only on a free-of-payment basis, but it has published plans to provide delivery-versus-payment (DvP) settlement in due course.

56 A number of links meeting ECSDA specifications have already been developed. CREST, which does not currently have any operational outward links, is in the process of developing links to SEGA (Switzerland) and DBC (Germany). The link to SEGA is due to be implemented in mid-July. The link to DBC is due to be implemented in the first instance through Dresdner Bank as custodian, from September. CGO's links with Euroclear and Cedelbank will be taken over by CREST next year when CGO merges fully into CREST.

57 If each ECSDA member were to develop such a standard link with each of the other members, the result would be a 'cat's cradle'-type structure. There would be (in effect) a single pool of securities in Europe, to which each member CSD would provide its customers with access. CSDs would therefore compete (through price and value-added services) with each other to be the counterparties' entry point of choice. This need not require significant legal changes (in the ECSDA model, the governing law for a particular security is that of the jurisdiction of the CSD into which it was initially issued) and would introduce less concentrated operational risk than a single pan-European CSD. Such links would be relatively low-cost, and might be accompanied by some consolidation among CSDs.

58 Another possibility is that a pan-European 'hub' could provide clearing and settlement services (and perhaps other value-added services such as securities lending, netting and collateral management) while the securities continue to be held in national depositories. This 'hub-and-spokes' model has some similarities with the service already offered by the ICSDs, which already have links (whether direct, or using a custodian intermediary) to the majority of CSDs in Europe (in addition to links to many non-EU markets).

- On 4 May, Euroclear advocated a variation on such a model as the most efficient and cost-effective settlement infrastructure for Europe. A single hub would settle cross-border transactions for global intermediaries. The spokes (based on the national CSDs) would settle domestic transactions in local markets, and be linked through the hub. The objective would be to provide a single point of entry to all clearing and settlement services for investors, issuers and intermediaries in all European capital markets. Longer term, Euroclear envisages that this structure may evolve through further rationalisation of the clearing and settlement infrastructure.
- On 14 May, Cedelbank announced a different proposal under which Cedelbank and DBC plan to merge their clearing, settlement and custody activities, provisionally in January 2000. They have also signed a memorandum of understanding with Sicovam, which is due to join the new venture soon afterwards. Cedelbank's proposal is envisaged as the first step towards the creation of a 'European clearing house'. Other European national and international CSDs have been invited to join.

The implication of these proposals is that a pure 'cat's cradle' model is unlikely to develop. But even if international settlement hubs are created, there may still be a role for ECSDA-style links, to connect the underlying depositories or to connect CSDs not involved in the cross-border hub.

59 Another basis on which settlement hubs could develop is a regional one. This structure was the basis of a recent proposal by the Norwegian, Swedish and Danish CSDs to create a platform to provide common clearing and settlement for the three markets (S4). S4 would have provided clearing and settlement services, on both a gross and net basis, while the underlying depositories (which would be connected via an ECSDA-style link) would continue to have provided services such as payments, corporate finance and investor relations. However, the plan was rejected by the boards of the three systems in March, reportedly because the development costs were deemed to be too high. Such a structure, particularly if applied across Europe, would offer investors increased opportunities to access CSDs directly, and so to a certain extent would serve to disintermediate custodian banks.

Conclusion

60 Many, often conflicting, considerations will influence the look of the future European settlement landscape, and at this stage it is not at all clear what sort of model will emerge. It is clear, however, that systems will to an increasing extent be in direct competition with each other, competing on efficiency, security and value-added services. The nature of this competition, and likely cross-border mergers, will have profound implications for regulators, with an interest in addressing investor protection and systemic risk, and competition authorities.

61 Participants are likely to be concerned about: the levels of investment required to create any new structure; the efficiency of settlements across the structure; the ways in which the structure can harness expertise in local procedures, instruments, laws and regulations; the risks to which they are exposed and the levels of security in the system; and the governance of the structure. There is no simple answer to the question of what the optimum securities settlement infrastructure should be in Europe, and it is far from clear what sort of structure will in practice emerge, but it is important that the structure which does emerge should benefit investors by providing an appropriate balance between risks and efficiency.

Repo trading and clearing systems

Repo trading systems

62 The euro repo market is one of a number of markets in which trading is increasingly being carried out through systems which provide electronic order input, matching and execution. The sponsors and users of these systems believe that electronic trading increases the liquidity of the markets, tightens spreads, reduces brokerage costs, and allows pre-execution anonymity. It also reduces operational costs, for example by facilitating straight-through processing from trading through to settlement and reconciliation. To support the expected growth of the euro repo market, three service providers have developed electronic repo trading platforms: MTS (the Italian regulated bond market), SWX (the Swiss Stock Exchange) and ERX (European Repo Exchange).

63 *MTS*, an Italian company which has for some time provided an electronic platform for cash and repo trading of Italian and German government bonds, launched a new company, *EuroMTS*, on 29 March. This is incorporated in the UK, and supervised by the SFA as an inter-dealer broker. EuroMTS is to provide, initially for its shareholders only, a wholesale electronic trading system for benchmark euro-area government bonds. Initially, about 30 German, French and Italian government bonds are being listed, but other euro-area government bonds will be added. Only cash trades will be possible in the first instance. Repo functionality, against both general collateral and specials, is expected to be introduced in the second half of 1999.

64 *SWX* is also poised to launch an electronic repo market trading system (Repo ERM), to which foreign financial institutions will have access. SWX already offers services in Swiss franc repos, but will launch non-Swiss franc services in July – for benchmark euro-area government bonds and UK gilts. Repo trades may be against both general collateral and specials. Cross-currency repos will also be available. SWX will be an exclusively interbank market. In the first instance, an ‘off-market’ system will be provided, where trading takes place bilaterally without automatic matching. An ‘on-market’ system (multilateral trading of standardised contracts over a central order book) will be launched later this year, with trades automatically matched against a central order book. For repos of Swiss securities, there will be straight-through processing to the Swiss domestic CSD. In other markets, SWX will be connected to settlement systems via the back offices of individual users.

65 *ERX* is an electronic trading system being developed by United News & Media, although it is envisaged that market participants will hold the majority of board seats. Both banks and securities houses may participate, as long as they have a net capital of at least €150,000, and a minimum single A credit rating. ERX will offer cash and repo trades against euro-area government bonds, as well as UK, Danish, Swedish, Swiss and possibly Greek, government bonds. Settlement will be in the CSD chosen by the participants. Three distinct forms of trading will be offered – direct bank-to-bank; via a broker; and automatic, via linked terminals. ERX plans to offer straight-through processing, with clearing and multilateral netting.

Repo clearing systems

66 The development of the European repo market will also be influenced by the proposed introduction of central counterparty clearing arrangements with multilateral netting. In the view

of market participants, the main benefit of such clearing arrangements is the ability to net long and short repo positions and so reduce their balance-sheet impact, facilitating balance-sheet recycling and freeing up credit lines. (In the US market, repo netting is estimated to have reduced balance-sheet commitments by about 50%.) Depending on accounting standards, clearing allows multilateral netting by replacing the web of bilateral credit exposures with a set of single exposures to the central counterparty.

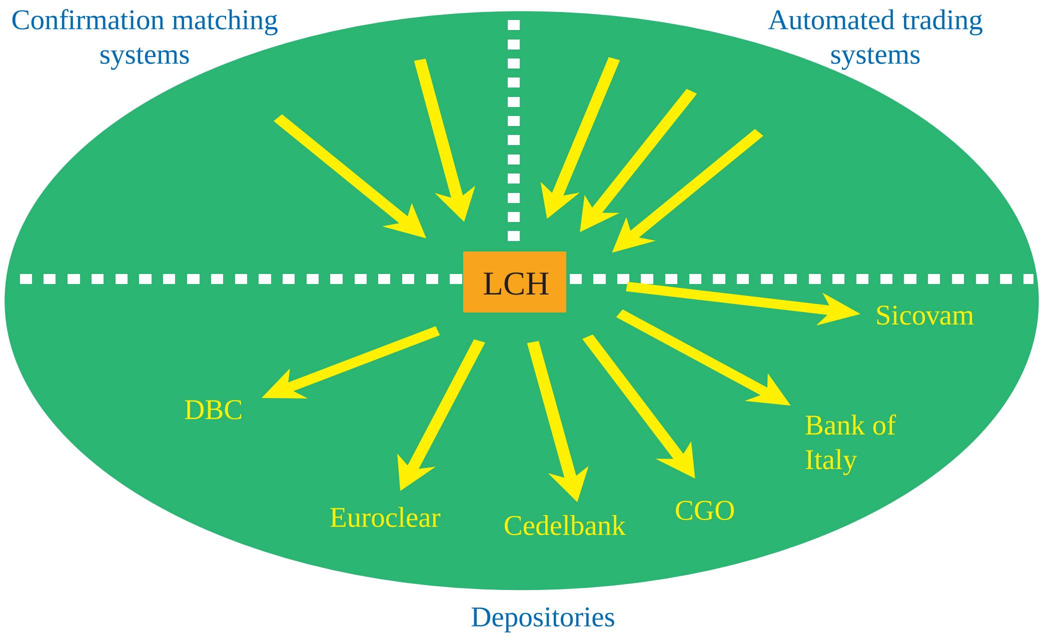
67 Further benefits identified by market participants include: introduction of standardised margining and mark-to-market procedures; potential cost reductions through common banking and cross-margining with similar products; operational savings through reduced movements of underlying securities; standardisation of counterparty credit risk and facilitation of anonymous trading. Repo clearing has been provided for a number of years in the US by the Government Securities Clearing Corporation (GSCC). US banks are among the main proponents of a similar service for the European repo market.

68 Three schemes are being developed, or have recently been launched, to offer clearing for the European repo market: RepoClear, GSCC/Euroclear and Clearnet. Many market participants expect that a single system will come to dominate over time (maximising the potential for multilateral netting). However, the ISMA repo sub-committee, which had launched a search for a suitable provider, decided not to back any particular scheme initially, but rather to work with all the possible providers and leave it to the market to decide its favoured system(s).

69 *RepoClear* is being developed by the London Clearing House (LCH) in response to market demand for a central counterparty which clears European repo: this will effectively replace bilateral netting of repos with multilateral netting. The steering committee consists of: BNP, Barclays Capital, Chase Manhattan, Credit Suisse First Boston, Deutsche Bank, Dresdner Bank, Goldman Sachs, Lehman Brothers, Merrill Lynch, Morgan Stanley Dean Witter, Nomura, Paribas, Salomon Smith Barney and Warburg Dillon Read. The main features of RepoClear are as follows.

- The service will initially clear bund repos (scheduled for introduction in July 1999), followed by BTPs, Dutch and Danish government bonds and UK gilts (currently scheduled for March 2000), and OATs, BTANs and BTFs (June 2000).
- Trades will initially be captured via TRAX, but automatic trading system (ATS) feeds from inter-dealer brokers and any other suitable source will be accepted at a later date.
- RepoClear will be open to brokers and market participants which meet LCH's membership requirements, and settlement will take place through the member's chosen CSD or ICSD (see Chart N).
- LCH plans to build on its existing risk management arrangements, which are based on margining and a default fund. (The default fund will be extended by £50 million to cover RepoClear.) Cash settlement offsets will be available across relevant LIFFE and repo contracts from launch, and LCH plans to introduce cross-margining with swaps and futures some time after June 2000. There is also the possibility at a later stage of clearing cash bonds.

REPOCLEAR CHART N



Source: LCH

70 *GSCC and Euroclear* recently announced a joint venture to provide a centralised netting system for euro-denominated repo and cash trades of euro-area government debt in early 2000. The venture is intended to build on Euroclear's experience in European bond settlement and GSCC's knowledge of repo clearing, netting and risk management in the US market. The initial intention is to offer a centralised netting system for euro-denominated sovereign debt, but this may in time be expanded to include other instruments as well as multiple currencies. The initial central counterparty will be a dormant JP Morgan company which will be sold to the participants, who will also contribute to a default fund.

71 *Clearnet*, which was launched in November 1998 by SBF, currently clears and guarantees repo in French government bonds (and, since April 1999, bunds) traded over-the-counter through Prominnofi (an electronic bond trading system that is 83% owned by SBF). Clearnet plans to include Belgian, Italian and Spanish government debt during this year and eventually all euro-area government bonds. Whilst Clearnet currently clears only deals executed through Prominnofi, it hopes to expand its service to transactions made through other inter-dealer brokers and for direct transactions carried out by members. Clearnet will also provide the clearing services for trades conducted on ERX.

Swapclear

72 In August 1999, LCH will introduce a central counterparty clearing service for the swap markets. *SwapClear* will provide a full clearing service for euro, sterling, US dollar and yen-denominated swaps and FRAs of up to 10 years' maturity. The service will be open to swap market participants which meet LCH's membership requirements, and will be similar to those to be applied for RepoClear. SwapClear will accept trades from any suitable sources, including S.W.I.F.T.'s Accord matching service. As with RepoClear, LCH plans to build on its existing risk management arrangements, which are based on initial and variation margin and a default fund (which will be extended by £100 million to cover SwapClear). Cash settlement offsets will

be available across relevant LIFFE, swap and repo contracts from launch, as will margin offsets across relevant LIFFE and swap contracts; margin offsets against repo contracts are intended to be introduced from 2000. LCH recently obtained the appropriate exemption from the US Commodities and Futures Trading Commission clarifying that SwapClear is exempt from most provisions of the Commodity Exchange Act, thereby removing a potential obstacle to participation by US banks.

C EXCHANGES

London Stock Exchange

73 The key components of the agreement in July 1998 between the LSE and Deutsche Börse are as follows.

- The creation of a unified European equity capital market with a single set of rules and simplified admission procedures.
- One trading system with: a focus initially on the top 300 or so European stocks, supported by widely-used indices; a single point of liquidity for European blue chips; electronic, multi-currency, continuous trading; and linkages to respective settlement systems.
- Unification to be pursued through a collaborative approach, allowing other like-minded exchanges to participate on an equitable basis.
- One organisation ultimately responsible for running the market.
- Open, low-cost, access to participants from anywhere in the world.
- Added-value services for the different customer groups, principally issuers, investors and investment banks.

74 Progress to date in implementing this strategy is as follows.

- *Phase 1: Common access*. This phase, effective from 4 January, makes it easier for market firms in the UK to gain access to the German market and vice versa by creating a single point of liquidity for the most liquid UK and German stocks.
- *Phase 2: Market convergence*. This phase is intended to contribute towards harmonising the market. The LSE has consulted market firms in London on a number of proposals, including a change to market hours, the introduction of unlimited maximum order sizes and an extension to the period of validity for orders. Changes in these areas will be implemented later this year.

75 On 4 May 1999, the heads of eight leading European stock exchanges – Amsterdam, Brussels, Frankfurt, London, Madrid, Milan, Paris and Switzerland – signed a memorandum of understanding. The memorandum is formal confirmation of the commitment by all the exchanges to continue to work jointly towards harmonising the markets for their leading securities and establishing a pan-European equity market. The memorandum confirms the long-term objectives of the European alliance to create one single electronic trading platform for blue-chip stocks, with common rules and regulations. Key alliance issues will be discussed by all eight exchanges.

LIFFE Connect

76 LIFFE Connect is LIFFE's new benchmark electronic trading platform, which is designed to be capable of supporting automated trading of all LIFFE's derivatives products. Following the successful launch of Connect for individual equity options in November 1998, LIFFE transferred its five and ten year gilt futures contracts on 12 April 1999. This was followed, on 10 May, by a series of contract migrations, starting with FTSE 100, FTSE 250 and FTSE Eurotop 100 contracts, bund, BTP, JGB, Euroyen and LIFFE*EFB* futures contracts. LIFFE's new pan-European index contracts – FTSE Eurobloc 100 Index, FTSE Eurotop 300 Index, FTSE Eurotop 300 ex UK Index, MSCI Pan-Euro Index and MSCI Euro Index – were launched on Connect on 25 May.

77 The final major stage in Connect will be the transferral of all its short-term interest rate (STIR) contracts (which are equivalent to around 70% of total LIFFE volumes). LIFFE's 'Euroswiss' futures contracts will begin trading on Connect on 23 August, followed by LIFFE's short sterling contract on 6 September and LIFFE's EURIBOR and euro LIBOR contracts on 20 September 1999. All contracts will be trading in parallel with the floor for a period to be determined by the market.

78 Distribution of LIFFE's products through Connect can occur in three ways.

- First, LIFFE's technology partner, Equant, supports the establishment of local 'hubs' in the key financial centres to which it will connect domestic participants wishing to trade directly or route orders through to LIFFE. Hubs are to be located in Paris, Frankfurt, New York and Chicago and will be extended to other countries in due course.
- Second, some firms use their own communication networks to provide affiliates with order routing or direct access to LIFFE.
- Third, Value-Added Network providers (eg quote vendors and global network providers) will use their own networks to link their customers to LIFFE, thus expanding the universe of potential users to a large number of globally located traders.

D BUSINESS DAYS IN 1999 AND 2000

79 Table 8 provides an updated overview of business days in the EU in 1999. The main changes since the December *Practical Issues* concern 31 December.

31 December 1999 and 3 January 2000

80 The ECB decided in March that, in the light of the year 2000 changeover, the TARGET system will be closed on Friday, 31 December. This includes both the interlinking mechanism and all domestic euro RTGS systems. Subsequently, on 19 April, the EU Council of Ministers announced: 'Member States should ensure by appropriate means that the performance of any contractual obligations of credit institutions or other agents in the financial markets at least for the transactions in euro shall neither, as on a public holiday, become due nor enforceable on 31 December 1999.'. Virtually all EU payment and securities settlement systems, and exchanges, will thus be closed on 31 December. The only exceptions are Greece, where the exchange will be open, and Denmark, where the domestic currency RTGS and settlement system will open in the morning.

TABLE 8: BUSINESS DAYS IN 1999

	Payment systems		Security settlement systems	Exchanges[3]		National public holidays in 1999[3]
	euro RTGS	Other[1, 2]	(CSDs and ISCDs)	Bonds and equities	Options and futures	
EU-wide	O (TARGET)	O[2] (EBA)	O (ICSDs)			1 Jan
Austria	O	-	O	Closed on all national public holidays and on 2 April, 24 and 31 Dec	Closed on all national public holidays and on 2 April, 24 and 31 Dec	1 and 6 Jan, 5 April, 13 and 24 May, 3 June, 26 Oct, 1 Nov, 8 Dec
Belgium	O	-	O	Closed on 1 Jan, 2 and 5 April, 13 and 24 May, 24 (pm) and 31 Dec	Closed on 1 Jan, 2 and 5 April, 13 and 24 May, 24 (pm) and 31 Dec	1 Jan, 5 April, 13 and 24 May, 21 July, 1 and 11 Nov
Denmark	O	C[1]	C (both euro and krona)	Closed on all national public holidays and on 31 Dec		1 Jan, 1, 2, 5 and 30 April, 13 and 24 May, 24 and 31 Dec (pm)
Finland	O	C[2]	O (APK/RM) C (APK/OM)	Closed on all national public holidays and also partly on 1 April and 31 Dec	Closed on all national public holidays and also partly on 1 April and 31 Dec.	1 and 6 Jan, 2 and 5 April, 13 May, 25 June, 6 and 24 Dec
France	O	O[2]	O	Closed on 1 Jan, 2 and 5 April, 24 May, 14 July, 1 Nov and 31 Dec	MATIF open on all TARGET days; MONEP as per Stock Exchange	1 Jan, 5 April, 13 and 24 May, 14 July, 1 and 11 Nov
Germany	O	O[2]	O	Closed on all national public holidays and on 24 and 31 Dec	Closed on all national public holidays and on 24 and 31 Dec	1 Jan, 2 and 5 April, 13 and 24 May
Greece	O	O[1]	O (both euro and drachma)	Closed on all national public holidays	-	1 and 6 Jan, 22 Feb, 25 March, 9 and 12 April, 31 May, 28 Oct
Ireland	O	-	O	Closed on all national public holidays and on 29 Dec	Closed on 1 Jan, 2 and 5 April, 3 and 31 May, 30 Aug, 27, 28 and 31 Dec	1 Jan, 17 March, 2 and 5 April, 3 May, 7 June, 2 Aug, 25 Oct, 27, 28 and 31 Dec
Italy	O	-	O	Closed on 1 and 6 Jan, 2 and 5 April, 1 Nov, 24 and 31 Dec (MTS available on all TARGET operating days)	Closed on 1 and 6 Jan, 2 and 5 April, 31 Dec	1 and 6 Jan, 5 April, 1 Nov, 8 Dec
Luxembourg	O	-	O	Closed on all national public holidays and on 2 April, 24 and 31 Dec	-	1 Jan, 5 April, 13 and 24 May, 23 June, 1 Nov
Netherlands	O	-	O	Closed on all national public holidays and on 31 Dec	Closed on all national public holidays and on 31 Dec	1 Jan, 2, 5 and 30 April, 13 and 24 May
Portugal	O	-	O	Closed on all national public holidays (except 1 April), 5 April and 31 Dec	Closed on all national public holidays and on 5 April and 31 Dec	1 Jan, 16 Feb, 1(pm) and 2 April, 3 and 10 June, 5 Oct, 1 Nov, 1, 8 and 24 Dec
Spain	O	O[2]	O (for regional CSDs, additional regional holidays apply)	Closed on all national public holidays and on 6 Jan, 1 and 5 April, 24 and 31 Dec	Equities: as per stock exchange Fixed income: Closed on national public holidays and on 6 Jan, 19 March, 1 April 16 Aug, 9 Nov and 31 Dec	1 Jan, 2 April, 12 Oct, 1 Nov, 6 and 8 Dec
Sweden	O	C[1]	O (except krona)	Closed on all national public holidays and also partly on 5 Jan, 1 and 30 April, 12 May and 5 Nov	Closed on all national public holidays and also partly on 5 Jan, 1 and 30 April, 12 May and 5 Nov	1 and 6 Jan, 2 and 5 April, 13 and 24 May, 25 June, 24 and 31 Dec
United Kingdom	O	C[1]	O (euro) C (sterling)	Closed on all national public holidays and on 24 (pm) and 30 Dec (pm)	Closed on 1 Jan, 2 and 5 April, 24 (pm), 27, 28 and 31 Dec; also not available for some contracts on 3 and 31 May, 30 Aug and 30 Dec (pm)	1 Jan, 2 and 5 April, 3 and 31 May, 30 Aug, 27, 28 and 31 Dec

O = open on all TARGET operating days in 1999: all weekdays except 1 January and 31 December (25 December falls on a weekend).
C = closed on all national public holidays.

Notes

1 RTGS system in national currency.
2 Large-value netting system for euro transactions.
3 In 1999, 4 and 25 April, 1, 2, 8 and 23 May, 5 and 26 June, 15 August, 3 October, 6 November, 25 and 26 December are public holidays in one or more countries, but fall on a weekend and are thus not included in these columns.

81 By contrast, it is currently understood that Monday, 3 January 2000 will be a normal business day in most EU countries, assuming that TARGET (including domestic euro RTGS systems) will be open. The only exceptions are the UK and Ireland, where 3 January is a public holiday (since 1 January falls on a weekend). The exchanges in these two countries will remain closed, but the euro payment and securities settlement systems will be open in line with TARGET. In the UK, CHAPS sterling will be closed, and CREST, CGO and CMO will not be open for sterling settlement.

Beyond 3 January 2000

82 No decisions have yet been taken about business days further ahead. In March, the EBF proposed to the ECB an increase in the number of days on which TARGET is closed. In addition to New Year's Day and Christmas Day, the EBF proposed to include Good Friday and Easter Monday (21 and 24 April respectively), May Day (1 May) and Boxing Day (26 December). The ECB is considering the question of TARGET days beyond 1999, but decisions are unlikely until August. Market participants clearly need to know the right value dates for their transactions (eg for new bonds, the first interest payments may take place one year after issuance). For transactions executed in 1999 for settlement on Good Friday and Easter Monday in 2000, an ECB decision to close TARGET on those days in 2000 would already imply that the financial markets have to apply special arrangements.

E LEGAL AND TAX

Treaty of Amsterdam

83 The Treaty of Amsterdam came into force on 1 May. The provisions on economic and monetary policy in the EC Treaty remain unchanged (with a few minor exceptions), but they have been renumbered along with other provisions of the EU and EC Treaties. As a result, the economic and monetary provisions are now to be found in Articles 98 to 124 (formerly Articles 102a to 109m) of the EC Treaty. References within Articles to renumbered Treaty Articles have been adapted accordingly.

Standard legal agreements in the London market

84 *Forward rate agreements*. The BBA has published EMU amendment provisions to take account of the introduction of the euro on forward rate agreements (FRAs) entered into on its FRABBA terms. The EMU amendment provisions have two purposes: first, to provide parties to FRAs entered into before 1 January 1999, which relate to a first-wave participating currency, with standard language by which they may amend the terms of those FRAs on a bilateral basis; and secondly, to incorporate amendment language into the FRABBA terms themselves, such that parties entering into FRAs after 1 January 1999, which relate to a first-wave participating currency, will be deemed to be entering into those FRAs on the basis of the FRABBA terms as amended. The relevant provisions in both cases cover such matters as confirmation of continuity of contract and applicable successor price sources, and amended definitions for settlement dates and maturity dates. The EMU amendment provisions are available on the BBA website.

85 *EBF Master Agreement*. The EBF has continued to work on the drafting of a standard form (the EBF Master Agreement) for the creation of a harmonised platform for documenting

repurchase transactions, securities loans and (possibly at a later stage) other financial transactions, such as foreign exchange, swaps and options. The EBF Master Agreement is designed to replace existing master agreements used predominantly in a domestic context in various continental European countries. Following consultation, a final text of the EBF Master Agreement is expected to be available shortly. It is unclear at this stage to what extent the document will be used in the London market, given that widespread use is already made of such master agreements as the PSA/ISMA Global Master Repurchase Agreement and the 1992 ISDA Master Agreement.

86 *Syndicated loan agreements*. In the loans market, a group of market participants proposed that TARGET days should be used for setting euro interest rates in the London market but that other functions under a facility (eg payments, making drawdowns, delivery of notices etc) could be based on a 'traditional' calendar respecting London holidays, on TARGET days, or on some other combination of days, as the parties wished. The market appears to be following these proposals.

87 *ECU legacy transactions*. The calendar of non-settlement days for the ECU, which had been published on Reuters, has been discontinued. Most market participants believe it is best practice to use TARGET business days for ECU legacy contracts, rather than the ECU calendar which was published in 1991.

Company share capital

88 The DTI is working on a further consultation paper on its proposals for share capital redenomination. The Second Company Law Directive still poses a problem to the introduction of 'true' no par value shares for public companies. In its consultation paper, *Modern Company Law: the Strategic Framework*, issued in February, the DTI's Company Law Review Steering Group revisited the whole subject of capital maintenance and invited comments on possible changes. One of the questions on which it has asked for views is whether, if the Second Directive continues to require that shares of public companies have a nominal or 'accountable par' value, it is appropriate to take advantage of the limited flexibility provided by the 'accountable par' provisions in the Directive.

Tax

89 The regulations in respect of the changes discussed in previous *Practical Issues* came into force on 1 January 1999 *(European Single Currency (Taxes) Regulations 1998/3177)*.

90 In January, the Inland Revenue issued a new leaflet, *The Euro*, which indicated that taxpayers who decided to use the euro in their businesses would be able to pay their tax and national insurance contributions in euro with immediate effect. In addition, on 23 December 1998, Customs and Excise issued a press release on the single currency. It, too, indicated that taxes and duties may be paid in euro.

91 The 1999 Finance Bill contains a clause which empowers the Inland Revenue and Customs & Excise to incur expenditure to ensure that, if the UK were to join EMU, they would be able to exercise their functions to tax and collect duties. This is essentially an administrative provision.

CHAPTER 5: USE OF THE EURO IN THE UK BEYOND THE CITY

1 As part of the work underlying the National Changeover Plan, HM Treasury is monitoring use of the euro in the UK whilst it remains 'out', with assistance from the Bank. In addition to the extent of euro use in UK financial markets, the current and future use of the euro in the UK corporate sector is of interest to the Bank, since this will affect the euro facilities and services expected from banks and other financial institutions in the UK.

A MONITORING BY BANK AGENTS

2 Since last autumn, the Bank's 12 regional Agents have been making use of their extensive contacts with firms to ask about current and expected future use of the euro, on the basis of a simple questionnaire. The results to date from these preliminary enquiries, covering 300 companies over the period October 1998 to February 1999, are summarised here.

- As a benchmark, respondents reported that some 10% of both their purchases (from suppliers) and sales (to customers) were invoiced in the participating currencies which joined the euro on 1 January. This was rather less than the 15% of purchases and sales they made in the euro area.
- Respondents expected that between 15% and 20% of their suppliers would switch at some point to invoicing them directly in euro, though less than 5% of their UK suppliers would do so. Respondents expected to switch some 15% of invoices for their customers to euro. The majority of the switch to invoicing in euro for both customers and suppliers was expected to occur before the end of 1999.
- However, many respondents had no clear view yet on this set of questions. And in the case of those that did, the results may be biased upwards, although it is not clear by how much, by two particular factors. Manufacturing firms formed a greater part of the Agents' sample than their overall contribution to the economy, and these firms seem more likely to make greater use of the euro. Moreover, the results were partly based on expectations, and there seems to be less use of the euro in practice so far than had been anticipated.
- More than 60% of respondents expected the percentages of their sales and purchases invoiced in euro to increase over time.
- More than half of those approached had a bank account in a participating currency. But they did not expect to make much use of the euro to raise new funds, or for their internal or statutory accounts, or for tax payments.

3 These findings by Bank Agents are broadly consistent with a survey last autumn conducted by the West Midlands Euro Preparations Forum, one of the Government's regional fora.

4 Last autumn it was useful to learn how much of the existing use of the participating national currencies would switch to direct use of the euro from 1 January. From now on, as this switch to direct use of the euro builds up during the transition period, it will be of increasing interest to learn how far the euro may displace other currencies, including sterling, in UK companies'

pricing and invoicing. This may differ between those UK companies which have pan-European operations and those which do not.

B PRIVATE SECTOR SURVEYS

5 A number of private sector surveys on use of the euro by UK firms have been published. Like the Bank's approach, these surveys aim to discover the extent to which companies of different sizes and within various sectors are adopting the euro in their commercial activities, and to establish the underlying motivation. The surveys target different groups and do not seek precisely the same information. But a few general conclusions can be drawn.

- UK companies' receipts and issuance of invoices previously denominated in participating currencies have begun to switch to euro, but much the largest proportion of these is still in the old national currencies.
- Because only a small part – perhaps one-tenth – of total invoicing was in participating currencies anyway, rather than in sterling or other non-euro currencies, invoicing specifically in euro by UK companies to date represents a very small proportion of the total.
- For domestic UK transactions alone, this proportion is negligible.

KPMG Consulting

6 At the end of May, KPMG published a survey of 394 businesses (excluding the primary sector, banking and finance). Of the sample, 154 firms had a turnover of £1-5 million, 160 of £5-50 million, and 80 of over £50 million. The survey assessed the extent to which the euro was used in the UK over the first quarter as a whole, compared with a baseline survey monitoring use of the euro in January. Use was measured by the value of transactions (ie income and expenditure). A distinction was made between domestic UK transactions, transactions between the UK and the euro area, and between the UK and the rest of the world. The main findings are as follows.

- The euro represented about 1% of the total value of all transactions (ie including domestic, export and import) undertaken by UK businesses in the first quarter.
- Use of the euro for domestic UK transactions in the first quarter remained negligible, as in January.
- The euro accounted for about 5% of all transactions between the UK and the euro area in the first quarter. This represented no change from January. It compares with 15% of transactions conducted in the former national currencies.
- As the euro begins to displace the old national currencies, its share of total euro-denominated and national-currency denominated transactions in the UK has increased from an estimated 16% in January to 24% for the first quarter as a whole.
- The number of UK firms using the euro for at least one transaction rose from 9% in January to 12% over the first quarter. The share of large companies using the euro for at least one transaction increased from 18% in January to 33% in the first quarter, compared with a rise from 13% to 22% for medium-sized companies and 7% to 8% for small companies.

- In January, 24% of companies had either already used the euro or expected to do so by the end of the first quarter. But according to the latest survey only 12% of firms actually did so, indicating that firms had overestimated the likely use of the euro.

7 The results of the survey for the first quarter, and a comparison with the baseline in January, are summarised in Table 9. KPMG attributes the fluctuations in the use of different currencies partly to the size of the sample and the instability of this type of data. A clearer trend is expected to emerge as more data become available.

TABLE 9: CURRENCY DENOMINATION OF UK BUSINESS TRANSACTIONS

Currency	All UK transactions		UK to euro area		UK to rest of world		UK to UK	
%	January	Q1	January	Q1	January	Q1	January	Q1
Sterling	82	85	57	43	51	30	91	97
'In' currencies	5	2	23	15	3	2	2	1
Euro	1	1	5	5	2	0	0	0
US dollars	6	6	4	15	37	42	2	1
Other currencies	6	6	11	22	7	25	5	1
Total	100	100	100	100	100	100	100	100

Source: KPMG

Lloyds TSB

8 In March, Lloyds TSB reported survey results on the number of suppliers and buyers using the euro, rather than the proportion of transactions (such as pricing and invoicing) expected to be conducted in the euro. The survey questions were aimed specifically at identifying the use of the euro itself rather than the participating national currencies, though it is not clear that respondents have consistently made this distinction. The sample consisted of some 300 small businesses (with turnover less than £1 million) and some 200 medium-sized businesses (with turnover up to £100 million).

9 In the case of small businesses:

- 20% of UK companies surveyed were importers or exporters;
- 9% of these importers or exporters had foreign suppliers which they paid in euro and 12% had foreign buyers which paid them in euro; and
- 6% of all small companies in the survey had business with multinational companies based in the UK which were requesting them to use euro.

10 In the case of medium-sized businesses:

- 61% of UK companies surveyed were importers or exporters;
- 19% of these importers or exporters had foreign suppliers which they paid in euro and 12% had foreign buyers which paid them in euro; and

- 4% of all medium-sized companies in the survey had business with multinational companies based in the UK which were requesting them to use euro.

Lloyds TSB intends to conduct further research broadly quarterly during 1999.

Allied Irish Bank

11 In March, Allied Irish Bank (UK) reported on a poll which they had commissioned of 1,000 small businesses, to identify the extent to which they were already using the euro. The focus was again on the number of companies using the euro rather than the proportion of transactions conducted in euro.

12 Overall, only 1% of the companies questioned had either paid suppliers in euro or received payments in euro. And only 10% of companies which had not made use of the euro said it was likely that they would make use of the euro in 1999. These data do not include payments made or received in the participating currencies.

Dun and Bradstreet

13 In May, Dun and Bradstreet published the results of a survey, commissioned in March, of over 2,000 companies in the 15 EU countries, plus Norway and Switzerland. Not surprisingly given the UK 'out' position, Dun and Bradstreet found that UK firms were amongst the least keen to prepare for, or use, the euro. The main results were:

- 8% of UK firms were quoting prices in euro; nearly 50% had no plans to do so;
- 5% of companies had invoiced a customer in euro; 12% expected to issue euro invoices by end-1999;
- 83% had not received any euro invoices this year; and
- 74% said that they would not file their accounts in euro.

C EURO RETAIL PAYMENT VOLUMES

14 Within the euro area, the bulk of retail payments remains in the previous national currencies. It is not surprising therefore that, within the UK, euro-denominated retail payment volumes are to date very low indeed. APACS is monitoring, and will shortly publish, data on the number of euro accounts at UK banks and the volume of euro retail payment traffic. Just under 3,000 euro-denominated cheques, worth some €22 million, are being processed on average per month, almost entirely for corporates. Typically, even less use is being made by corporates of automated means for euro retail payments.

CHAPTER 6: PREPARING FOR POSSIBLE UK ENTRY

A THE OUTLINE NATIONAL CHANGEOVER PLAN

1 On 23 February, the Prime Minister launched an Outline National Changeover Plan for the UK. This sets out the key stages which would be involved in any decision to enter EMU, and gives a broad indication of the time needed between them. The background to the Outline Plan is the Government's 'prepare and decide' policy, which is designed to allow the Government the practical option of joining early in the lifetime of the next Parliament, should it decide this is warranted by its five economic tests. The Plan already reflects considerable input from a broad cross-section of institutions and interest groups, but more detailed work will be undertaken before a further Plan is published after an interval of about a year.

2 The Outline Plan identifies the key stages in the changeover as:

- a Government decision to join the single currency;
- a Referendum;
- joining (when sterling would be irrevocably fixed against the euro);
- the introduction of euro notes and coin; and
- the end of the changeover when sterling would be withdrawn.

3 The Plan identifies broad, though not yet exact, timings between the stages; and estimates that the entire changeover could be achieved in 40 months or less. This is considerably faster than in the first-wave countries because the euro already exists, business and the public sector is already adapting to the euro, and the UK can learn from the experience of its EU partners.

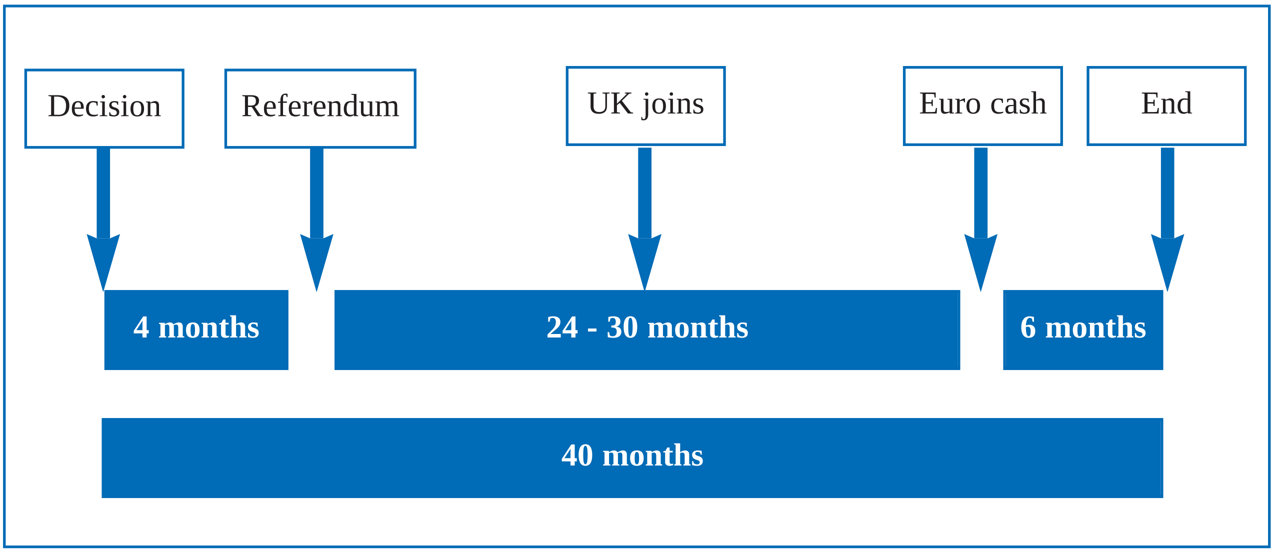
4 Between the decision and a Referendum would take some four months, depending on how quickly the practical arrangements for a Referendum could be put in place. Before the UK could join, the European Commission and the ECB would need to report to the Council on whether the UK economy had achieved a high degree of sustainable convergence with the euro area, as the basis for the Council's decision on whether or not the UK met the necessary conditions to join.

5 The Plan does not give a timescale for the period from a positive Referendum result to joining. This would be influenced by a number of factors, including the state of preparedness of key sectors of the economy which may need to cope with high initial demand for euro services – principally the banks and the public sector revenue departments – on which further work is required, and in hand.

6 From a Referendum to the introduction of UK euro notes and coin, the Plan estimates, would take some 24 to 30 months, provided that detailed planning is taken forward now.

7 The final period, from the introduction of euro notes and coin to the withdrawal of sterling cash, has been set initially at six months, similar to the first wave, although most of these Member States are trying to shorten this dual circulation period in practice to around two or three months.

8 The overall timetable is summarised below.



9 The Plan outlines the challenges and opportunities for business in general and looks at key sectors in more detail. It includes sections on the retail banks and the City, as well as retailers. The Plan also identifies a key role during the changeover for the public sector. The larger departments – the Department of Social Security, Inland Revenue and Customs & Excise – would be particularly important in meeting the critical path timetable. The public sector will take a lead in planning so that the UK could make a quick and smooth changeover.

10 The Bank contributed across its areas of expertise to the work underlying the Plan. In particular, a working party of City practitioners was established last summer to identify the preparations which would be required to transform the sterling wholesale financial markets into euro, and the length of time these would take. The working party's report is published here.

11 The Outline National Changeover Plan identifies a series of steps to be taken to inform next year's more detailed version. Those directly affecting the financial sector are as follows.

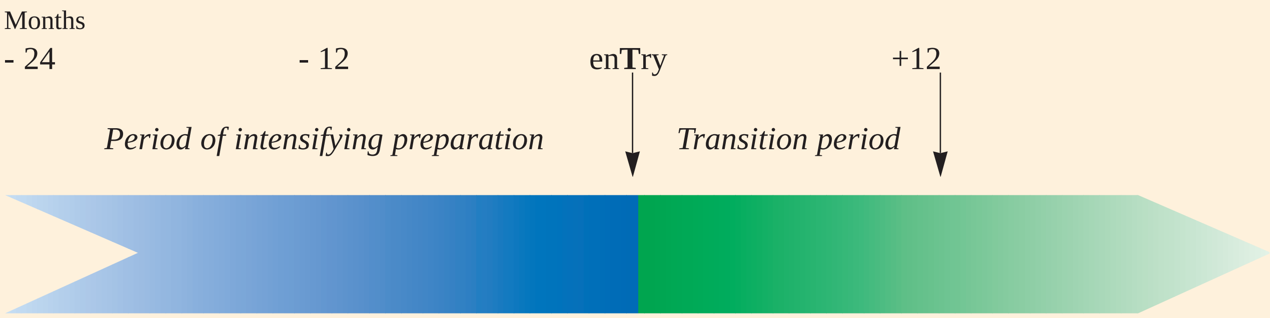
- The UK will continue to follow the experiences of the participating Member States very closely.
- HM Treasury, in co-operation with industry, will set up systems to monitor and understand the growth of euro usage.
- The Bank of England will continue to take the lead in further planning in the City.
- The BBA, APACS, Bank of England and HM Treasury will continue to improve their understanding of how the retail banks might approach the conversion of core systems.
- APACS, the Bank of England and the Royal Mint will continue to improve their understanding of the likely demand for euro notes and coin, and the strategies for distributing euro cash and withdrawing sterling.
- HM Treasury will set out progress on this further work in the Euro Preparation Unit's six-monthly report and produce a further plan after about a year.

REPORT OF A WORKING PARTY ON THE CHANGEOVER FROM STERLING TO EURO IN THE WHOLESALE MARKETS

SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

Overview

- A period of at least 12 months would be needed before UK entry to prepare the sterling wholesale markets alone to become euro, even with prior planning and preparation; with a post-entry transition period of 12 months or more before the withdrawal of sterling.



Lead times

- In order to convert the wholesale financial markets from sterling to euro, many system changes would be needed, both in individual financial institutions and to the infrastructure. The Group judged that almost every system, taken in isolation, could be adapted within a 12-month period ahead of the entry date, so long as detailed planning, and in some cases consultation and development work, had taken place beforehand.
- But because of the number of systems requiring development, each competing for the same scarce resources, it would be prudent to allow more than 12 months to complete all the preparations.
- This lead time includes the preparations that would be necessary for UK banks and building societies, and the Bank of England, to participate in Eurosystem monetary policy operations. The caveat about competition for scarce resources applies to all these institutions; and detailed consultation, planning, and some development work, would need to have taken place prior to the 12-month period. The Bank is considering any internal preparations it may need to make ahead of this period.
- UK banks' ability to offer wholesale euro products to retail customers, to make payments on securities in euro and to settle new wholesale market transactions in euro, would depend on their capacity to handle euro payments to and from their retail customers. So lead times in the wholesale markets are partly dependent on those for the provision of euro retail financial services. This dependence requires further elaboration and analysis.
- Early announcement of all key policy decisions would greatly assist preparations and planning. It would also help if the official conversion rate from sterling to euro could be agreed and announced some time before entry.

Conversion

- The entry date should be part of a three-day weekend. Ideally, the preceding Friday should be a trading holiday in the euro and sterling markets; otherwise, it should be a day with as many markets as possible closed and others normally quiet.
- After the conversion weekend, new wholesale financial market transactions would be expected to be in euro, and based on euro market conventions; outstanding sterling transactions in the money, foreign exchange and OTC derivative markets would not need to be converted and should remain based on sterling market conventions.
- The changeover should include a transition period after entry, since a single 'big bang' is unlikely to be practicable. A transition period of around 12 months would allow the bulk of outstanding sterling transactions to run off.
- All share prices quoted in sterling on the London Stock Exchange should convert to euro at the time of entry. It is expected that the share price quotations of a significant number of UK listed companies would switch from sterling to euro ahead of UK entry, once it became clear that the UK was going to join.

Redenomination

- Gilt redenomination should be simultaneous for all gilts. Calculations should be made at the level of investor holding and rounded to the nearest euro cent. Gilt redenomination would not necessarily have to take place during the entry weekend: the pros and cons of delaying for a few weeks after entry should be considered.
- Sterling money market securities should not be redenominated.
- The Government should consider legislation to enable non-government issuers to redenominate sterling bonds without investor consent providing they used a defined approach, probably the same as for gilts. Assuming that the UK changeover would have a similar legal basis to that for first-wave countries, explicit redenomination of securities would not be necessary at any point, even at the end of the transition period. Issuers would need to consider carefully whether any benefits might justify the costs entailed. There could be advantage in co-ordinating any corporate redenominations, for example in a series of 'mini bangs' on pre-designated weekends.
- Legislation could help to simplify the process for companies wishing to redenominate their share capital. A preferred solution, to avoid the need to renominalise shares after the conversion to euro, would be the introduction of 'true' no par value shares.

Overarching issues

- UK entry should be covered by an EU Regulation along the lines of the Article 123(4) Regulation (previously the 109l(4) Regulation).
- Specific UK legislation would be needed in a number of areas, including those specified above.
- As with the introduction of the euro on 1 January, UK entry should be tax-neutral; and would be unlikely to raise significant new accounting issues.

Areas for further work

- Further work is needed on how best to develop CHAPS to provide a large volume euro-only RTGS service to replace the current parallel sterling and euro services, and the time required to implement the preferred solution. Payment banks would also have to ensure compatibility between their own internal systems and the chosen payment infrastructure.
- CREST and CGO are currently proposing different approaches to the treatment of sterling transactions outstanding beyond entry: CREST plans to allow them to settle in sterling, while CGO plans to convert them to euro. Following the transfer of ownership of CGO to CREST, these different approaches should be reviewed.
- We intend to consider further issues relating to fund management, including those affecting both wholesale and retail sectors, which may not yet have been fully identified.
- A review of wholesale market regulation may be advisable to confirm that only minor modification to accommodate UK entry to the euro would be needed.
- These conclusions and recommendations need to be kept under review in the light of the changeover experience within the euro area, and of developments in using the euro in the UK whilst 'out'.

INTRODUCTION

As part of the work towards the Outline National Changeover Plan, published by HM Government on 23 February, the Bank was asked by HM Treasury to identify the changes which would be required to convert the sterling wholesale financial markets to euro, to consider how the changes might best be implemented and to set out indicative timescales for the necessary work. The Bank established a working group to consider these questions, and invited representation from across the City, to ensure as comprehensive coverage as possible. However, a number of UK wholesale markets would be relatively unaffected by UK entry because they are not primarily sterling-based. These include the bullion market, the International Petroleum Exchange and commodities markets, including the London Metal Exchange.

The Group met last summer and autumn, and produced an early draft report which has since been updated, for publication here, through consultation with market associations. The report nevertheless remains preliminary, reflecting current imperfect knowledge. It will be kept under review, including to reflect any lessons from first-wave countries. The Bank is identified in the National Changeover Plan as taking the lead in further planning in the City and requested to report progress in time for next year's more detailed Plan.

The report is divided into three parts covering lead times, the changeover and overarching issues respectively. The Bank would welcome comments, both on the report itself and on issues or areas not covered, addressed to John Townend, Director for Europe (fax: 0171-601 5016; e-mail: john.townend@bankofengland.co.uk).

Definitions

The following terms are used in this report with these meanings:

- *day T:* the point at which the euro would replace sterling as the UK domestic currency;
- *changeover:* the entire process from day T to the withdrawal of sterling notes and coin;
- *transition period:* a period during which sterling would remain a denomination of the euro at the fixed conversion rate and payments could be made in sterling or euro units according to a 'no compulsion, no prohibition' principle;
- *big bang:* a changeover with no transition period, meaning outstanding sterling transactions would be converted immediately and simultaneously to euro;
- *legacy:* a sterling transaction that remained outstanding after day T and had not been converted, or a sterling security that had not been redenominated;
- *conversion:* a change to the currency of a cash transaction at the fixed euro:sterling conversion rate, using standard rounding to the nearest euro cent;
- *redenomination:* a change to the currency in which the face value of a security would be denominated; and
- *renominalisation:* a change to the minimum amount in which a security could be held.

Timing questions

Timing of day T within the year. A majority of the Group thought it would be helpful if day T avoided quarter-ends and year-ends so as not to clash with the end of standard accounting periods; but some members thought this mattered less given the successful experience with the conversion weekend at the start of 1999 and a minority even saw positive merit in making T a quarter-end. Ideally, day T should be within a period of three consecutive non-business days for sterling and the euro, in order to maximise the time available for conversion work. Ordinarily, the only non-business weekdays for the euro are the limited number of TARGET holidays. It is possible therefore that a three-day weekend would require an extraordinary holiday for the euro on a Friday or Monday. Other Member States might agree to such an extraordinary holiday across the entire euro area, but this must be unlikely. On the assumption that it would be a euro holiday only in the UK, it would be necessary to consider the practicalities and potential benefits. But clearly, if there were practical difficulties with, or the potential benefits were insufficient to warrant, such a course, the conversion work would have to be carried out over just a two-day weekend. The Group would favour a weekend following a quiet trading day (eg Easter or 1 May), so that the volume of open transactions would be minimised.

Clashes with other major projects. The Group's preference was that the conversion weekend should be kept apart from other major projects involving systems work. These would include any changes to securities settlement systems such as the merger of CGO and CREST, the introduction of CLS (Continuous Linked Settlement) Bank, any changes to the CHAPS platform and the end of the transition period for the first-wave countries, when residual national currency-denominated transactions will be converted to euro.

Advance notice of likely conversion rate. If the exchange rate at which sterling would join could be assumed with confidence, some new transactions might be conducted in euro rather than sterling ahead of day T. This would reduce the volume of outstanding sterling transactions at day T. More importantly, advance knowledge of the likely conversion rate would enable preparations to be made ahead of the conversion weekend. It would therefore be helpful if the UK Government could agree and announce the intended conversion rate in advance. However, even a small remaining exchange rate risk would be enough to give market participants an incentive to match sterling assets and liabilities. So the likely use of the euro for domestic UK transactions prior to day T should not be exaggerated.

Relationships with other economic sectors

Retail financial services. In some areas, it is impossible to consider the wholesale markets in isolation from the retail markets. The large UK banks are active in both markets, and wholesale products (such as foreign exchange transactions) are sold to retail customers, such as small businesses, through their branch networks. The banks' wholesale market activities therefore rely on retail market systems (see Part 1). Similarly, in excess of two-thirds of all equity holdings and bargains (by number) involve retail customers, and retail customers are major holders of investment products such as unit trusts. The Group's preferred approach would be for new wholesale market transactions to be in euro, and for payments on securities to be made in euro, from day T. This would require banks to make and receive euro payments on behalf of their retail customers and convert them to and from sterling where accounts remain sterling-denominated. This report assumes that UK banks would be able to provide these services from day T. But the dependence in wholesale markets on retail preparations requires further analysis.

Legislation. Part 3 suggests a number of areas in which the Group identified a possible need for new legislation or changes to existing legislation. However, the Group neither made any firm proposals for new legislation, nor reviewed the content of any necessary or desirable amendments to existing legislation.

PART 1 LEAD TIMES

The Group assessed the lead times for each of the steps identified as part of the potential changeover from sterling to euro in the wholesale markets. In most cases, 12 months would be the minimum time needed from the start of investment ('the investment trigger') to day T. The Group therefore believed a period of at least 12 months before day T would be needed to prepare, although a longer period would be helpful. This time would be used to implement and trial system changes and should include a co-ordinated, possibly market-wide, testing of systems.

In some key areas, planning and development would have to take place in advance of a 12-month lead time. For example, the Bank of England would need to plan, prepare and build systems for Eurosystem monetary policy operations. Another vital area is payment systems. It is not yet decided how the CHAPS system would best be adapted to handle the euro as the UK domestic currency. Some of the possibilities are set out later. The lead times needed to prepare the CHAPS system are closely tied to those needed to prepare individual banks' retail as well as wholesale systems. Up to two years or more could be required, so planning and preparations would need to begin among the relatively small number of institutions involved well in advance of a Government decision to join. Given their other commercial priorities, the Group considered that the banks might be reluctant to trigger this investment until some of the following conditions were met:

- the Government had set a target date for entry;
- the public sector had committed significant money to preparations;
- the pattern of euro use in the UK economy suggested UK entry would be inevitable; and
- sufficient support for EMU entry in the country was clear.

The timetable assumes there would be a transition period of around 12 months following day T that would give market participants the option of allowing maturing sterling transactions to run off without conversion. Lead times would be at least six months longer if the wholesale markets had to prepare for a big bang in which all outstanding sterling instruments and transactions would be converted on day T.

While it might be possible to shorten lead times for some individual projects looked at in isolation, institutions often require the same IT and project teams to carry out each piece of work. Therefore the aggregate lead time for the whole changeover would be likely to be less flexible.

The Group did not estimate lead times for new legislation and the legislative changes needed to facilitate the changeover in the wholesale markets. It took the view that this would be for the Government to consider. Part 3 outlines some of the areas in which legislation would be needed.

The Group emphasised that preparations would be simplified enormously if comprehensive, clear and definite policy decisions were announced at an early stage. Uncertainty about key policy decisions (including uncertainty by the authorities about what decisions were needed and who should take them) was a major problem for market participants in the approach to 1 January 1999. The wholesale market's ability to be ready would depend on all the key policy decisions being known sufficiently in advance, including:

- the timing of day T;
- the length of any transition period;
- the legal framework for the change in currency;
- a definitive statement on the method and timing of gilt redenomination;
- the content of any redenomination legislation;
- taxation issues;
- the changeover of the public administration;
- how payments and securities settlement systems would manage the changeover;
- implementation of Eurosystem monetary policy operations by the Bank of England;
- UK business days, including arrangements for any additional holidays to assist the changeover; and
- replacement of price sources.

The Group agreed that it would be essential to study closely the experience of the first-wave countries, to identify all the policy decisions required, and to make these as clearly and widely available as possible. We have made a start in this direction, as the next section of this *Practical Issues* shows.

Monetary policy operations

From day T, the Bank of England would be required to participate fully in the harmonised monetary policy operations of the Eurosystem. UK banks and building societies would need a lead time of at least 12 months to be prepared for day T. The Bank of England is currently examining the work which would be required to facilitate access for UK institutions to participate in Eurosystem operations. The main changes would be as follows.

Eurosystem reserve requirements. The Eurosystem uses reserve requirements to create demand for central bank money. All UK credit institutions (more than 600 banks and building societies, including foreign branches) with eligible liabilities greater than €100,000 would be required to hold minimum reserves on an account at the Bank of England. These would be remunerated at the ECB refinancing rate. The requirement is equal to 2% of deposits and debt securities issued with a maturity of less than two years, excluding repos and interbank liabilities. The ratio can be met as a monthly average of the institution's end-of-day balances rather than a fixed daily balance. This is important because one of the main intentions of the reserve requirement system is to stabilise money market interest rates, by allowing banks to offset unexpected payment flows into and out of the money market, through adjustments to their overnight reserve balances. Institutions must have access to their accounts every day in order to withdraw or deposit funds in this way.

The Bank of England Act 1998 enables the Bank at present to call on UK credit institutions with eligible liabilities of more than £400 million for non-interest bearing cash ratio deposits equal to 0.15% of their sterling eligible liabilities, in order to help finance its activities. But these are fixed six-month term deposits. Only the settlement banks, and the few credit institutions that use the Bank as their settlement bank, have accounts at the Bank that they can draw down on demand. The Bank would need to design a structure to implement Eurosystem reserve requirements for UK banks and building societies. The Bank's prospective counterparties would need a lead time of 12 months to implement and trial the necessary changes to systems. At the same time, the Bank would also have to set up systems to collect and process the statistics needed to calculate reserve requirements; and to decide how to implement the sanctions laid down by the ECB for any institution that failed to maintain the required reserves. Some of these internal preparations by the Bank might need to begin earlier.

Eurosystem tenders. The Eurosystem supplies liquidity to the market through weekly tenders for two-week funds provided against eligible collateral and open to all credit institutions. Bids are collected and settlement occurs via the NCBs, although the ECB determines allotment centrally. At present, the Bank of England conducts daily repo tenders but these are only open to those institutions, some 20 in number, that are active in the sterling money markets. The main change for the Bank would therefore be to extend access to the operations to a much larger group of counterparties, since all UK banks and building societies would have the right to participate. The Bank conducts its current tenders by taking bids over the telephone. With a much larger number of potential bidders, this would be impractical in the time allowed for bids to be relayed to the

ECB. For this reason, the Bank would have to introduce an electronic bidding system to give its potential counterparties access to Eurosystem tenders. The tender for a system supplier and much of the Bank's preparatory work, including market consultations, would need to be completed in advance of a Government decision to join. A lead time of at least 12 months would be needed to install and trial the system and for counterparties to make the necessary investment at their end.

Overnight standing facilities. All credit institutions in the first-wave countries have the right to deposit funds with or borrow funds from their local NCB overnight, at relatively unattractive rates (these rates define a corridor around market overnight interest rates). Again, these facilities would require the Bank of England to establish new accounts for a large number of UK banks and building societies, with links to their reserve accounts. Since the lending facility is only available against eligible collateral, the Bank would also need arrangements to take delivery of securities from all UK credit institutions. Finally, a system would be needed to communicate requests for access to the Bank, perhaps late in the day. The lead time for implementing and trialling these changes with credit institutions is estimated at 12 months. The preparations would be closely linked to those for reserve requirements and an electronic bidding system.

Legal framework. The Bank's repo and deposit operations would be governed by new legal agreements that the Bank would enter into with potentially all UK credit institutions. This agreement would have to meet the Eurosystem common standards and would need to be approved by the ECB. The lead time needed to produce the documentation, obtain ECB approval and enter into agreements with counterparties (including obtaining legal opinions on enforceability in the case of branches of overseas institutions) is estimated to be 6-12 months. Preparatory work would need to be completed ahead of a Government decision to join.

UK payment system

Since 1 January, CHAPS has provided separate same-day payment systems in both sterling and euro. Sterling payments continue to be processed via the original CHAPS system, while CHAPS euro uses a new platform based on messages sent via the S.W.I.F.T. network. If the UK joined EMU, the intention would be for CHAPS to revert to a single currency system for euro only (although there would be a facility for payment messages to carry the original amount, if in sterling).

There are nevertheless significant technical questions about how this transformation should best be accomplished. The S.W.I.F.T. network that CHAPS euro uses would probably not have the capacity to cope with the increased euro volumes entailed by UK EMU entry without enhancement. Many payment banks would also face a similar problem with regard to their own systems. They are linked to CHAPS euro through systems designed, for example, to handle international payments: these may not have the capacity to handle the higher volumes that would arise if the euro became the UK domestic currency. These banks will, therefore, also have to consider how they would process euro payments through their domestic, currently sterling-based, systems.

Payment infrastructure decisions are complicated by the need to respond also to recent and prospective developments in domestic and international markets – notably the changes necessary to support the introduction next year of CLS Bank, and of delivery versus payment for settlement of securities transactions. APACS, the CHAPS Clearing Company and the member banks are currently considering how they might prepare for potential UK entry, in the context of these wider issues, and developing a comprehensive strategy. There are a number of options being examined.

- One option would be to replace the current sterling CHAPS platform entirely, with a single, enhanced S.W.I.F.T.-based, CHAPS euro system. This is an attractive option in the long run, because of the limitations of the CHAPS sterling platform (including its limited ability to cope with additional direct members). The scale of the task is such that implementation of this option would need to begin soon if it were to be operational by the date the CHAPS Company regards as the earliest possible for UK EMU entry.
- A second option would be to convert CHAPS sterling to euro but, because of its limitations, simultaneously to expand the payment capacity of CHAPS euro, so it could assume the role of main domestic UK payment system. The two systems would run in parallel until all the payment traffic had migrated to CHAPS euro.
- A third option would be to retain the two systems but build a secure 'bridge' between them, so that payments in one could be received in the other. This would increase capacity and give banks the option of making payments through their former sterling systems, but would clearly only be a transitional solution and even this option would have a long lead time.

Market participants' own systems

The Group estimated that market participants would need a lead time of at least 12 months to make system changes for the replacement of sterling by the euro, to prepare for the conversion weekend, to train staff and to carry out trialling. The preparations for the introduction of the euro have highlighted the need for adequate internal and external trialling of new systems, which adds at least three months to the time needed to build systems and to gain acceptance by the users. This lead time would be significantly longer if the changeover took the form of a big bang rather than a transition. The Group estimated at least 18 months for this case.

Euro treasury management. UK banks would need to consider how to manage their liquidity and their balance-sheets in the euro markets if their base currency were to change to euro. They would need to plan their treasury operations, their participation in Eurosystem operations (eg management of reserve requirements) and their payment strategy. This work could be done in advance of a Government decision to join but market participants may be unlikely to focus sufficiently on these issues until they attach a high probability to UK entry in the foreseeable future.

Relationship of wholesale financial markets to retail financial markets. The wholesale markets have already gained experience of making the necessary preparations, first to introduce the euro as a new currency, and second to replace existing national currencies with the euro. The replacement of sterling by the euro would in many ways be just another example of the second that may actually be less complex because of the absence of the first. The new element would be the replacement of sterling by the euro in the UK retail financial sector. Institutions that have wholesale and retail financial market activities in the UK, such as the large clearing banks, do not divide them neatly. Wholesale market products such as foreign exchange transactions, money market deposits and trade finance are sold to retail market customers such as small businesses through the branch network. These comprise a high proportion of transactions by number if not by value. Wholesale markets therefore rely on banks' branch systems to process the retail market transactions that create the underlying demand for wholesale market transactions.

In the large UK banks, the treasury area manages the net flows arising from the retail business in conjunction with its wholesale market activities. This also requires close integration of the central accounting of the branch operation with the treasury system.

IT systems in the wholesale markets are designed to be multi-currency and are typically upgraded fairly frequently. So the introduction of the euro to replace foreign currencies may be judged relatively straightforward. Domestic systems, such as the large banks' branch accounting systems, are by contrast designed with sterling as a base currency and are typically relatively old and inflexible. If these systems were not able to cope with the euro by day T, banks might not be able to offer euro wholesale market products, such as trade-related foreign exchange transactions, to their retail customers.

The wholesale markets would also be affected by the ability of the banks to process payments to retail customers in euro. The preferred approach in the wholesale markets would be for consideration on new transactions and payments on securities to be made in euro from day T. But about half the sales of investment funds and in excess of two-thirds of all equity holdings and bargains (by number) involve retail customers. Gilts are also widely held by retail investors. It would therefore only be possible to make payments in euro if retail payment systems (BACS and Cheque Clearing) were able to process them. On the assumption that most individuals and many small businesses would not have euro-denominated bank accounts, at least at the start of the transition period, it would also require banks to be able to credit and debit euro payments to and from sterling bank accounts held at their branches, whether these payments are made electronically or by cheque and preferably at no extra cost to the customer. This report assumes that UK banks would be able to offer these services from day T. For that reason, wholesale market preparations would be governed to some extent by lead times in the retail financial services sector. In this area, the UK should be able to learn from the experience of the first-wave countries.

UK exchanges

LIFFE would either have to convert its sterling-denominated short sterling and gilt contracts into euro on (or after) day T, or to introduce conversion mechanisms between parallel euro and sterling-denominated contracts (see Part 2). The International Petroleum Exchange's natural gas contract, and the sugar and cocoa contracts on LIFFE, are also sterling-denominated and conversion mechanisms would need to be established. The lead time needed to introduce such changes is estimated to be at least nine months. The main currency used in LME contracts is the dollar, though contracts may also be settled in Japanese yen, sterling, Deutschemark and, since January 1999, the euro. The LME would therefore be relatively unaffected by the replacement of sterling by the euro.

The LSE has already examined its listing rules (the 'Yellow Book') and the AIM admission rules, and identified the relevant sterling references that would need to be shown in euro. The necessary changes, which all refer to threshold amounts such as minimum capitalisation requirements, would take place at the time of a UK announcement that it was to join EMU. The

LSE does not think any further changes to listing or prospectus requirements would be needed as a result of UK entry. Some small changes to LSE rules would be needed, but the lead time for making these would be likely to be short.

UK securities settlement systems

CGO and CREST would need 9-12 months lead time to prepare and trial the system procedures for redenomination of securities. Both are already multi-currency systems that can handle euro-denominated securities and transactions against euro consideration. A CMO euro service has been in operation since 4 January. Work would be required in order that the payment stream from the sterling service should be converted to euro for settlement following UK entry. The lead times for this work would fall within those required for CGO and CREST.

Market agreements

A number of standard legal agreements used in the sterling markets, as well as private bilateral agreements between firms, and trade confirmations, would need to be examined and possibly amended to reflect the replacement of sterling by the euro. These include the following market agreements: the International Currency Option Master Agreement, the International Foreign Exchange Master Agreement, the ISDA Master Agreement, the PSA/ISMA Master Repo Agreement, the Gilt Edged Stock Lending Agreement, and the Master Equities and Fixed Interest Stock Lending Agreement. (The FOA's Master Netting Agreement already allows for a possible change in the UK's currency, and would therefore need no amendment.) The process of examination and subsequent agreement to amendments between counterparties would have a lead time of at least 12 months. It is helpful that the great majority of these agreements is subject to English law.

ISDA has prepared an *EMU Protocol* that enables its members to agree to a number of optional clauses relating to the introduction of the euro which are then legally binding for all transactions with others who have agreed to the same clauses. A similar approach might be taken in the event that sterling were replaced by the euro.

Notice of price-sensitive changes

Replacement of sterling reference rates. The BBA would be likely to replace sterling LIBOR with euro LIBOR. It is not at present clear whether SONIA (the Sterling Overnight Index Average) would be replaced by EURONIA (the overnight euro rate in London) or by EONIA (the overnight rate in the euro area). Market participants would require at least 6-9 months' notice of successor rates, and on which screen pages they would be displayed, in order to adjust contracts such as interest rate swaps. The Group recommended that index-linked gilts should remain linked to the UK retail price index (RPI), which should therefore continue to be published.

Business days. Market participants need certainty about business days so that they know on which days cash-flows can be paid and therefore the value of the cash-flow. Euro business days are defined as those on which the TARGET payment system is open. Unless London business days had already converged with TARGET business days, this would mean an increase in the number of business days for euro as opposed to sterling securities and transactions. 12 months' notice of UK entry into EMU would ensure that all sterling bonds had entered a new coupon period before day T, so that the change in business days did not affect the market value of the next coupon (the coupon payment would not change, but a change in the day on which the payment was made would alter its market value during the coupon period).

PART 2 THE CHANGEOVER IN THE WHOLESALE MARKETS

In general, the Group recommended a similar approach for any changeover from sterling to euro in the wholesale markets as that taken for the first-wave currencies. It is important to study this experience closely and the preferred approach may change in the light of lessons learned.

New securities issued and transactions after day T. The view of the Group was that new securities and transactions in the UK wholesale markets would be overwhelmingly in euro from day T. During any transition period, there would probably be retail demand for transactions denominated in sterling units. But the wholesale market, in which prices are formed, would move to euro immediately, and in some cases prices might be quoted in euro before day T.

Legacy sterling securities and transactions after day T. The main question therefore would be the treatment of outstanding sterling securities and transactions. The two broad alternatives would be:

- to allow sterling securities and transactions to run to maturity unaltered; and
- to convert them to euro.

The first alternative would only be an option during a transition period in which sterling would remain a denomination of the euro and payments could be made in euro or sterling units according to the 'no compulsion, no prohibition' principle. At the end of the transition period any remaining sterling obligations would have to be paid in euro and, where necessary, transactions converted accordingly.

The remainder of this part of the report sets out the Group's recommended approach to legacy sterling securities and transactions in four categories: bonds and money market securities; equities; secondary market security transactions; and money, foreign exchange and OTC derivative transactions. In general, the Group considered that legacy transactions should settle as dealt, with the length of the transition period being determined by each market or system separately.

Money market securities and bonds

These include the following instruments.

- *Sterling-denominated money market securities:* CDs, Treasury bills, bank bills, commercial paper and trade bills. Typically these securities have an original maturity of less than one year and, with the exception of CDs, are traded at a discount to face value; CDs, however, are interest-bearing and can have a maturity of up to five years. The majority are held with the Bank of England's CMO.
- *Sterling-denominated bonds:* gilts and other sterling bonds issued into the domestic market (registered or bearer securities settled in the Bank of England's CGO or

CREST); and sterling bonds issued into the international market (bearer securities usually held within Euroclear and Cedelbank).

- *Exchange-traded derivatives contracts:* short sterling and gilt contracts on LIFFE.

New issues in euro rather than sterling would differ in three main ways.

- Cash-flows would typically be paid in euro: for example, dividend and redemption payments on securities.
- The nominal or face value of the security would be denominated in euro rather than sterling.
- Prices would be based on euro market conventions, which differ in some respects from sterling market conventions. In the money market, cash-flows would be discounted or interest calculated using the actual/360 rather than the actual/365 day-count. In the money and bond markets, reference interest rates such as LIBOR would be fixed for T+2 rather than T+0 settlement, and business days would be defined as TARGET operating days rather than London business days.

The conversion of sterling securities to euro would therefore involve the payment of cash-flows in euro rather than sterling, redenomination of the face value of the instrument and changes to the conventions on which prices are based. With one exception, these changes could occur separately and would not be interdependent. The exception is that market participants associate conventions with the currency in which a security is denominated. So it would be preferable (although not essential) to change to euro conventions if a security were redenominated, and otherwise to leave the price based on sterling conventions.

Payment of cash-flows in euro

The Group expected that dividend and redemption payments on money market securities and bonds would be made in euro units from day T, regardless of whether the securities were redenominated. The IPAA has already recommended that, from day T, all payments on securities in the international market denominated in the euro or its national currency denominations should be made in euro units. These would include sterling-denominated bonds following any UK entry into EMU. In the case of gilts, the Registrar’s Department of the Bank of England would pay all dividends and redemptions in euro from day T.

During any transition period, retail investors with sterling-denominated bank accounts could rely on their banks to convert euro payments to sterling. The Registrar’s Department of the Bank of England would report to investors in both sterling and euro.

Redenomination of money market securities and bonds

Redenomination means conversion of the nominal or face value of the security to euro. Redenomination is not necessary to enable the cash-flows on a bond to be paid in euro units. Nor does it influence how the price of a bond is quoted, which is as a percentage of the face value and therefore unaffected by the currency of the denomination. The main importance of the denomination is that secondary market transactions occur in nominal amounts of the bond. If the bond is issued in denominations of £5,000, trading can only be done in multiples of £5,000. Trading could still be carried out in sterling nominal amounts even if all cash payments were made in euro; CGO and CREST would still be able to settle securities denominated in sterling even after they had ceased to accept transactions against sterling consideration. So redenomination would not be essential even after the end of a transition period and issuers would always have the option to leave legacy sterling-denominated bonds to run to maturity.

One concrete reason to redenominate some bonds would be that they could then become fungible with new or outstanding issues of euro stock, increasing the size and liquidity of the issue. Less tangible reasons include the possibility that euro-denominated bonds would have greater presentational or marketing appeal to international investors. In the case of longer-dated bonds, issuers might feel that they did not want to have outstanding issues denominated in a currency that had ceased to exist.

The main disadvantages of redenomination would be the cost of the process and any consequent need for 'renominalisation'. For non-government issuers, redenomination of issues made under English law would require bondholder consent unless the terms of the debt provide for it or new legislation were to give issuers the necessary powers. It seems unlikely that the benefits of redenomination would justify the costs of obtaining bondholder consent, which would usually require a bondholder meeting. Redenomination also imposes costs on securities depositories, custodians and investors, which must all make changes to their records and systems and reconcile these entries amongst each other. Renominalisation refers to a change in the minimum nominal amount or denominations in which a security can be held following redenomination. For example, a bond issued in £5,000 denominations might be redenominated to €7,692.31 at a hypothetical conversion rate of €1 = £0.65. The issuer could then either change the minimum denomination to one euro cent or change it to a round number of euro such as €1. The second approach involves rounding the redenominated amount downwards (to €7,692 in this case) and then compensating investors in cash for the reduction in the nominal value of their holding (€0.31) at the current market price ('cashing out'). Cashing out is costly to administer, although it was the approach taken in the French market.

Money market securities. In the case of money market securities, the Group thought that the disadvantages of redenomination would significantly outweigh any advantages. Because of their short maturity, most outstanding sterling money market securities at day T would quickly run off and be replaced by new euro-denominated issues. Redenomination of sterling money market securities would in any case be difficult as they are bearer instruments issued in round minimum sterling denominations. The Group's preference was that money market securities should remain denominated in sterling but with cash-flows paid in euro. CMO-sterling would be kept open until all outstanding sterling securities had matured. This would be likely to be a period of 6-12 months. The net cash positions of the member banks would, however, be converted to euro for settlement at the end of each day from day T.

Gilts. The Group's view was that gilts should be redenominated simultaneously in a big bang. Calculations should be made at the level of investor holding (by each stock account) in order to minimise rounding differences arising from the conversion to euro. Redenominated holdings should be rounded to the nearest euro cent. Gilts would thereafter be transferable in multiples of one euro cent nominal. The UK's position should be relatively simple as gilts already trade in nominal amounts of pounds and pence. Thus there would be minimal change to the economic value of each holding (a maximum change of 0.49 of a euro cent).

Holdings for investors who are part of a pooled nominee account should be converted and rounded at the stock account level, and the intermediary would have responsibility for attributing the correct values to beneficial owners. As soon as the method of redenomination were decided, market practitioners should agree on best practice in implementing it, including the treatment of odd lots and fractions.

Some (17) gilt issues have the option to be held in physical, bearer form in various denominations. The Group suggested that any redenomination legislation should include a provision to deem all bearer bonds and physical certificates redenominated without requiring an actual exchange of paper instruments or physical 'stamping over'. The sterling denominations would then be read as euro amounts, converted at the official rate.

Like conventional gilts, gilt STRIPS currently trade in multiples of one penny, so that redenomination should not present a problem for STRIPS trading. However, requests by Gilt-Edged Market Makers (GEMMs) for stripping or reconstituting gilts in CGO must be in minimum amounts of £10,000. A convenient new threshold in euro would have to be established.

Timing of gilt redenomination. The first-wave governments all chose to redenominate their government debt over the initial conversion weekend. The Group could see no great technical merit in this approach, but judged the first-wave decisions to have been taken largely for political reasons. Delaying redenomination of gilts for a short period (perhaps 1-2 weeks) after day T could help reduce the workload over the conversion weekend, especially if this were only a two-day weekend. The fungibility of gilts with any existing HM Government euro issues would be delayed briefly. But redenomination could still occur before any new issue of euro gilts after day T. Delaying gilt redenomination for a short period would also give market participants prior knowledge of the fixed conversion rate, if it were not known in advance of day T, and allow some pre-planning of the processing. Nevertheless, the greater part of the work of CGO, Registrar's, custodians and market participants could still not proceed until the exact nominal amounts to be redenominated were known.

Given the success of the conversion weekend before the launch of the euro, it would be sensible now to assess the pros and cons of different timings for gilt redenomination, in the light of first-wave countries' views and experiences.

Non-government bonds. Non-government issuers should be free to decide whether any benefits from redenomination justified the costs of the process. This would be more likely if issuers could redenominate without having to call a special meeting of bondholders to obtain their consent. One possibility would be for new sterling issues to include redenomination language in their documentation. This language could give the issuer the option to redenominate following UK entry into EMU and resolve issues such as the new minimum nominal amount and the rounding convention for redenominated amounts. Some new issues already include such clauses and IPMA has published standard wording.

Another possibility would be for redenomination legislation to enable issuers to redenominate without investor consent. This is the approach adopted by first-wave countries, so long as issuers adopted the same methodology as the government. So UK legislation might require rounding of nominal amounts to the nearest euro cent and the introduction of a minimum denomination of one euro cent. This could have implications for any legislative and regulatory distinctions between retail and wholesale transactions based on minimum transaction sizes. The authorities would have to consider these issues.

Where issuers did decide to redenominate, the Group thought that co-ordination of the timing of redenomination might be desirable. Market participants would prefer redenomination to occur at set times so that processing would be concentrated into a few weekends. However, volumes mean a single big bang at the same time as gilt redenomination, especially on the initial conversion weekend, would be unlikely to be attractive. The preferred option could be a series of 'mini bangs', where issuers would be steered towards a number of pre-determined weekends. The UK authorities should be able to learn from the experience of first-wave countries. Whichever option were chosen, a definitive central source of information about bonds to be redenominated and the method to be used should be provided. As with gilts, a common treatment for odd lots and fractions should be agreed in advance of T day.

Futures and options contracts on LIFFE. LIFFE's approach to its short-term interest rate contracts denominated in first-wave currencies was based on mandatory conversion on a weekend shortly after the introduction of the euro, following voluntary conversion arrangements. Bond contracts for first-wave currencies have been denominated in euro from the June 1999 delivery month onwards. In the case of equity options, LIFFE requires the currency of the option to be the same as the trading currency of the underlying share. LIFFE's FTSE 100 and FTSE 250 index contracts remain in sterling, in line with the denomination of FTSE International's UK indices.

LIFFE has not yet decided how it would convert its short sterling and gilt contracts, and will consider its approach in the light of experience from the first wave. In the case of FTSE UK index contracts, a euro-denominated contract standard would be used for all contract months introduced after UK entry.

Changes to money and bond market conventions

Money market securities. In line with its recommendation against redenomination of money market securities, the Group's view was that prices of outstanding sterling-denominated securities should remain based on sterling money market conventions after day T. Cash-flows should therefore remain discounted or interest calculated using the actual/365 rather than the actual/360 day-count; reference interest rates should remain fixed for T+0 rather than T+2 settlement; and business days should remain defined as London business days for the purposes of defining when payments could be made.

LIFFE has added terms to its short sterling contracts stating that they will settle against three-month BBA euro LIBOR if the euro becomes the lawful currency of the UK, provided the irrevocable locking of the euro:sterling exchange rate does not occur within twenty business days of the last trading day of the relevant delivery month. LIFFE has provisions within its contract specifications to handle the adjustments necessitated by the fact that euro LIBOR is fixed on the basis of an actual/360 day-count for T+2 settlement whereas sterling LIBOR is based on actual/365 for T+0 settlement.

Bonds. On 1 November 1998, the gilt market adopted the actual/actual day-count convention for the calculation of accrued interest that is the market standard in the euro-denominated bond market. Interest accrual for new sterling issues in the UK domestic and international corporate bond markets should therefore be based on the actual/actual convention ahead of UK entry to EMU. Prices are now quoted in decimals (£0.01/£100) rather than fractions (£1/32nds/£100).

Outstanding private sector sterling issues are currently based on either the 'actual/365' convention in the case of domestic issues or '30/360' in the case of international issues. If issuers chose to change the convention for their issues, the Group suggested that they should do so on a coupon date to avoid any jump in the amount of accrued interest outstanding.

Equities

Euro equities differ from sterling equities in two main ways:

- equity prices are quoted in euro rather than sterling; and
- the nominal or face value of the security is denominated in euro rather than sterling.

The conversion of sterling equities to euro therefore would involve changing from a sterling to a euro price for trading and redenominating the face value of the instrument. Dividend payments on equities are already made in different currencies, depending on the investors' preferences. Registrars would continue to offer this flexibility after day T, although the default currency could be euro.

Change from sterling to euro prices for trading

The LSE expects that there would be a demand for trading some UK stocks in euro even in advance of a UK decision to join EMU. It will not run dual-order books in euro and sterling, but stands ready to switch shares from sterling to euro quotation stock-by-stock when it considers that there is significant demand or that price formation has moved to euro.

The prices of those stocks that remained quoted in sterling at day T would be converted to euro in a big bang at T date. This approach was taken by first-wave stock exchanges. Delaying or staggering the conversion of prices would not be an attractive option as these would be the prices at which new trades could be undertaken rather than the prices previously agreed for outstanding trades.

The needs of the retail equity investor would be important here. The Group expected some retail investors would want to trade in sterling against a visible sterling price until the end of the transition period. During the transition period, brokers would be expected to provide exchange facilities between euro and sterling showing prices in sterling terms and the Group assumed that banks would convert payments to and from euro for customers with sterling bank accounts.

The derivatives markets expected to match changes in the underlying cash market. Individual exchange-traded stock options would move to euro quotation at the same time as the underlying security itself switched to euro (ie the strike price would convert at the sterling:euro exchange rate on the day that the underlying stock converted to euro quotation). This would produce prices to a number of decimal places, but that would be preferable to the alternative of the option and underlying stock being quoted in different currencies. LIFFE would need to amend contract terms to allow for conversion, given the likelihood of some shares moving to euro quotes before UK entry. ISDA has provided guidance on equity derivatives in *EMU Operations Guide* and the *EMU Operations Supplement*, as well as in the *1998 ISDA Euro Definitions*.

Equity index contracts are quoted in index points. FTSE index contracts are currently valued at £10 per index point and it is expected that for outstanding contracts this would be converted to the exact equivalent euro value at the conversion rate from day T, both for ease of reference and to avoid rounding errors. A new contract with a standard, round euro value per index point would be introduced for contract months announced after T.

FTSE International intends to include all companies domiciled in the UK for tax purposes in its UK indices, regardless of whether their share prices are quoted in euro or their share capital is redenominated into euro. FTSE International has indicated that UK indices (eg FTSE 100) will continue to be calculated in sterling until the majority of UK companies are trading in euro or the UK enters EMU. When either of these criteria are satisfied, the base currency for the UK indices will be converted from sterling to euro. This changeover would not affect the index value or disrupt the series.

Redenomination of equities

Redenomination of equities has even less practical consequences than that of bonds. Whereas bonds are traded in nominal amounts and priced as a percentage of the nominal value of the debt, shares are traded by number and valued at the quoted price. An ordinary share represents an interest in the equity of a company (an entitlement to receive part of the profits) rather than a claim for a fixed monetary amount. Redenomination would not be necessary for share prices to be quoted on the LSE in euro or for dividends to be paid in euro. Nor would it be obligatory to redenominate share capital to euro during a transition period after possible UK entry. However, unlike most bonds, ordinary shares are undated. So issuers would not have the option of issuing new shares in euro and waiting for outstanding sterling shares to mature. Issuers may be expected to want to make decisions about the denomination of the nominal value of their shares, any change to which currently requires shareholder approval.

Redenomination of shares can take three main forms.

- *Simple redenomination*: convert both the share capital and nominal value of each share to an exact euro value, without rounding. This method avoids having to increase or decrease the share capital of a company, but could be awkward presentationally.
- *Renominalisation*: change the redenominated par value of each share to produce more convenient round numbers (to the nearest euro or euro cent). This solution would necessitate a change (up or down) in the share capital of the issuing company. A capital increase would require reserves (if available) to be capitalised, whereas a capital reduction may have implications for creditors and would require both court and shareholder approval under current law.
- *No par value (NPV) shares*. These represent the share as a fraction of the equity but have no nominal value. The total amount of share capital would be redenominated but individual share holdings would be unaffected. NPV shares have a number of

advantages: the number of shares in issue would remain the same, so there would be no need to change registers or re-issue certificates to shareholders; the absence of a par value gives greater flexibility in arranging a company's capital structure; and, it avoids the complication (and potential confusion to less sophisticated investors) of giving a fixed nominal value to a share which rapidly ceases to have any connection to its market value. There are two subsets of NPV: 'true' (used in the US and Canada), and a more restricted version 'accountable' (used in Belgium, Luxembourg and certain other European countries).

The DTI has consulted widely on this issue. The responses have indicated there is strong support for a change to company law to introduce a simplified procedure to enable UK companies to redenominate more easily. It has been suggested that directors should be empowered to redenominate shares under this procedure with shareholder approval before day T, but without the necessity of shareholder approval after day T. A similar simplified procedure would be desirable for unit trusts and 'oeics'.

Respondents also expressed strong support for changes to legislation to permit true NPV shares. Even if English company law was changed to allow NPV shares, public companies would still have to act within the framework of the 1976 EC Second Company Law Directive. This only permits the accountable variant of NPV. The Commission has confirmed to the DTI that the EC Second Company Law Directive would not currently permit true NPV shares for public companies. The DTI is exploring with the Commission the scope for modifying the requirements of the Second Directive relating to 'accountable par' and will consult on the options.

The Group supported the introduction of a simplified procedure for redenominating and renominalising share capital and permitting companies the option of converting to true NPV shares. Although a less attractive alternative, the introduction of the accountable par variant may also be preferable to the current position if changes to the Second Directive are not achievable. Companies should decide whether and when to redenominate their shares. Similarly to bond redenomination, however, co-ordination of timing by the authorities might be desirable to manage the burden on CREST, registrars, custodians and market participants. Again a series of 'mini bangs' on pre-determined dates would be a possible option. This should be reviewed in the light of experiences in the first-wave countries.

Secondary market securities transactions

After day T, legacy sterling secondary market transactions would include outright sales and purchases of securities, repos, and stock lending and borrowing. Cash consideration relating to these transactions is usually settled through the relevant securities settlement system.

In most first-wave countries, amounts due for settlement on outstanding transactions involving equities or debt securities that were redenominated were converted to euro by the securities settlement system in a big bang on day T. In contrast, CREST, as CSD for Irish securities, allowed outstanding transactions to settle as matched in Irish punts for a one-month transition period. CREST plans to adopt the same approach for any UK changeover ie to allow outstanding sterling transactions to settle in sterling for a short period after day T. At the end of the period, any unsettled transactions would be deleted and re-input by members with euro consideration. But the large proportion of open trades would settle as matched. Current turnover on the LSE is around 60-70,000 bargains each day. So market participants and CREST might avoid having to restate up to 300,000 open trades. It would also be consistent with the preferred approach to outstanding sterling transactions in the money, foreign exchange and OTC derivative markets.

Following consultation with members, however, CGO would propose to follow the model adopted by most first-wave securities settlement systems rather than the CREST approach. Both settlement systems would no longer accept input of new transactions against sterling consideration from day T. Unlike CREST, any consideration on outstanding sterling transactions in CGO would convert to euro on day T. Former sterling transactions would become indistinguishable from trades input in euro.

Following the transfer of ownership of CGO to CREST, it would be helpful to review whether a consistent approach in the two areas would be necessary or desirable.

CMO does not accept trades for forward settlement and therefore the question of how to treat outstanding sterling transactions after day T does not arise. Transactions in legacy sterling instruments held in CMO sterling would continue to be input with sterling consideration after day T, although final settlement would take place in euro at the end of each day.

Money, foreign exchange and OTC derivatives transactions

Sterling transactions potentially affected by the replacement of sterling by the euro would include interbank deposits, interest rate swaps, forward rate agreements, forward deposits, interest rate options, spot foreign exchange transactions, forward foreign exchange transactions, foreign exchange swaps, foreign exchange options, asset swaps, bond options and equity options and any sterling commodity swaps or options. Cash payments relating to these transactions are settled bilaterally on the basis of exchanged settlement instructions.

Transactions in euro differ from those in sterling in the following ways.

- Cash payments are made in euro units.
- Contracts are based on euro rather than sterling market conventions.
- Money, foreign exchange and OTC derivatives transactions have different settlement instructions. Market participants maintain nostro accounts in each currency that they trade to make and receive payments. Non-banks and banks operating in overseas currencies usually have their nostro accounts with a local correspondent bank that is a member of the payments system(s) for that currency. SSIs are sent to counterparties to specify to which bank, and for which account, funds should be paid. Prior to any UK entry into EMU, UK banks and their UK and overseas customers will have at least one sterling account in the UK and, in most cases, at least one euro nostro account, which may be in any EU country (including the UK, since CHAPS-euro is linked to TARGET). After UK entry, many of these institutions would be likely to want to consolidate these accounts, either by using their existing euro account or by setting up a new euro account (eg in the UK). Either approach would mean numerous changes to SSIs.

Converting outstanding sterling transactions to euro might therefore involve a currency conversion, changes to conventions and changes to settlement instructions. The main issue would be whether transactions should be converted in a big bang or allowed to run off over a transition period. The attraction of a transition period would be greater in the money, foreign exchange and OTC derivatives markets where settlement is decentralised, than in the securities market where settlement occurs in securities settlement systems which can convert open transactions centrally. The value of a transition period would also be related directly to the number of outstanding sterling transactions that it would allow to run off and therefore the typical residual maturity of transactions. Any sterling transactions that still remained at the end of the transition period would need to be converted.

Because of the decentralised nature of these markets and the very high number of transactions, the Group believed strongly that the changeover from sterling to euro would be facilitated by a transition period. This would reduce the workload involved in altering large numbers of sterling transactions by bilateral agreement in order to convert them to euro and euro conventions. A big bang would involve significant operational risk for each market participant and for the market as a whole, particularly if converted transactions failed to reconcile. It would also be more costly, requiring many hours of work to review transactions, agree and process changes and remedy errors. All institutions, big and small, throughout the world that have outstanding sterling transactions would have to participate in the conversion and have the systems to cope. Such a big bang approach was not adopted for 1 January 1999, so market firms would have no experience to draw on. There would be considerable benefits from building on the operational and systems knowledge gained from the introduction of the euro itself.

A transition period would give market participants the option of allowing outstanding sterling trades maturing within the transition period to settle in sterling units according to the conventions that were agreed originally (eg day-count, fixing period, business days) and possibly according to the original SSIs. The Group's preference was that the transition period should be long enough to allow the great majority of money and foreign exchange trades to run off. A period of 12 months would encompass most money market transactions, and allow at least one coupon period in the case of longer-term transactions such as swaps. It would also allow contracts with sterling as settlement currency in the Lloyd's market, and the London company insurance and reinsurance markets, to be redenominated at the annual contract renewal. Some longer-dated sterling trades would remain outstanding. But bilateral conversion of this smaller number would be much more manageable than a big bang. A shorter transition period of, for example, 4-12 weeks would still be preferable to a big bang because it would allow very short-term transactions to run off (eg the high volume of trades done for spot settlement). It would also spread the changeover process over two weekends (a 'T weekend' for the conversion of positions and redenomination of government bonds, and an 'E weekend' for the conversion of outstanding sterling transactions). But a transition period of less than 12 months would still leave a material volume of transactions to convert; so the Group recommended at least a 12-month transition period for the wholesale market.

Conventions for legacy sterling money, foreign exchange and OTC derivatives transactions

If a 12-month transition period were agreed, outstanding sterling transactions should remain based on sterling market conventions. This would preserve the link between currency and conventions. Suppliers of reference rates and screen service providers would also therefore need to show euro rates based on legacy sterling conventions throughout the transition period. The BBA expects it would publish sterling LIBOR on the same screen pages as are currently used, but would set it equal to euro LIBOR with euro market conventions. Screen providers would be expected to recalculate euro LIBOR on sterling day-count conventions and publish it separately for market convenience. It would also be necessary to define ‘London sterling business days’ (ie those days that would still have been business days if sterling had remained a separate currency) in order to determine on which days payments on legacy sterling transactions were due. The Group saw no intrinsic advantage in moving to euro conventions in the sterling money markets before day T.

Changes to SSIs and nostro accounts

Whereas changes to the terms of transactions can only normally be made by bilateral agreement, market practice is to accept unilateral changes to SSIs, provided good notice has been given (5-6 weeks normally). The recommended notice period for changes taking effect on 1 January 1999 was three months. SSIs can also be changed independently from any other aspect of a transaction. A market participant might therefore choose to consolidate its sterling and euro bank accounts and change SSIs for sterling and/or euro transactions in a big bang on day T, while still using a transition period to allow outstanding sterling transactions to run off in sterling units and according to sterling conventions. If so, the transactions would be unaffected apart from the account number and/or location details of the beneficiary account.

London market participants considered this issue in the context of the introduction of the euro on 1 January 1999. Drawing on this work, the Group’s view was that there would be risks involved in a big bang change to SSIs of this nature, notwithstanding the most careful preparation and planning. Although some firms would be able to pre-programme systems to change SSIs at a future date, other systems might not have this facility; in which case changes to SSIs would have to be input on the day before they took effect or the day itself. The result could be a great number of misdirected payments with consequences for liquidity management and a greater number of interest claims.

The Group’s recommendation would be to delay changes to SSIs for outstanding sterling transactions until after the first 3-6 months of its preferred 12-month transition period. This would mean the bulk of these transactions would have matured and volumes would therefore be much lower. The exact timing would depend on the maturity profile of a firm’s sterling book. Delaying changes to SSIs for outstanding sterling transactions in this way would mean the bulk of these could settle as dealt, in sterling according to the original SSIs.

Where SSIs were changed, it was recommended that old nostro accounts should nonetheless be left open for a period after payments had been directed elsewhere (until the danger period had clearly passed), to avoid fails where counterparties mistakenly sent payments to the old accounts.

A big bang?

The Group’s strong preference would be for a transition period, but it also considered the possibility of a compulsory big bang, which would mean all payments after day T could only be made in euro and all outstanding sterling transactions would need conversion. Although a big bang would save the costs of ‘dual running’ both sterling and euro systems, it would add significantly to the overall cost and risks of the changeover. The Group doubted whether it would be practicable. If all transactions must be converted on day T, firms would generally require longer to prepare and trial systems. They would also need longer notice of the exact changes they must implement over the conversion weekend (eg redenomination, cash conversions, changes to conventions, new price sources, and changes to SSIs). The Group estimated that a big bang approach would therefore add at least 6 months to individual institutions' lead times. In particular, the following issues would need to be considered.

Earlier change in conventions. If the conversion to euro occurred in a big bang on day T, the Group thought that sterling money markets would need to change to euro conventions at an earlier date. The workload and operational risk of processing changes to currency and conventions simultaneously would be too great. On balance, the Group would prefer to introduce the new conventions to the sterling market over a transition period, during which new transactions would be based on the new conventions and outstanding transactions would remain based on the previous conventions until they ran off. A transition period would leave some sterling transactions on one basis and others on another, which would reduce transparency and increase the risk of mistakes. But this would nevertheless be preferable to the alternative of a big bang change to conventions, which would involve changes to the terms of existing transactions and listed short sterling contracts on LIFFE. The Group suggested that the change to euro conventions in the sterling market should take place at least 12 months in advance of day T and that at least 12-months' notice of this change should be given.

Changes to SSIs. The Group believed it was likely that most UK firms would wish to alter their SSIs for euro transactions on day T if the changeover occurred in a big bang. Most would not want their converted sterling, now euro, transactions to settle according to their existing euro settlement instructions, because these would not direct payments to their main UK bank account. Rather they would want to establish new euro SSIs: for example, to direct payments to their former sterling account. A big bang would therefore increase greatly the number of changes to SSIs that the market would need to process on day T. This is a further argument against the big bang approach.

PART 3 OVERARCHING ISSUES

Legislation

New legislation. The Group's recommended approach to the replacement of sterling by the euro in the wholesale markets would require legal underpinning at an EU level similar to that provided by the Council Regulation (EC) No 974/98 for the first-wave countries. This Regulation provides for the introduction of the euro as the currency of the first-wave countries; includes the 'no compulsion, no prohibition' principle for use of the euro during the transition period; allows redenomination of government debt securities and subsequently of private sector debt securities; and states that from the end of the transition period amounts in national currency units should be 'read as' euro units. These elements would also be desirable for a UK changeover. The EC Treaty appears to give some scope to tailor the legal framework to suit the UK's position as a later entrant to EMU.

The first-wave countries have also introduced further national legislation to provide for redenomination within their respective jurisdictions. Domestic UK legislation might also be needed: for example, to specify the way in which gilts would be redenominated, to enable other issuers of sterling-denominated debt under English law to redenominate (possibly only where they follow the methodology for gilts), and to allow companies to redenominate their share capital in a simplified way. Parallel changes to current regulations would be needed to allow redenomination of the base currency of an authorised unit trust or oeic without requiring unitholder or shareholder approval. A decision to introduce NPV shares would require additional legislation.

First-wave countries have legislated to replace national currency price sources with euro price sources, such as the Eurosystem refinance rate or the EURIBOR rate. The UK authorities would need to consider whether it would be necessary to specify a successor euro rate to any sterling price sources, for example, for any floating rate gilts outstanding.

Changes to existing legislation. Following UK entry, EU and ECB regulations and guidelines relating to monetary policy implementation would apply in the UK: for example, to impose minimum reserves on UK banks and building societies. Some existing UK legislation would need consequential prior amendments; most obviously, the Bank of England Acts 1694 to 1998. The Bank would need to have been made fully independent as required by the EC Treaty.

A wide range of legislation governing wholesale market activities will need to be reviewed to identify any changes needed if sterling were to be replaced by the euro. The relevant primary and secondary legislation includes: Coinage Act 1971, Currency Acts 1982 and 1983, Companies Act 1985, Insurance Companies Act 1982, Insolvency Act 1986, Cheques Acts 1957 and 1992, Trustee Investments Act 1961, Financial Services Act 1986, Stock Transfer Acts 1963, 1982 and Regulations, Treasury Bills Act 1877 and Regulations, Bills of Exchange Act 1882, National Debt Acts 1972, 1889, 1870, Banking and Financial Dealings Act 1971, Banking Act 1987, Banking Act 1987 (Exempt Transactions) Regulations 1997, Uncertificated Securities Regulations 1995 and Insolvency Rules 1986.

In many statutes and regulations, thresholds, limits and monetary amounts specified in sterling would need to be converted to convenient round euro figures.

Tax

Tax issues such as the treatment of debt redenomination, continuity of contracts and financing have been addressed by the Inland Revenue in relation to the first-wave currencies. UK entry might raise new questions, such as the treatment of share capital redenomination. In general, the Group’s view was that, where transactions would remain unchanged other than being converted or redenominated into euro, the tax treatment should be neutral.

The replacement of sterling by the euro might have consequences for the volume and types of transactions falling within certain categories defined by the Revenue for tax purposes. For example, to move from sterling bearer instruments to euro bearer instruments would widen the scope of the definition; there might be uncertainty about whether euro foreign exchange trades falling within the scope of the forex regime prior to UK entry would remain within that regime; and qualifying corporate bonds would have to be redefined in euro terms.

The Inland Revenue should announce at an early stage when it would accept calculation and payment of different taxes in euro and at what stage tax returns and tax reporting could be submitted in euro (including periodic returns, such as CT61).

The convergence of markets following EMU will in any event focus attention on the few remaining tax differences. One such difference is the application of stamp duty and SDRT on UK securities. Members of the Group believed that stamp duty could damage the UK's competitive position in Europe. Consequently they suggested that the Government should review the operation of the stamp duty regime before any UK entry into EMU.

Accounting

Most of the accounting issues that would be raised by the replacement of sterling by the euro for entities reporting under UK GAAP have been covered by the UITF in Abstract 21 and its appendix.

A potential source of confusion would lie in the reporting of historical information for comparative purposes after day T. Sterling amounts reported at the fixed conversion rate would differ from sterling amounts converted at historic exchange rates, and further confusion could arise if euro amounts had been converted to sterling at historic exchange rates and were subsequently converted back to euro at the fixed conversion rate. A standard labelling convention for historical data would be essential.

B THE CHANGEOVER EXPERIENCE IN FIRST-WAVE COUNTRIES

Introduction

12 In considering the UK preparations necessary for possible EMU entry, it is prudent to learn as much as possible from the experience of first-wave countries in the run-up to 1 January 1999, and from their plans for the completion of the changeover to the euro in the rest of the economy, including for the introduction of euro notes and coin on 1 January 2002. This section is based on information, particularly about the financial sector, provided to the Bank of England mainly by euro-area NCBs.

13 Inevitably, the experience in first-wave countries can only act as a guide to a possible second-wave entrant. There are both similarities and differences between approaches to the changeover to date in first-wave countries. The starting position in each country is unique. Participating in a new system from the outset is also not the same as joining a system which is up and running. But the experience of the first wave in the financial sector is still of interest to a possible second-wave entrant, particularly in the following areas: the framework for monetary operations; the wholesale markets; retail payments; and notes and coin. They are considered in this section, and will repay further study in future.

Key findings

Lead times

14 Preparations in first-wave countries for the start of EMU on 1 January 1999 generally involved fairly long lead times (covering most of the three-year period, 1996-1998), both in the planning and implementation phases. This was particularly the case for monetary policy instruments and procedures but also for other parts of the wholesale markets infrastructure (payment and securities settlement systems). The long lead times arose not only because of technical changes to systems, but also the need to train and educate people to use the new systems, and the euro more generally.

15 Preparations in the first-wave countries were complicated by the fact that ECB decisions on the financial infrastructure could only be taken at a late stage in 1998, after the ECB had assumed the tasks of the EMI. Without this complication, lead times for the implementation of most of the projects would generally have been shorter. However, where there are strong interdependencies between different sectors of the financial markets, the overall lead time would naturally have been determined by that required for the slowest sector.

Gradual introduction of changes

16 In a number of countries, elements of the new monetary policy framework and the payment and settlement infrastructure were introduced at a considerable interval in advance of 1 January 1999, giving both the central bank and credit institutions time to adjust to the new regime. This was all the more important because the changes were not merely technical, but also affected behaviour (eg the introduction of new large-value payment systems, and the need for more active liquidity management by banks). Introducing changes in a staged approach also

reduces the 'bunching' of projects and therefore reduces competition for resources. However, it does lead to a longer lead time for the project as a whole.

Planning, testing and trialling

17 Detailed planning, comprehensive testing and trialling all contributed to the success of the introduction of the euro in the first-wave countries. There were three important aspects.

- Planning depended on key policy decisions (such as the method of redenomination, market conventions and the legislative framework) being announced at an early stage.
- It was important to commit adequate resources to EMU projects, to involve the correct people in discussions from the start and to identify all aspects of a particular issue.
- Some form of trialling was conducted everywhere, although its extent and nature varied from country to country. Most countries recognised at an early stage that the interfaces between wholesale market systems were vital and should be tested, and that end-to-end trials helped to reduce the risk of problems in the early stages of EMU. But a system-wide dress rehearsal was conducted in very few countries, either because it was generally not felt necessary or was impracticable.

Conversion weekend and redenomination

18 The conversion weekend was successful in all first-wave countries. A number of elements contributed to this success.

- At an early stage, first-wave countries identified key changes required in the financial infrastructure, established milestones and monitored progress in the run-up to the conversion weekend.
- By introducing some of the changes required at a considerable interval in advance of the euro's launch, some countries were able to reduce the workload during the conversion weekend.
- All first-wave countries chose to redenominate most of their own government debt during the conversion weekend, mainly in order to create an immediate pool of liquidity in euro securities. But this also helped in practice to promote clarity and reduce complexity (eg the need for dual accounting in collateral management).
- Redenomination of most non-government securities did not take place during the conversion weekend. It was not seen as necessary for a successful changeover and would merely have increased the workload during that weekend. Instead, in a number of countries, set weekends during the transition period are being offered in which companies can redenominate after giving advance notice.

Retail payments

19 First-wave countries have taken different approaches to the introduction of the euro in their retail payment systems. The approach which each chose was influenced by an assessment of which euro facilities would be required and how quickly demand would grow during the transition period. However, first-wave countries did not have an entirely free hand in this decision, since they were constrained by existing payment infrastructures (including the design of

banks' internal systems). The actual pick up in use of the euro outside the wholesale markets has been limited so far, but the same may not be true for subsequent entrants to EMU.

Introduction of euro notes and coin from 1 January 2002

20 Most countries are now intending to reduce the length of the final changeover period, to switch from national to euro notes and coin, from the maximum six months permitted by the EC Regulation, to a period typically of two to three months (in practical terms but in most cases probably also in legal terms). In order to reduce the length of the final changeover period, a number of measures are currently being considered, including the possibility of front-loading cash at banks and post offices and perhaps retailers.

Eurosystem operational framework

21 First-wave NCBs had to adjust their existing operational framework to the needs of the Eurosystem (although Luxembourg had to start from scratch). The operational framework is defined here as the set of instruments and procedures used in implementing monetary policy, foreign reserve management and foreign exchange intervention. Monetary and foreign exchange policy in the Eurosystem is implemented in a decentralised way, but on the basis of a single operational framework, common to all NCBs (as described for example in the ECB *General Documentation*, published in September 1998).

22 There are limits to the lessons that potential later entrants to EMU can draw from the experience of the first-wave NCBs in adjusting their operational framework.

- Problems faced and lessons learned in other countries will not always be relevant, since each country began with its own national operational framework. These differing starting positions meant that the necessary changes were also different and this affected both lead times and the approaches taken to the preparations.
- The first-wave NCBs were also confronted with something of a moving target: discussions on developing the operational framework for the Eurosystem took a number of years, whilst decisions could only be taken once the ECB was formed in mid-1998, with some final decisions and changes made quite late last year. All NCBs mentioned that this factor greatly complicated their EMU preparations, even though it was unavoidable. In this respect, later entrants would be better off, since the operational framework of the Eurosystem is now clearly defined (although some changes have already been made since the publication of the *General Documentation*) and they can observe its operation in practice.

23 Despite these limitations, the experience of the first wave is interesting, as it reveals the most difficult tasks to implement and a number of common themes. The following tasks are the most difficult and important.

Reserve requirements

24 The ECB requires credit institutions to hold minimum reserves on accounts with NCBs. It is not a requirement that the reserve account reaches its required level each day, but on average over a one-month maintenance period. Some first-wave NCBs did not use minimum reserves prior to EMU (Belgium, Luxembourg), or employed them without an averaging facility

(Netherlands, Ireland). The changeover to the reserve scheme of the Eurosystem was considered as an important project, especially in these countries, and had long lead times. Implementation of this change well in advance of 1 January 1999 was seen as beneficial both to the NCB, and to credit institutions, so that they could adjust their behaviour accordingly. The Nederlandsche Bank introduced an averaging facility to its minimum reserve system in May 1997. The Central Bank of Ireland did so in November 1997, together with a move from daily fine-tuning operations to weekly tenders. The Belgian National Bank introduced reserve requirements at the beginning of September 1998 (albeit optional for counterparties until 1 January 1999).

25 But the Eurosystem framework also required several changes in those countries where a system with required reserves with averaging was already in place prior to EMU. During 1998, the Banque de France widened the reserve base and the range of credit institutions, and introduced remuneration of reserves. The Banco de España changed the maintenance period for required reserves from 10 days to one month in November 1998. The Banco de Portugal also introduced a number of changes in November 1998.

26 NCBs identified the following as the most complicated and time-consuming tasks.

- *Application to all credit institutions*. The ECB has published a list comprising more than 8,000 credit institutions. (No credit institutions are currently exempt from reserve requirements.) Since a number of NCBs were used to applying reserve requirements mainly to larger institutions (eg via the application of thresholds), the Eurosystem framework potentially required those NCBs to increase the number of accounts and establish an operational relationship with many new credit institutions. In practice, indirect holdings of reserves reduced this burden.
- *Indirect holdings of reserves*. Credit institutions may apply for permission to hold reserves indirectly through intermediaries. This is particularly important in countries with a large number of smaller savings banks or co-operative banks. To arrange for indirect holdings, special arrangements had to be put in place (eg contracts and reporting arrangements) which proved to be time-consuming.
- *The definition of the reserve base and the lump-sum allowance*. The introduction of a lump-sum allowance (ie the deduction of a fixed amount of €100,000 from the required reserves) was new to some NCBs.
- *Reporting requirements*. Although reserve base items are reported to NCBs as part of regular money and banking statistics, some NCBs found that they needed to arrange some additional reporting by credit institutions.

27 NCB preparations were complicated by the fact that, especially in the case of reserve requirements, ECB decisions were only taken late in 1998 (partly in July, partly in October).

Number of counterparties

28 All credit institutions subject to reserve requirements are eligible to be counterparties for Eurosystem standing facilities and open market operations, if they fulfil certain prudential requirements and any further operational requirements set by the NCB in their own country. The potential increase in the number of counterparties as a result of EMU required changes in NCB internal systems and procedures. A particular example is the way NCBs handle bids by

counterparties in tender operations. Some NCBs have introduced (Italy) or upgraded (France, Germany) their electronic bidding systems to cope with the larger numbers of bidders, and this has also increased the speed and safety of operations. But as credit institutions do not all make use of their right to be a counterparty to the Eurosystem, the actual increase in the number of active counterparties has in several cases been less than it could have been.

Standing facilities

29 The Eurosystem offers two standing facilities to counterparties: a deposit facility; and a marginal lending facility. Some NCBs did not previously use either or both of these facilities; and other changes to existing NCB facilities were necessary to bring them fully into line with the Eurosystem framework. In some cases, harmonisation took place prior to 1 January 1999. Changes to existing facilities were implemented as early as 1996 in Austria. The Nederlandsche Bank introduced a marginal lending facility in May 1997, while the Banco de España introduced both facilities in November 1998 (later than ideally they would have wished), in combination with a move away from daily fine-tuning operations (as well as a change in the length of the maintenance period for required reserves).

Collateral management

30 The Eurosystem accepts a wide range of collateral in its operations with counterparties. Its eligible assets may also be used on a cross-border basis. The collateral is subject to risk control measures. For most NCBs, the Eurosystem's procedures for collateral management involved difficult and time-consuming preparations, including setting up or changing databases and legal arrangements. The risk control measures were especially difficult to prepare. Another aspect was the widening of the range of eligible collateral, since many NCBs did not accept paper other than government securities prior to 1 January 1999. The cross-border use of collateral, in accordance with the CCBM, was new for all NCBs. While a few NCBs decided (partly or fully) to automate their internal procedures relating to the CCBM, others did not do so because they expected that the actual use of collateral by counterparties in a cross-border context would be limited. Although this has indeed generally been the case, the CCBM-related work in NCBs proved to be laborious, and more NCBs are contemplating changing to more automated solutions in the future.

Foreign reserve management and foreign exchange intervention

31 In these areas, the most difficult task was the preparation for decentralised management of ECB reserves by NCBs. Some NCBs had to change their internal systems and procedures to enable the ECB portfolio to be managed separately from other foreign currency reserve assets. Each NCB had to ensure that it complied with ECB rules on risk management, and on 'Chinese walls' between ECB and other reserves. The majority of NCBs, which previously had a domestic and a foreign desk, now have a policy and a reserve management section. Also, preparing and implementing the actual transfer of reserves to the ECB at the end of December 1998 proved cumbersome. But generally, NCBs thought that internal changes in the area of foreign reserve management (and foreign exchange intervention) were less difficult than those relating to monetary policy.

Common themes in NCB preparations for the Eurosystem operational framework

32 A considerable amount of *technical work* was required, often with long lead times. This involved both front and back office systems and, because of their interrelationships, any limitations arising from back office settlement and collateral management systems needed to be considered. Testing and trialling of new or adjusted systems, both within the central bank and with external parties, was time consuming.

33 Those NCBs whose starting point differed substantially from the Eurosystem operational framework generally saw benefits from an *early introduction* of the main elements of the new framework, considerably ahead of the start of EMU. Examples were: an early adoption of the Eurosystem reserve requirements scheme (Ireland, Netherlands, France, Belgium); a move away from very frequent open market operations to weekly tenders and a greater reliance on averaging provisions for minimum reserves and standing facilities (Austria, Spain, Portugal). The main advantage of a gradual changeover of this kind was to give both the NCB and its counterparties time to adjust to the new regime. In particular, a shift from very active money market management by the NCB to a more passive approach implied a lengthy learning process for the banking community. This was even more important than the related technical changes in systems. One disadvantage was the need for relatively early planning, which was difficult since the final Eurosystem framework was not decided until late 1998. The other was the need to introduce two or more sets of changes instead of just one change on 1 January 1999. Those NCBs whose existing framework was already more in line with the Eurosystem framework, waited to implement the remaining changes until 1 January 1999.

34 The adoption of the Eurosystem framework also involved considerable work on *documentation* and *contractual arrangements* between the NCB and its counterparties. This was especially true for countries where, prior to EMU, arrangements were of a less formal nature (eg Ireland). But also in other countries, the need to comply with the ECB *General Documentation* meant rewriting existing national documents, contacting and educating counterparties (including institutions with no prior involvement in such activities), and consulting the ECB. This required long lead times.

35 It is difficult to obtain precise estimates of *lead times* relating to the changeover to the Eurosystem operational framework in first-wave countries. Generally, the bulk of the preparations took place in the period from 1996 to 1998. But NCBs stressed that this period was probably longer than 'technically' necessary, due to the uncertainty about final ECB decisions (ie the 'moving target' factor). Apart from the initial discussions and the planning, the actual implementation of projects in this area took place in most cases over a shorter period. However, even without this uncertainty, the overall lead time for the preparation of the Eurosystem operational framework would have been determined by the pace of introduction of the slowest change, because of interdependencies.

Wholesale market preparations

36 The introduction of the euro in first-wave countries was a major task for the wholesale financial markets, affecting all aspects of the sector. The task facing later entrants would be different, but no less important: although 'out' countries have already introduced the euro as a trading currency in their wholesale markets, there would be additional work involved in changing

over to the use of the euro as their domestic currency. So first-wave experience would be relevant. Even though the approach taken to the preparations varied considerably from one country to another, two major factors were vital to the success of the exercise in all first-wave countries: detailed planning; and comprehensive testing and trialling.

Planning

37 Since the financial infrastructure varies widely from country to country, it is not meaningful to calculate an average lead time for the changeover in the wholesale markets. The exercise to introduce a new currency for 11 countries simultaneously also differs greatly from that required to extend it to one or a few additional countries. In most cases, detailed planning in the financial sector began in the latter half of 1996 (even earlier in France and Germany), with written plans being drawn up by the end of that year or early 1997. Project implementation began in the first half of 1997 (or later). In a number of countries (eg France and Italy), recent experience gained from a large project like the introduction of an RTGS system proved invaluable. Banks were used to collaborating to achieve a common goal, and existing contacts and working groups could be used to identify issues and discuss them.

38 There are a number of other common themes that emerge from the planning process in first-wave countries.

- It is easier to plan when key policy decisions (such as the method of redenomination, market conventions and the legislative framework) are announced at an early stage.
- Adequate resources from all relevant areas must be committed in good time. Working groups should include representatives from front and back offices, from both the domestic and international areas of firms. Back office systems are typically older and less flexible than front-office systems, and changes to them require longer lead times.
- Software changes should be kept to a minimum, and where they are unavoidable, live systems should be available in good time in advance of the conversion weekend to give firms a chance to prepare their own systems and to train staff.

Testing and trialling

39 In addition to extensive testing of new systems, some form of trialling with the users of the systems was conducted in every first-wave country. However, the extent and nature of the trialling varied from country to country. The systems commonly identified as representing the core of the financial infrastructure were TARGET, the national RTGS and securities settlement systems, the collateral management systems of credit institutions and the internal accounting systems of the NCBs.

40 The characteristics of the financial infrastructure, as well as cultural differences between countries, determined the approach taken. In France, for example, a large number of tests were conducted with financial institutions in the second half of 1998 under the supervision of either the CSD (Sicovam) or the Banque de France. These included compulsory trials (especially for monetary policy operations) and a full overall dress rehearsal for all sectors of the financial system. An external auditing firm was brought in to monitor the progress of 70 key players in the capital markets (including software suppliers). External auditors were also used by AEX in the Netherlands. In Italy, a minimum standard of performance was required in testing and

trialling of monetary policy operations in order to qualify as a central bank counterparty. By contrast, others countries, such as Germany and Finland, felt it sufficient to make the systems available to members for testing, and did not make trialling compulsory.

41 Most countries did not attempt to mount a full system-wide dress rehearsal. Some considered this to be logistically difficult, and others unnecessary. However, in the majority of countries the importance of identifying the critical systems and then applying a hierarchy of tests was recognised. Each system should first be tested internally, then with market participants and finally in end-to-end tests sector by sector. It was stressed that testing and trialling should not only encompass the conversion weekend and conversion functionality, but also the running of a typical day after the change has been made. Testing should be as realistic as possible, using live volumes and all types of functionality and transaction. The most common combined trialling took place involving the RTGS and securities settlement systems, since both are critical to the Eurosystem monetary policy operations.

Conversion weekend

42 In mid-1998, the ECB established a conversion weekend committee and asked NCBs to identify a series of milestones for the key parts of their financial infrastructure. For the weekend itself, central communication points were set up, both for communication between NCBs and for market participants to contact their own NCB. It was judged important to assign specific tasks to named individuals, and to promulgate those widely. In addition, a detailed timetable, with precise timings of individual processes and their interdependencies, was considered imperative.

43 In some countries, final testing of key systems took place during the conversion weekend, after the conversion process had been run. For example, on 2 January in the Netherlands, all members of the payment systems (and service providers) were required to take part in a test in the live system with a system date of 4 January, to prove that they were all ready for the new environment. In Italy, too, the payment system was open on 3 January on a voluntary basis to allow members to verify their positions. Testing of this kind did not take place in all countries. Some countries viewed testing over the conversion weekend as an additional risk, and one that might give members of payment systems a false sense of security in undertaking their preparations.

Redenomination

44 Redenomination of government debt was one of the major tasks undertaken in every first-wave country over the conversion weekend. The decision to redenominate immediately upon entry was taken primarily for political and competitive, rather than technical, reasons. Governments wanted to give a clear signal about the launch of the euro by creating immediately a critical mass of euro-denominated securities, and no one euro-area government wanted its debt to be at a disadvantage. However, there were also practical reasons for keeping the conversion of cash and securities in the wholesale markets together. Accounting and collateral management would have been more complicated if the cash and securities had been in different denominations. The redenomination of debt at the same time as the conversion of cash was seen as reducing the likelihood of confusion.

45 The majority of countries applied redenomination at the level of investor holding with rounding to the nearest euro cent. The exact method of redenomination used in each country has been covered in previous editions of *Practical Issues*. There was no uniform approach to the treatment of short-term paper. In six first-wave countries, short-term government debt was redenominated. This decision depended on a number of factors. In Finland, short-term paper is held in the same CSD as bonds, and the workload was not greatly increased by also including this paper in the redenomination process. Additionally, it was hoped that redenomination would increase or maintain the liquidity of such issues. In Spain, however, the redenomination of short-term paper took place because the authorities felt that a segmentation of the market would be complex to administer and because new funding is usually raised through additional tranches of existing issues. If new funding was in euro and existing paper remained in pesetas, there would be dislocation in the market.

46 Most non-government securities were not redenominated during the conversion weekend. Redenomination was not seen as necessary, and would merely have increased the workload during that weekend. Instead, in some first-wave countries, a number of set days or weekends are provided during the transition on which private issuers may redenominate their debt. Pre-announcing such a set timetable for future conversions reduces the risk of confusion, especially if the investor has access to a definitive list of companies due to redenominate on each date. Typically, for example in France, Spain and Italy, this issue is handled by the CSD and/or the stock exchange, which are responsible for maintaining stock details. In France, the conversions are organised according to a calendar approved by the Conseil des Marchés Financiers, and regularly updated.

Retail payment systems

47 First-wave countries have taken a number of different approaches to the provision of euro facilities to corporate and retail customers in their payment systems. In each case, of course, the result is consistent with the concept of ‘no compulsion, no prohibition’ in the use of the euro. However, the approach taken does affect how ready each country may be to cope with a rapid increase in demand for financial services in the euro from corporate and retail customers during the transition period.

48 Underlying the various approaches used by the first wave, three stylised models can be identified:

- a dual-currency, single-system method;
- a single-currency, single-system method with converters; and
- a dual, parallel, system method.

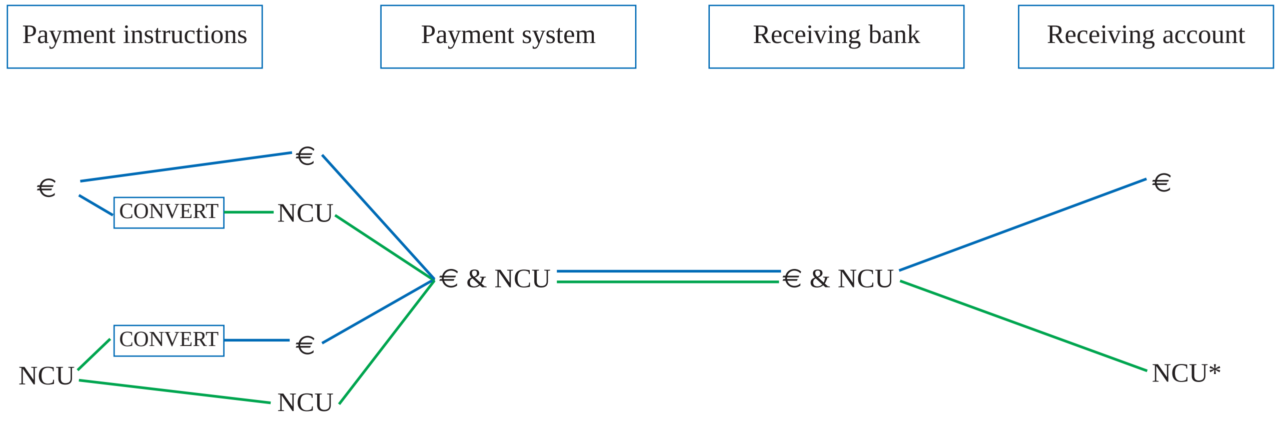
These are represented in Charts O, P and Q.

Method one

49 Under the first method, a bank receiving an instruction to make a payment in either euro or the ‘old’ national currency unit (NCU) calculates the equivalent value of the amount in the instruction using the official conversion rate and inputs the amount in *both* denominations into the payment message. Both amounts are carried through the dual-currency system and the receiving bank can choose which it wishes to use to credit its customer. It is only possible to

identify the *originating* denomination of the transaction by looking at the instruction received by the sending bank from its customer (this is part of the payment message).

CHART O

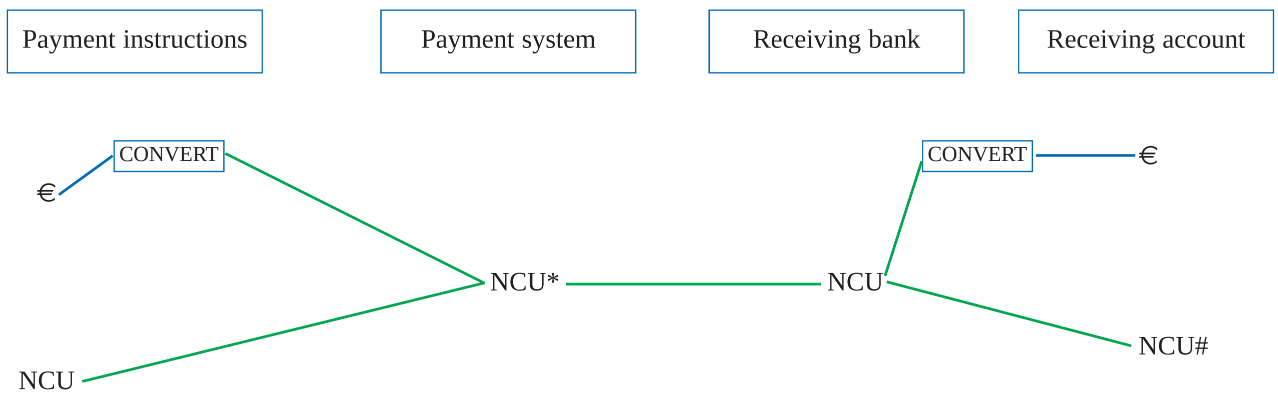


* Accounts may also show details of euro postings

Method two

50 Under the second method, each payment system handles only *one* denomination. This could be either the euro or the NCU, and a different choice is possible for different parts of the payment infrastructure. In order that transactions in both denominations can be handled, banks need to have converters in place. If a bank receives a payment instruction in the denomination not accepted by the system, it performs a conversion before entering the payment. Often a 'note field' is used to identify the original payment information. In some cases, this is limited to a flag that the payment originated in the NCU, and in others that the original amount is also held. However, since the information is held in a free-format note field, it cannot automatically be picked up by the receiving bank's internal systems and used in processing the payment. The receiving bank is therefore also required to make a conversion if it is necessary to return the payment to its original denomination. The additional information in the note field is then of use, since conversion from an NCU to a rounded euro value and back again may result in rounding errors.

CHART P

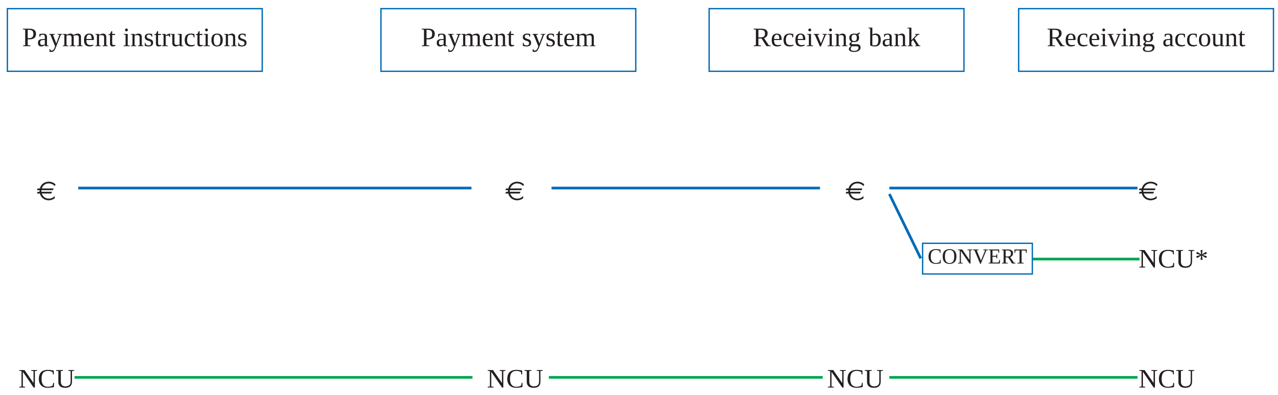


* Base currency could also be euro
\# Accounts may also show details of euro postings

Method three

51 Under the third method, both the euro and the national denomination are processed in distinct streams, without conversion. Sometimes the payment systems are cloned to create two parallel, but separate, systems. In other cases a new field (ie a ‘currency type’ or the equivalent) has been introduced into payment messages resulting in two separate payment streams within a single system. The separation of payment streams does not mean that customers have to hold separate euro and NCU accounts. If a bank receives an individual payment in euro, but the beneficiary only holds an account in the NCU, the bank performs the conversion within its internal systems.

CHART Q



* Accounts may also show details of euro postings

52 *Method one* is used in Germany (and broadly in Luxembourg). The decision to use this method in Germany was taken at an a early stage. The Bundesbank and the leading banking associations signed an agreement in April 1996. The solution applies to all payment types (eg cheques, giro transfers and direct debits). It was possible to adopt this solution because there was a field in payment messages which could be redefined to hold euro information. Once the Deutschemark has lost its legal tender status in 2002, the Deutschemark field will become a reserve field.

53 Under method one, the speed of pick up in use of the euro in place of the national denomination is immaterial, since a payment in euro requires the bank to perform a conversion to the NCU and vice versa: banks must be able to handle both the euro and the national denomination at all levels from the start of the transition period. Customers need not open a separate euro account to make payments in euro, and most bank statements show every entry in both euro and Deutschemark. One advantage of this approach is that institutions are free to choose when to change their internal accounting into euro at their own pace, as comparable information is available to them in both denominations throughout the transition period. Also, since no conversions take place after the initial calculation of the equivalent amount, there are no rounding problems.

54 *Method two* is used in the majority of first-wave countries in at least one of the payment systems. Typically, countries have converted their wholesale system into euro, but have not yet made the change for retail systems. The fact that the retail systems still operate in the NCU

minimises the number of conversions required, since the bulk of retail payments currently remains in the NCU. In France, for example, SIT (which clears electronic retail payments) and the cheque clearing operate in francs (with end-of-day netting in euro). The intention is to change the clearing operation to euro when there is a 'critical mass' of transactions in euro, or by the end of 2001, whichever is the earlier. In Finland, a decision was made to leave all interbank payment systems in markka. This is because conversion from the euro to a rounded markka figure and back again does not result in a rounding error, whereas the reverse is not the case. In contrast, the Belgian CTEC, which clears small interbank payments, operates entirely in euro.

55 Method two is particularly appropriate if the payment system does not have a flexible design and cannot readily be amended to hold additional fields or information. This puts the onus on banks to build converters for use during the transition period. For those countries where the system continued to operate in the NCU, a rapid pick up of activity would result in large numbers of conversions and imply a heavy burden on banks. In the Netherlands, for example, the retail payment systems operate in guilders, and the banking sector has not prepared for retail customers' use of the euro for direct debits, credit and debit card payments, and guaranteed cheques (although there are euro facilities for business-to-business payments). Since the launch of the euro, banks have been under some external pressure to provide such services, and they are currently studying how best to respond.

56 Bank customers in countries using method two can set up a separate euro account. But this is not necessary, as they can make (at least some forms of) payments in either denomination from their existing accounts. At a minimum, account statements display the total balance on the account in both euro and the NCU and, in some cases, individual postings in euro are also itemised. However, customers who have large numbers of euro postings through their accounts may wish to have a 'pure' euro account to simplify reconciliation and avoid the difficulty of rounding errors.

57 In Spain, the large-value net domestic payment system (SNP) now operates in euro with converters (method two), whilst the retail systems use *method three*. Banks collect payment information separately in pesetas and euro, followed by netting in pesetas and then in euro each night. In Italy, a new field was introduced into payment messages to enable banks to specify the currency type. A lira and a euro settlement figure are produced separately for each clearing. Final multilateral net settlement takes place in euro only across accounts in the Italian RTGS system. The level of demand for euro services during the transition period is constrained only by the capacity of the system. When the NCU ceases to be used, no further development is required. Method three (which is also used in Portugal) allows for minimal change to existing retail systems and to interfaces with those systems.

58 It was not necessary to adopt one of these stylised models for the whole of the payment infrastructure in the first-wave countries. Each method has advantages and disadvantages. The method to be chosen depends in part on the existing payment infrastructure - whether it is centralised or decentralised, and how modern and flexible it is - as well as on the expected pick up in demand for financial services in euro by the corporate and retail sector during the transition period. The pick up in demand for the euro outside the wholesale markets has so far been limited, but the same may not be true for subsequent entrants.

Changeover to euro notes and coin

59 The final changeover from national to euro notes and coin in the first half of 2002 will be a major operation in the first-wave countries, requiring meticulous preparations. Although in most countries these preparations are under way, this clearly is an area of 'work in progress'. Discussions are still taking place (in part, at the European level) and final decisions have in most cases yet to be taken. Even so, a number of common elements in approach, as well as some differences, already seem clear.

60 In each country, the preparatory work involves a *wide range of parties* (ie the NCB, Treasury/Mint, banks, post offices, security carriers, retailers, ATM manufacturers, the vending machine industry, consumer organisations). As they have different interests, the discussions so far have in many cases proved difficult and time consuming. There is an expectation that, once general agreement has been reached, the actual project planning and implementation should be easier.

61 The majority of first-wave countries aim to *shorten the changeover period* from the maximum six months to a period of typically two to three months (and one month in the Netherlands). Some even favoured a big bang on 1 January 2002. However, this would have required the 'front-loading' of all cash users, including the general public, with euro notes and coin in advance of 1 January 2002. This has effectively been ruled out at European level. By contrast, in Spain and Finland, the current thinking is to leave the changeover period at or close to six months. In Spain, the average return circulation period for notes is relatively long. The authorities do not want to interfere with this, and they are also concerned about the risks of front-loading the retail sector. In Finland, the authorities expect that in practice the changeover will be relatively quick, but they see no reason to alter the legal length of the changeover period.

62 During this shortened changeover period, there will be *dual legal tender status:* both euro and national notes and coin will be legal tender in those countries. The exception is Germany, where the authorities aim for a 'legal big bang' supplemented by a 'modified deadline regulation': after 1 January 2002, only euro notes and coins will be legal tender. In practice, however, German banks (as well as the retail sector) will still accept Deutschemark notes and coin for a period of around two months. So, despite the legal position, the actual situation in practice will be similar to other countries. The concept of legal tender differs from country to country, which affects the way the authorities address this issue.

63 First-wave countries expect to take a number of steps to assist completion of the changeover in the final, shortened, period.

- The NCB and the mint will front-load banks and post offices, and possibly also cash centres and security carriers, with euro notes and coin.
- Some, large, retailers may also be front-loaded, in this case by banks and post offices.
- Banks and post offices will distribute euro notes and coin only after 1 January 2002.
- ATMs will be converted from national currency to euro as quickly as technically possible. Once converted, they will only issue euro notes. In some countries, ATMs can be front-loaded with euro notes (by the use of spare trays), in which case the switch to euro can take place overnight on 1 January 2002. In other countries, the

changeover may take one or two weeks. In countries with large ATM networks, it may be possible to close ATMs holding ‘old’ notes.

- Retailers may give only, or mainly, euro notes and coin as change to customers after 1 January 2002.
- In some first-wave countries, the authorities are thinking of providing the public with ‘starter kits’ (probably only in coin) at the beginning of 2002.

64 After the national currency ceases to be legal tender, banks and post offices in first-wave countries will probably continue to accept national notes and coin for a few months on a voluntary basis, but generally not after 1 July 2002. Restrictions (eg limitations on amounts, or small fees) may be imposed after a time. NCBs will continue to exchange notes and coin for a longer period: for coin (1-3 years); and for notes (5-10 years, or even indefinitely).

65 NCBs judge that a transition period of three years is necessary for first-wave countries to complete the production of sufficient euro notes and coin, alongside the other preparatory work related to the final changeover. However, they believe that a shorter transition period should be possible for second-wave entrants, for example because euro notes and coin should by then be available to test vending machines and ATMs. With hindsight, some of them consider that the timing of the start of the final changeover (1 January 2002) is less than optimal from a logistical point of view. It was often mentioned that February might have been a better month.

66 The authorities in first-wave countries consider that an increased use of electronic payments is beneficial to the final changeover process. Some are contemplating ways of promoting such electronic payments.

67 The storage of the new currency prior to 1 January 2002, in particular coins, raises specific problems. NCBs and mints are also preparing for the withdrawal, validation and destruction of national notes and coin after 1 January 2002.

68 Other issues which are still being discussed, either at European or national level, include: legislation; transport and insurance; the timing of debiting banks with the face value of front-loaded notes; the distribution of costs involved (in some countries some form of compensation by the government is being contemplated); and a public campaign to accompany the introduction of euro notes and coin.