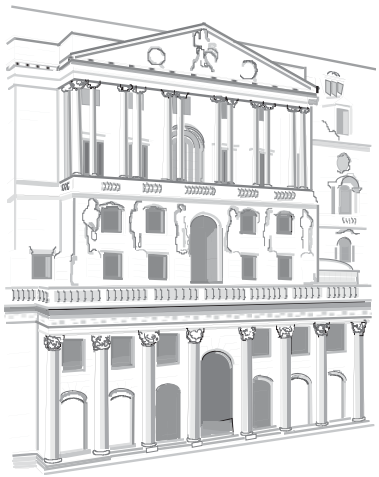
Bank of England Quarterly Bulletin



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The Quarterly Bulletin and Inflation Report

Inflation Report
(published separately)

The *Inflation Report* reviews developments in the UK economy and assesses the outlook for UK inflation over the next two years or so in relation to the inflation target. The *Report* starts with a short overview section, while the second investigates money, credit, and financial market data, including the exchange rate, and the following three sections examine demand and output, the labour market and pricing behaviour respectively. The concluding sections present an assessment of medium-term inflation prospects and risks, and information about non-Bank forecasts.

The Bank of England Act
(pages 93–99)

In this article, Peter Rodgers, Secretary of the Bank of England, outlines the main provisions of the Bank of England Act, which gives legislative force to the major changes to the Bank's structure, powers and responsibilities announced by the Chancellor of the Exchequer in May 1997.

Markets and operations
(pages 101–22)

After the volatility of the final quarter of 1997, markets were generally more stable in the first quarter of this year. Equity markets in the major countries rose to new highs during March. Bond markets in the major countries, which had benefited in 1997 Q4 as investors sought the security of highly-rated government paper, gave up only a little ground in 1998 Q1. Foreign exchange markets were also active in the first quarter of 1998, with sterling rising to its highest against the Deutsche Mark since May 1989. Official interest rates were unchanged in most of the major industrialised countries, including the United Kingdom.

The international environment
(pages 123–35)

This article discusses developments in the international environment since the February 1998 *Quarterly Bulletin*. The main news is: the financial and economic situation in Asia now appears more stable. Signs of contagion in other emerging markets have diminished. Growth in the United States slowed slightly in the final quarter of 1997. The Japanese economy has continued to slow, and Japanese output fell slightly. The recovery in Germany and France has continued, though growth slowed in Germany. Domestic demand continued to strengthen in France, but not in Germany. Equity prices in most major markets have continued to rise. After strengthening in January 1998, Japanese equity prices remained in a narrow range during February and March, but fell slightly in early April. Inflation has remained low throughout the major six (M6) overseas economies. EU countries have released their fiscal debt and deficit figures for 1997. Based on these, the European Commission and European Monetary Institute recommended that eleven countries were eligible for membership of monetary union. The European Council decided to admit these countries to monetary union from 1 January 1999. Official interest rates have remained unchanged in most industrial countries. Bond yields remained at low levels.

Recent developments in financial markets
(pages 136–44)

This article, by David Collins of the Bank's Markets and Trading Systems Division, discusses major trends in the financial markets during the past 18 months, focusing in particular on the impact of the problems in East Asia, EMU-related issues and the growth of electronic trading.

Research and analysis
(pages 145–65)

Research work published by the Bank is intended to contribute to debate, and is not necessarily a statement of Bank policy.

Growth in UK manufacturing between 1970–92 (by Gavin Cameron of Nuffield College, Oxford, James Proudman of the Bank's Monetary Instruments and Markets Division, and Stephen Redding of New College, Oxford and CEPR). This article examines productivity growth and levels in UK manufacturing between 1970–92. During this period, UK manufacturing output fell, but by less than the number of hours worked in manufacturing, and so labour productivity increased. Within manufacturing, economic performance varied considerably, both across sectors and time, including a notable difference between the two peak-to-peak business cycles 1973–79 and 1979–89. To understand manufacturing economic performance more fully, the article considers disaggregated data for 19 manufacturing industries, using two measures of productivity: labour productivity and Total Factor Productivity.

Competition and co-operation: developments in cross-border securities settlement and derivatives clearing (by Bob Hills and Chris Young of the Bank's Payment and Settlement Policy Division). European securities settlement systems and derivatives clearing houses are preparing for EMU by offering members clearing and settlement services in foreign as well as domestic instruments. This article outlines recent developments and new initiatives in cross-border securities settlement and derivatives clearing. It suggests that competition for post-EMU business is already resulting in increased co-operation, in the form of links between systems. These developments have implications for the risks in cross-border clearing and settlement and for market structure, and raise issues for central banks and regulators.

Report
(pages 166–72)

The financing and information needs of smaller exporters (by Stuart Cooper and Inke Nyborg of the Bank's Business Finance Division). This article outlines the key structural issues facing smaller firms seeking to enter or remain in export markets. It finds that effective access to focused advice and information is the most important enduring issue facing smaller exporters, especially those new to exporting. Access to finance does not appear currently to be a major difficulty for firms with some experience of exporting, though they may not be fully aware of all the alternative sources of finance. There is also some evidence that smaller exporters are less active than larger exporters in taking steps to manage their foreign exposure, possibly making them more vulnerable to the risks arising from fluctuations in foreign exchange rates and the failure of foreign buyers. The final section of the article notes the likely impact of the single currency on smaller exporters.

The Bank of England Act

In this article, Peter Rodgers, Secretary of the Bank of England, outlines the main provisions of the Bank of England Act, which gives legislative force to the major changes to the Bank's structure, powers and responsibilities announced by the Chancellor of the Exchequer in May 1997.[1]

The Bank of England Act received Royal Assent on 23 April 1998 and will come into force on 1 June 1998. It provides a statutory basis for the functions of the Monetary Policy Committee (MPC), which was established as an interim committee following an arrangement set out in a letter from the Chancellor to the Governor dated 6 May 1997.[2] The Act also transfers responsibility for the supervision and surveillance of banks from the Bank of England to the Financial Services Authority. The governance of the Bank itself is changed by the Act, which reforms the constitution, composition and duties of Court, the Bank's Board of Directors. The Act makes new provisions relating to the funding, the accounts and the profits of the Bank, and the collection of monetary statistics by the Bank is backed by legislation for the first time.

The Monetary Policy Committee

In his letter to the Governor on 6 May last year, the Chancellor said that all aspects of the new procedure for making and announcing decisions on monetary policy would operate *de facto* until the new Bank of England Act came into force. The Committee was therefore in a position to take its first decision on interest rates within a month of the announcement that the Bank was to be given operational independence.

The Bank's monetary policy objective, described in the Chancellor's letter, has now been set out formally in the new legislation. The Bank is to maintain price stability and, subject to that objective, to support the government's economic policy, including its objectives for growth and employment. The Treasury is responsible for defining and publishing what it means by price stability, and for specifying the economic policy of the Government. In other words, the Government sets the inflation target and the Bank takes the operational decisions required to reach it.

The Chancellor announced on 12 June 1997 that he was setting the Bank a target for retail price inflation excluding mortgage interest payments (RPIX) of 2.5%, rather than the previous formulation of '2.5% or less'. As chairman of the MPC, the Governor is required to write an open letter to the Chancellor if inflation strays by more than 1% either side of the 2.5% target. These detailed provisions relating to the inflation target are not contained within the Act itself.

However, the legislation does specify that the Treasury must publish a statement on its price stability objective and on the Government's economic policy within seven days of the Act coming into force, and thereafter at least once every twelve months.

The Act establishes the MPC as a committee of the Bank, and gives the Committee the responsibility for formulating and implementing monetary policy. It also sets out the composition of the MPC, which will comprise the Governor and two Deputy Governors of the Bank, two members appointed by the Bank after consultation with the Chancellor, and four members appointed by the Chancellor. Of the two members appointed by the Bank, one will be the executive responsible for monetary analysis within the Bank, and the other the executive responsible for monetary operations. A Treasury observer may attend meetings and speak, but not vote. The legislation says that the four external members appointed by the Chancellor (who become employees of the Bank) must have knowledge and experience 'relevant to the Committee's functions'.

The Treasury is given reserve powers to give orders to the Bank in the field of monetary policy, but the Act states that this is only if the Treasury is satisfied that they are required in the public interest and by 'extreme economic circumstances'. The Act also specifies a number of detailed operational and reporting procedures for the MPC. It says that the MPC must meet at least monthly, must publish its decisions as soon as practicable and must publish minutes of its meetings within six weeks (though there are provisions for delaying publication of information on market intervention by the MPC in certain circumstances). The minutes must record the votes of members, each of whom has one vote, but in the event of a tie the Governor, as chairman of the MPC, has a second, casting vote. The MPC is responsible under the legislation for approving the Bank's quarterly *Inflation Report*, and is closely involved with Bank staff in the preparation of the forecasts for the *Report*. Finally, the collection of statistics by the Bank for monetary policy purposes is to be backed by legislation for the first time.

Outside the specific provisions of the Act on such matters as structure and reporting, the MPC is free to set its own procedures, including the organisation of its programme of

(1) These changes were set out in an article on pages 241–47 of the August 1997 *Quarterly Bulletin*.
(2) The letter was published in the August 1997 *Quarterly Bulletin*, pages 244–45.

MPC membership

Professor Willem Buiter of Cambridge University and Professor Charles Goodhart of the London School of Economics were nominated by the Chancellor to join the MPC as external members, and appointed by the Bank in time for the first meeting on 5 and 6 June 1997. The other members of the Committee who attended the first meeting in June 1997 were the Governor, the Deputy Governor (at the time Howard Davies, now chairman of the Financial Services Authority), Mervyn King, Executive Director for Monetary Analysis, and Ian Plenderleith, Executive Director for Monetary Operations.

Two further members announced by the Chancellor took up their positions later in the year; Dr DeAnne Julius, previously chief economist at British Airways and now full-time at the Bank, joined in September. Sir Alan Budd, Chief Economic Adviser at the Treasury, acted as a Treasury observer at a number of meetings of the Committee until he retired from his post in November, and joined the MPC in time for its December meeting. David Clementi, appointed as Deputy Governor to succeed Mr Davies when he left for the FSA, joined the MPC in September. Finally, John Vickers, Drummond Professor of Political Economy at Oxford University, joined the Bank part-time on 1 April 1998 and will be full-time from 1 July. Mr Vickers succeeds Mr King as Executive Director for Monetary Analysis. He will join the MPC when the Act comes into force, bringing its membership to the full complement of nine. The Government has said that it intends to recommend Mervyn King to the Queen for appointment as a Deputy Governor when the legislation comes into force, and he will therefore remain a member of the MPC.

work. For example, the Committee has decided to hold an intensive all-day briefing of its members by the Bank of England's professional staff on the Friday before the monthly interest rate meetings. This 'pre-meeting' includes input from the Bank's twelve regional Agents, three of whom are asked to give a presentation each month. During the summer of 1997, the MPC met to consider a number of other operational matters, including its relationship with the press and the public. It was decided to institute a period of purdah each month, lasting eight days, from the Friday before the interest rate announcement—which is normally made on a Thursday—to the Friday immediately following, inclusive. During this period, MPC members will not normally make any public statements relating to monetary policy. In *Inflation Report* months, purdah is extended to the following week, to the morning that the *Report* is published. Since August 1997, the press conference on the *Inflation Report* has been televised live.

In his letter dated 6 May 1997, the Chancellor set out a framework for accountability of the MPC, including regular reports and evidence to the Treasury Select Committee (TSC). These arrangements for accountability through the TSC do not stem directly from the new legislation but are a matter for Parliament. In a further development, in October 1997 the TSC published its own report on the accountability of the Bank of England, which led to an announcement in February that it would hold hearings on the appointments of MPC members.

The Act does contain a number of provisions that relate to the accountability of the MPC. The Committee is to submit a monthly report on its activities to Court of the Bank. Court must, through a sub-committee comprising all the Non-Executive Directors, keep under review the procedures followed by the MPC. This includes ensuring that the MPC collects the regional, sectoral and other information necessary for formulating monetary policy. (The Non-Executive Directors' responsibilities are described in more detail later in this article.) Court is furthermore required by the Act to report annually to the Chancellor, who must lay the report before Parliament, including a report by the committee of Non-Executive Directors relating to their own responsibilities.

Banking supervision and financial stability

The Bank will retain responsibility for the overall stability of the financial system as a whole. This was set out in a letter to the Governor from the Chancellor on 20 May last year, but is not part of the Act.

The Act transfers to the Financial Services Authority (FSA) the Bank's functions under the Banking Act 1987 and the Banking Coordination (Second Council Directive) Regulations 1992, together with its functions under Section 43 of the Financial Services Act 1986, the Investment Services Regulations 1995, relating to the listing of money-market institutions, and Section 171 of the Companies Act 1989, relating to the listing of those who provide settlement arrangements.

A Memorandum of Understanding (MoU) between the Treasury, the Bank and the FSA,(1) published on 28 October 1997, established a detailed framework for co-operation between the three organisations in the area of financial stability, setting out their respective responsibilities. The MoU provides for the Bank and the FSA to exchange information freely and to consult where their interests interact or overlap. It also establishes a high-level Treasury—Bank—FSA Standing Committee, which will provide a forum where a common position can be developed for emerging problems. To further ensure that each is aware of the other's concerns, the chairman of the FSA, Howard Davies, has become a member of Court, and

(1) Reprinted as an Annex to this article.

Membership of Court

The membership of Court once the Act comes into force will be as follows:

Eddie George (Governor)
David Clementi (Deputy Governor)
Mervyn King (Deputy Governor)
Dame Sheila Masters (Partner, KPMG; designated by the Chancellor to chair the sub-committee of Non-Executive Directors)
Christopher Allsopp (Fellow in Economics, New College, Oxford)
Roy Bailie (Chairman, W&G Baird Holdings)
Andrew Buxton (Chairman, Barclays Bank)
Sir David Cooksey (Chairman, Advent Ltd)
Howard Davies (Chairman, Financial Services Authority)
Graham Hawker (Chief Executive, Hyder)
Frances Heaton (Director, Lazard Brothers)
Sir Chips Keswick (Chairman, Hambros plc)
Sir David Lees (Non-Executive Chairman, Courtaulds; Non-Executive Chairman, GKN)
Sheila McKechnie (Director of the Consumers' Association)
John Neill (Deputy Chairman and Group Chief Executive, Unipart Group)
Bill Morris (General Secretary, Transport & General Workers' Union)
Sir Neville Simms (Deputy Chairman and Group Chief Executive, Tarmac)
Sir Colin Southgate (Chairman, EMI Group; Chairman, Royal Opera House)
Jim Stretton (Chief Executive, UK Operations, Standard Life Assurance Company)

the Deputy Governor responsible for Financial Stability, David Clementi, serves on the FSA board. When the Bank of England Act takes effect, the Board of Banking Supervision will become a committee of the FSA.

The Bank has on its own initiative also established a new internal Financial Stability Committee, which parallels the roles and procedures of the MPC. Relieved of its responsibilities for supervising individual banks, the financial stability role of the Bank is to focus on detecting and limiting systemic financial risk, a standard central bank responsibility. Under the MoU, this involves close monitoring of the financial system infrastructure, particularly payments systems, to detect and advise the Chancellor on any major problems. The Bank will closely monitor economic and financial market developments, as part of an overview of the system as a whole. In exceptional circumstances, it will undertake official financial support operations, to limit the risk of problems affecting individual institutions spreading to other parts of the financial system. The Bank will also oversee the efficiency and effectiveness of the financial sector, particularly its international competitiveness.

Financial Stability Committee

The members of the Bank's internal Financial Stability Committee are :

Eddie George (Governor)
David Clementi (Deputy Governor)
Mervyn King (Deputy Governor)
Ian Plenderleith (Executive Director)
John Vickers (Executive Director)
Alastair Clark (Executive Director)
John Footman (Deputy Director)
Professor Dick Brealey (Adviser to the Governors)

Corporate governance

Until the Act comes into force, the Bank's Court of Directors consists of the Governor, the Deputy Governor and sixteen Directors,(1) up to four of whom may have executive responsibilities in the Bank. Members of Court are appointed by the Crown—Governors for five years and Directors for four years.

When the Bank of England Act comes into effect, the composition of Court will change to comprise the Governor, two Deputy Governors and sixteen Non-Executive Directors, all of whom will be appointed by the Crown—the Governor and Deputy Governors for five years and the Directors for three years. The Executive Directors will cease to be members of Court.

The Bank of England Act provides that Court will meet at least once a month. Court will manage the Bank's affairs, other than the formulation of monetary policy. This will include determining the Bank's objectives and strategy, and ensuring the effective discharge of the Bank's functions and the most efficient use of the Bank's resources. The sixteen Non-Executive Directors of Court will form a sub-committee, whose functions will include reviewing the Bank's performance in relation to its objectives and strategy, monitoring its financial management, reviewing its internal financial controls, and determining the Governor's and Deputy Governors' remuneration and pensions. It will also review the procedures of the MPC (as described above). The Chancellor of the Exchequer has designated Dame Sheila Masters to chair the sub-committee, and to chair Court in the Governor's absence, as provided for by the Act.

The Bank's finances

The Bank's *Annual Report* has been placed on a statutory basis, and is to include a report by the sub-committee of Non-Executive Directors, as described earlier.

(1) One directorship is currently vacant.

The Act also includes a section on cash ratio deposits (CRDs)—money that commercial banks place interest-free with the Bank to finance its operations, until now agreed with the Bank on a voluntary basis. These deposits will become statutory, and will cover institutions authorised under the Banking Act 1987, European bank branches in the United Kingdom and UK building societies. The latter are included in the CRD net for the first time. The legislation includes powers for the Bank to obtain information related to these functions. It also includes a formula under which the Bank's dividend to the Treasury will be 50% of its post-tax profits for the previous financial year 'or such other sum as the Treasury and the Bank may agree'. The Bank is required to keep proper accounts and to prepare a statement of accounts corresponding to those that would be required by the Companies Act (which it has done, in practice, for some years). The Treasury is given power to require the publication of additional information relating to the accounts.

The Bank has handed responsibility for the Government's debt to the Treasury, which set up a Debt Management Office with effect from 1 April 1998. The Government's cash management will also be transferred towards the end of the year (in October). The Chancellor also said on 6 May 1997 that the Bank would have its own pool of foreign exchange reserves to use in support of its monetary policy objectives, in addition to the Government's foreign exchange reserves. Neither of these changes requires legislation.

Annex
Memorandum of Understanding between HM Treasury, the Bank of England and the Financial Services Authority

1 This memorandum of understanding establishes a framework for co-operation between HM Treasury, the Bank of England and the Financial Services Authority in the field of financial stability. It sets out the role of each institution, and explains how they will work together towards the common objective of financial stability. The division of responsibilities is based on four guiding principles:

- clear *accountability*. Each institution must be accountable for its actions, so each must have unambiguous and well-defined responsibilities;
- *transparency*. Parliament, the markets and the public must know who is responsible for what;
- no *duplication*. Each institution must have a clearly defined role, to avoid second guessing, inefficiency and the duplication of effort. This will help ensure proper accountability;
- regular *information exchange*. This will help each institution to discharge its responsibilities as efficiently and effectively as possible.

The Bank's responsibilities

2 The Bank will be responsible for the overall stability of the financial system as a whole which will involve:

(i) stability of the monetary system. The Bank will monitor this, as part of its monetary policy functions. It will act daily in the markets, to deal with day-to-day fluctuations in liquidity;

(ii) financial system infrastructure, in particular payments systems at home and abroad. As the bankers' bank, the Bank will stand at the heart of the system. It will fall to the Bank to advise the Chancellor, and answer for its advice, on any major problem inherent in the payments systems. The Bank will also be closely involved in developing and improving the infrastructure, and strengthening the system to help reduce systemic risk;

(iii) broad overview of the system as a whole. The Bank will be uniquely placed to do this: it will be responsible for monetary stability, and will have high level representation at the institution responsible for financial regulation (through the Deputy Governor (financial stability), who will be a member of the Financial Services Authority Board). Through its involvement in the payments systems it may be the first to spot potential problems. The Bank will be able to advise on the implications for financial stability of developments in the domestic and international markets and payments systems; and it will assess the impact on monetary conditions of events in the financial sector;

(iv) being able in exceptional circumstances to undertake official financial operations, in accordance with the arrangements in paragraphs 11 to 13 of this Memorandum, in order to limit the risk of problems in or affecting particular institutions spreading to other parts of the financial system;

(v) the efficiency and effectiveness of the financial sector, with particular regard to international competitiveness. The Bank will continue to play its leading role in promoting the City. Much of this work will be directed towards improving the infrastructure.

The Financial Services Authority's responsibilities

3 The Financial Services Authority's powers and responsibilities will be set out in statute. It will be responsible for:

(i) the authorisation and prudential supervision of banks, building societies, investment firms, insurance companies and friendly societies;

(ii) the supervision of financial markets and of clearing and settlement systems;

(iii) the conduct of operations in response to problem cases affecting firms, markets and clearing and settlements systems within its responsibilities, where:

  (a) the nature of the operations has been agreed according to the provisions of paragraphs 11 to 13 of this Memorandum; and

  (b) the operations do not fall within the ambit of the Bank of England defined in paragraph 2 above. (Such operations by the Financial Services Authority may include, but would not be restricted to, the changing of capital or other regulatory requirements and the facilitation of a market solution involving, for example, an introduction of new capital into a troubled firm by one or more third parties.)

(iv) regulatory policy in these areas. The Financial Services Authority will advise on the regulatory

implications for firms, markets and clearing systems of developments in domestic and international markets and of initiatives, both domestic and international, such as EC directives.

The Treasury's responsibilities

4 The Treasury is responsible for the overall institutional structure of regulation, and the legislation which governs it. It has no operational responsibility for the activities of the Financial Services Authority and the Bank, and will not be involved in them. But there are a variety of circumstances where the Financial Services Authority and the Bank will need to alert the Treasury about possible problems: for example, where a serious problem arises, which could cause wider economic disruption; where there is or could be a need for a support operation; where diplomatic or foreign relations problems might arise; where a problem might suggest the need for a change in the law; or where a case is likely to lead to questions to Ministers in Parliament. This list is not exhaustive, and there will be other relevant situations. In each case it will be for the Financial Services Authority and Bank to decide whether the Treasury needs to be alerted.

Information gathering

5 Through the exercise of its statutory responsibilities, the Financial Services Authority will gather a wide range of information and data on the firms which it authorises and supervises.

6 The Financial Services Authority and the Bank will work together to avoid separate collection of the same data, to minimise the burden on firms. Where both need access to the same information, they will reach agreement as to who should collect it, and how it should be transmitted to the other.

7 The Bank will collect the data and information which it needs to discharge its responsibilities.

Information exchange

8 This will take place on several levels. The Bank's Deputy Governor (financial stability) will be a member of the Financial Services Authority Board, and the Financial Services Authority Chairman will sit on the Court of the Bank of England. At all levels, there will be close and regular contact between the Financial Services Authority and the Bank. The Financial Services Authority and Bank will establish a programme of secondments between the two institutions, to strengthen the links and foster a culture of co-operation.

9 The Financial Services Authority and the Bank will establish information sharing arrangements, to ensure that all information which is or may be relevant to the discharge of their respective responsibilities will be shared fully and freely. Each will seek to provide the other with relevant information as requested. The institution receiving this information will ensure that it is used only for discharging its responsibilities, and that it is not transmitted to third parties except where permitted by law.

Standing Committee

10 In addition to the above arrangements, there will be a Standing Committee of representatives of the Treasury, Bank and the Financial Services Authority. This will meet on a monthly basis to discuss individual cases of significance and other developments relevant to financial stability. Meetings can be called at other times by one of the participating institutions if it considers there to be an issue which needs to be addressed urgently. Each institution will have nominated representatives who can be contacted, and meet, at short notice.

11 In exceptional circumstances there may be a need for an operation which goes beyond the Bank's routine activity in the money market to implement its interest rate objectives. Such a support operation is expected to happen very rarely and would normally only be undertaken in the case of a genuine threat to the stability of the financial system to avoid a serious disturbance in the UK economy. If the Bank or the Financial Services Authority identified a problem where such a support operation might be necessary, they would immediately inform and consult with each other.

12 Each institution (the 'lead institution') would take the lead on all problems arising in its area of responsibility as defined in paragraphs 2 and 3. The lead institution would manage the situation and co-ordinate the authorities' response (including support operations). The form of the response would depend on the nature of the event and would be determined at the time.

13 In all cases the Bank and the Financial Services Authority would need to work together very closely and they would immediately inform the Treasury, in order to give the Chancellor of the Exchequer the option of refusing support action. Thereafter they would keep it informed about the developing situation, as far as circumstances allowed.

Consultation on policy changes

14 Each institution will inform the other about any major policy changes. It will consult the other in advance on any policy changes which are likely to have a bearing on the responsibilities of the other.

Membership of committees

15 The Financial Services Authority and the Bank will co-operate fully in their relations with international regulatory groups and committees. They will both be represented on the Basle Supervisors' Committee, the EMI Banking Supervisors' Sub-Committee, and on other international committees where necessary. Where only one institution is represented, it will ensure that the other can contribute information and views in advance of any

meeting; and will report fully to the other after the meeting. This will promote co-operation and minimise duplication.

16 The Financial Services Authority and the Bank will keep HM Treasury informed of developments in the international regulatory community which are relevant to its responsibilities.

17 The Financial Services Authority and the Bank have agreed the following arrangements for chairing domestic market committees:

- Sterling Joint Standing Committee: Financial Services Authority.
- Foreign Exchange Joint Standing Committee: Bank of England.
- Derivatives Joint Standing Committee: Financial Services Authority.
- Stock Lending and Repo Committee: Bank of England.

18 The Financial Services Authority and the Bank will each use best endeavours to facilitate contacts by the other with overseas central banks and/or regulators, where necessary to discharge their respective responsibilities.

Provision of services

19 In some cases it will be more efficient for a service to be provided by the Financial Services Authority to the Bank, or *vice versa*, rather than for both institutions to meet their own needs separately. In these cases, service agreements will be established between the two institutions setting out the nature of the service to be provided, together with agreed standards, details of timing, charges (if any), notice periods, and so on. These agreements will in the first instance cover: the provision of facilities (premises, IT etc) during the transitional phase; the provision of analysis on domestic and overseas financial markets; the provision of research; and the processing of statistical information.

Litigation

20 The Bank will retain responsibility for any liability attributable to its acts or omissions in the discharge or purported discharge of its banking supervisory functions prior to the transfer of those functions to the Financial Services Authority and shall have the sole conduct of any proceedings relating thereto. The two institutions will co-operate fully where either faces litigation.

Records

21 The Financial Services Authority will be responsible for the custody of all supervisory records. It will ensure that, within the framework of the relevant legislation, the Bank has free and open access to these records.

Rt Hon Gordon Brown MP
Chancellor of the Exchequer

Eddie George
Governor of the Bank of England

Howard Davies
Chairman, Financial Services Authority

Markets and operations

- *Bond and equity markets were buoyant in the first quarter of the year.*
- *Official interest rates were unchanged in most of the major industrialised countries, including the United Kingdom.*
- *Short-term interest rate expectations were also broadly unchanged.*
- *Foreign exchange markets were active: sterling and the dollar rose, and the yen was volatile.*

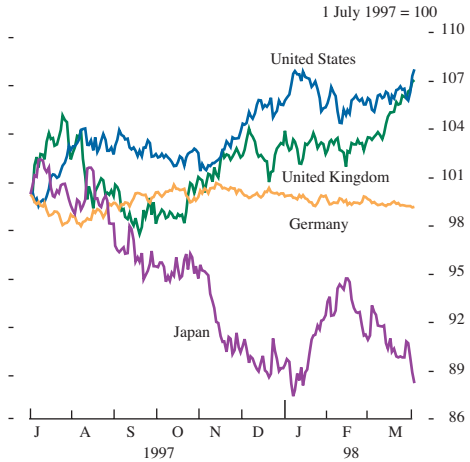
Overview

After the volatility of the final quarter of 1997, markets were generally more stable in the first quarter of this year. Equity markets in the major countries rose to new highs during March. This partly reflected lessening concern about the effects of the Asian crisis, though other institutional and liquidity factors were also important.

Bond markets in the major countries, which had benefited in 1997 Q4 as investors sought the security of highly-rated government paper, gave up only a little ground in 1998 Q1. Yields in the United Kingdom and United States reached historic lows in January; real interest rates and inflation expectations fell in both countries.

Foreign exchange markets were also active in the first quarter of 1998, with sterling rising to its highest against the Deutsche Mark since May 1989. The dollar strengthened modestly against the Deutsche Mark. The yields available in sterling and dollar markets were seen as attractive relative to lower-yielding currencies such as the yen and Swiss franc. Market expectations about the likelihood of Economic and Monetary Union (EMU) involving eleven countries were, if anything, strengthened following the Irish punt's realignment. Foreign exchange volatility fell, with the exception of the yen (see Chart 1), which was affected principally by news about Japanese fiscal policy and associated weakness in the stock market. East Asian currencies recovered from their lows of the previous quarter.

Chart 1
Effective exchange rate indices: United Kingdom, United States, Germany and Japan

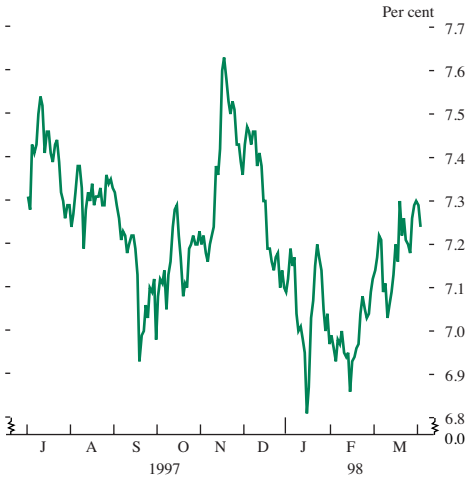


Market developments

Short-term interest rates

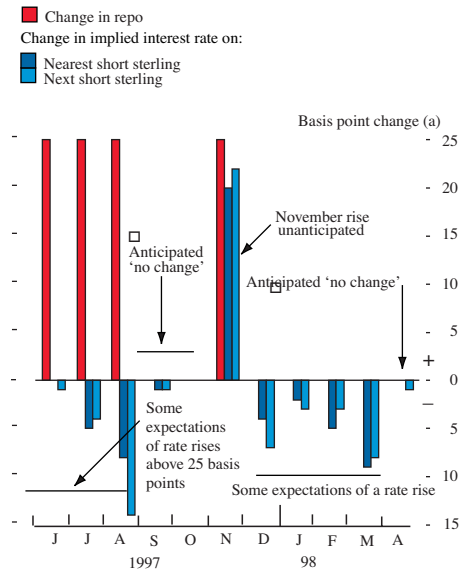
Short-term official interest rates in the United Kingdom were unchanged during the first quarter of the year. Short-term interbank rates, to which some corporate borrowing rates are linked, also remained broadly unchanged during the quarter. Despite no change in official rates, the three-month London interbank offered rate (Libor) had risen towards the end of last year, partly affected by credit concerns during the Asian crisis, and reached a peak of 7.6% in December. It fell a little in early January, as the effect of the Asian crisis on short-term funding rates

Chart 2
Short sterling: December 1998(a)



(a) Three-month Libor rate implied by short sterling futures price.

Chart 3
MPC decisions and the change in short sterling implied interest rates



(a) Close of business Wednesday to close of business Thursday on day of MPC announcement.

eased. But for most of the first quarter, three-month Libor was at, or around, 7.5%.

Although shorter-term cash money-market rates were broadly unchanged during the quarter, interest rate expectations further along the money-market curve fluctuated quite sharply. In the early part of the quarter, interest rate expectations fell; Chart 2 shows this for the December 1998 three-month sterling interest rate future. Rate expectations for the end of 1998, according to this measure, reached a low in early January of 6.8%, as markets became more worried about potentially large effects on growth from the Asian crisis. US markets became concerned about the possibility of deflation, following a speech by Federal Reserve Board Chairman Greenspan on 3 January. As a result, US short-rate expectations fell sharply, and the effect was to some extent transmitted to UK markets.

Rate expectations then began to rise gradually, as markets began to judge that the Asian crisis might affect growth less than previously expected. In the United Kingdom, continued uncertainty about the macroeconomic outlook, with generally weaker-than-expected manufacturing data being offset—in the market's view—by uncertainty about how much the personal sector was slowing down, also helped lead to firmer rate expectations. News that the Bank's Monetary Policy Committee (MPC) had recorded divided votes for the first time, with three and then four members voting for an immediate rise in rates, also underpinned rate expectations.(1) Some market commentators had also looked for measures to exercise more restraint on consumer demand growth in the Budget on 17 March.

Although the Bank's repo rate was unchanged during the quarter, the 'no change' decisions themselves generated changes in market interest rate expectations: the markets did not fully anticipate these decisions. To illustrate, Chart 3 shows the change in the nearest short sterling contracts on the day of each MPC announcement. Following the March MPC announcement, the implied interest rate on the contract expiring in March 1998 fell by 8 basis points on that day—suggesting that there had been some probability attached to a 25 basis point rise in the repo rate, though the size of the move in short sterling suggests that the probability attached to a rise was less than 50%.

Overall, sterling interest rate expectations, measured by short sterling futures prices, rose during the quarter, though as Chart 4 shows, the money-market yield curve ended the quarter sloping downward. In other words, the markets still believed that the outlook was for flat-to-falling short-term interest rates. At the beginning of the quarter, short-term interbank rates were expected to fall to 7.15% by the end of 1998; by the end of the quarter, the rate expected for end 1998 was about 10 basis points higher, implying a fall of about 25 basis points from the end-March three-month rate.

US interest rate expectations, derived from futures prices, ended the quarter little changed (see Chart 5). Eurodollar futures rates for

(1) At the January meeting, a minority voted against the proposition that the Bank's repo rate be left unchanged, preferring an immediate increase in interest rates. At the February meeting, the committee was split evenly and the Governor used his casting vote in favour of the proposition that interest rates should be left unchanged.

Chart 4
UK three-month Libor cash and futures markets

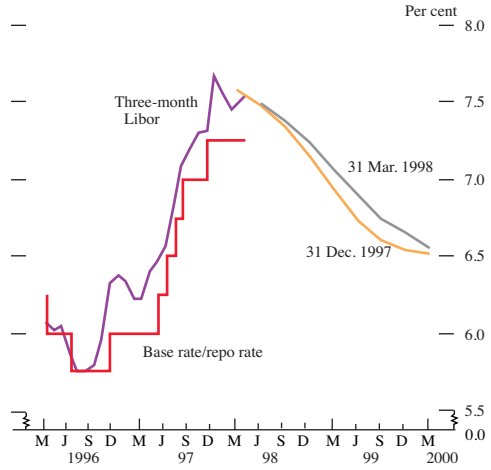


Chart 5
Changes between end December and end March in three-month interest rates implied by futures contracts

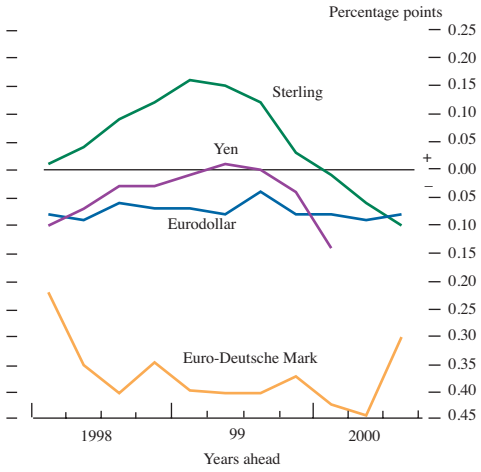
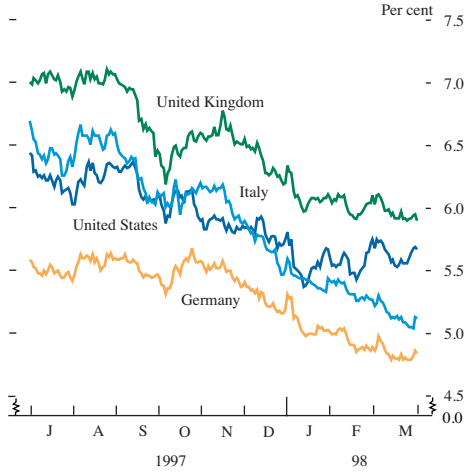


Chart 6
International ten-year bond yields



December 1998 fell by around 40 basis points in the days after the speech by Chairman Greenspan mentioning deflation, amid continuing concerns about the extent of the crisis in East Asia. Rate expectations then drifted upwards, as the market came to believe that its more extreme deflationary fears might not be valid, and growth and corporate earnings continued to be relatively strong.

In Japan, interest rate expectations also fluctuated during the quarter, reflecting views on the domestic economy. In early January, weakness in other East Asian markets—an important market for Japanese goods—reduced the implied rate of the June 1998 euroyen contract to around 0.65%, from around 0.8% in late December (the official discount rate was 0.5% during the quarter). Between mid January and 25 February, the recovery of the East Asian markets, and the prospect of a Japanese fiscal stimulus, helped to raise the implied rate to 0.87%. However, the market was rather sceptical of the potential for fiscal policy to stimulate demand and euroyen futures prices later rose, as the markets expected accommodative monetary policy to continue for longer.

In the exchange rate mechanism countries, there was a broad decline in short-term interest rate expectations. The nearer end of the euro-Deutsche Mark futures curve fell by around 20 basis points during the quarter, with the longer end falling by around 45 basis points. This downward shift reflected expectations that interest rates in the ERM countries would converge at the lower rates of Germany and France next year, rather than the average rates for the group (see the box on page 104). As part of the move to convergence of official interest rates, Portuguese rates were cut by 20 basis points during the quarter.

Long-term interest rates

After the turbulence of the final quarter of 1997, when government bond markets were seen as a safe haven and bond yields fell sharply, government bond markets were generally much calmer in the first quarter of this year (see Chart 6). Nevertheless, in the United States and United Kingdom, bond yields reached historic lows during the quarter, and yield curves continued to flatten or invert (see the box on page 105).

In the United States, bond yields ended the quarter little changed, with the par yield on the long bond at 5.95% at the end of the quarter. At the beginning of January, however, US yields reached a low of 5.7%. That was mainly driven by the market's fear that the Asian turbulence might lead to a more pronounced slowdown in growth, or even deflation. As those fears faded, US yields drifted higher later in the quarter.

In the ERM countries, long-term interest rates declined steadily during the quarter, with further convergence of core and non-core countries' bond yields. For example, German ten-year bond yields fell by 44 basis points during Q1, finishing the quarter at 4.91%, and Spanish ten-year yields fell by 50 basis points, to end the quarter at 5.09%.

Gilt-edged market

The gilt-edged market reached historic levels in the first quarter. Gilt yields fell during the quarter as a whole, in contrast with

European short-term rates

The path of European short-term interest rates and exchange rates in the run-up to the end of 1998 will affect monetary conditions in Europe. What changes in market views were embodied in the market in Q1, and what might the implications be? (This box covers developments up to the end of the first quarter and so does not include any assessment of developments during, or immediately after, the 'convergence weekend' of 2–3 May.)

Table 1
Official interest rates in EMU countries at 31 March

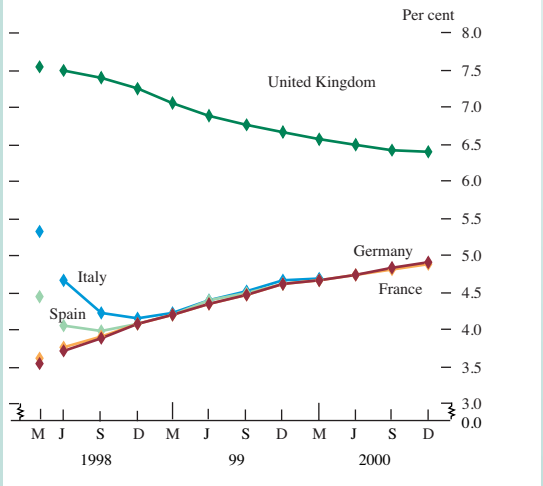
Per cent

Austria	3.2	Ireland	6.75
Belgium	3.3	Italy	5.5
Finland	3.25	Portugal	4.7
France	3.3	Spain	4.5
Germany	3.3		
Luxembourg	3.3		
Netherlands	3.3		

Table 1 shows that among the countries likely to enter EMU in 1999, there was a group whose policy rates were close to 3¼%, and a group whose rates were much higher.

The chart shows three-month futures rates for four prospective (1999) EMU countries and the United Kingdom. During the past year, short-rate expectations have converged considerably. A year ago, French and German futures rates did not fully converge by the beginning of 1999. The gap between them was about 15 basis points, probably reflecting residual uncertainty about the probability of EMU going ahead. Data for Italy and Spain were at that time available only up to 1998; they showed that by June 1998, those countries' short-term interest rates were expected to be considerably above those in Germany—by more than 2 percentage points in the case of Italy, and 1 percentage point in the case of Spain. By the end of the first quarter, though actual short-term rates in the four countries were still different, the market expected them to converge by the beginning of 1999.

Three-month futures rates (March 1998)



In 1997 Q4, markets appeared to be affected frequently by changing views and rumours about the level at which short-term interest rates might converge. The rise in the Bundesbank's repo rate announced on 9 October was an important factor. At the height of the speculation (around mid to late October), futures rates for March 1999 implied German three-month interest rates of 5.1%, a rise of 100 basis points from three-month rates at the time. So at that point, the market was discounting higher short rates at the start of EMU. Since then, however, there has been a growing view that interest rates will converge at lower levels.

By the end of the first quarter, implied futures rates for March 1999 for participant EMU countries were around 4¼%. That does not mean that official rates were expected to converge at that level—futures rates are of different maturity than official rates and also include credit and liquidity premia. For example, at the end of March, three-month rates in Germany were around 3.6%, so the expected rise in three-month rates was about 65 basis points. By contrast, the market expected a fall of, for example, 100 basis points in Italy and 200 basis points in Ireland. If covered interest rate parity is to hold, while a country's interest rates are above those in the DM bloc, its currency would need to depreciate toward its expected EMU conversion rate.

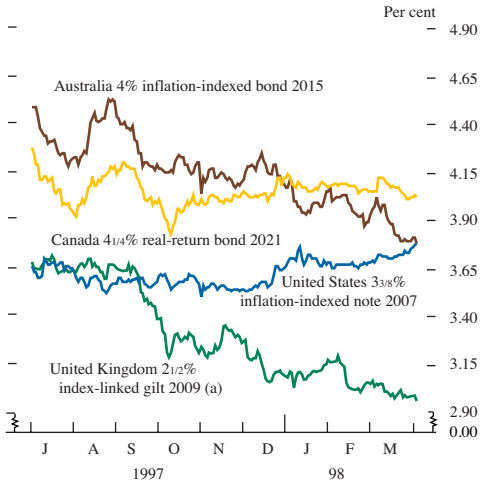
Forward exchange rates at the end of March showed that EMU countries' exchange rates were moving closer to their central rates as the start of EMU approached. Table 2, for example, shows the spot rates, central rate and nine-month forward rates for EMU countries. The realignment of the Irish punt on 14/15 March moved the central rate up by 3%, closer to market levels.

Table 2
Spot and forward exchange rates against the Deutsche Mark at 31 March

	Spot	Nine-month forward	Deutsche Mark central rate
Belgium	20.63	20.63	20.63
Finland	3.035	3.035	3.04
France	3.35	3.35	3.35
Greece	173.1	182.2	180.5
Ireland	2.51	2.49	2.48
Italy	985	992	990
Netherlands	1.13	1.13	1.13
Portugal	102.4	102.7	102.5
Spain	84.87	85.12	85.07

On domestic demand management grounds, some countries might wish to maintain their interest differential with Germany for as long as possible. In Ireland and Spain, for example, GDP grew by 7.5% and 3.2% in 1997 and is forecast to grow by 7.3% and 3.6% in 1998, according to the OECD's December *Economic Outlook*. Asset markets also seem to be pricing in strong growth in such countries: equity indices in Italy and Spain, for example, have risen by more than in Germany during the past year, perhaps as investors favour equities as a protection against potential inflation risks; and house prices in some European countries have also been rising rapidly.

Chart 7
Real yields on index-linked securities



(a) Assuming 3% inflation.

US Treasuries: ten-year par gilt yields fell by 41 basis points, to 5.88%. So the spread between gilts and Treasuries narrowed by about 35 basis points. The gap between gilts and Bunds was broadly unchanged during the quarter, at around 100 basis points.

Two factors accounted for gilts' modest outperformance of Treasuries: a fall in relative UK inflation expectations and a fall in relative real interest rates. Relative inflation expectations can be measured by comparing breakeven inflation rates in the two countries. The breakeven inflation rate is the inflation rate at which investors are indifferent between holding nominal and index-linked bonds of the same maturity. UK ten-year breakeven rates continued to be well above US rates during the quarter, but fell by more (UK rates fell by about 0.3 percentage points, US rates by about 0.1 percentage point). Relative real interest rates, measured by the yield on index-linked bonds, also fell in the United Kingdom, as Chart 7 shows.

Lower prospective gilt supply and the strength of sterling were additional factors underpinning the gilt market. In January, there was a record public sector debt repayment, and in February the public sector also repaid debt (£2.1 billion), compared with a market expectation of a borrowing requirement of around £2.2 billion. The Budget on 17 March confirmed the view that gilt supply was falling rapidly: it forecast that more gilts would be redeemed than issued in the 1998/99 fiscal year. But this did not

Shape of the yield curve

The slope of the yield curve, in the form of the gap between ten-year bond yields and three-month interest rates, is a useful summary statistic that the markets—and some academics—sometimes use as a potential indicator of future economic growth. These indicators are used more widely in the United States than in the United Kingdom, and there is also reason to be sceptical of their predictive power if there has been a change in monetary regime. Nevertheless, the shape of the curve is a useful 'real-time' measure of market views.

Yield curve slopes compared (basis points)

	Late 1980s		1997–98	
	Peak of upward slope	Trough of downward slope	Peak of upward slope	March 1998
United Kingdom	+130	-510	+260	-150
United States	+190	-100	+150	0
Germany	+270	-60	+270	+140
Japan	+60	-40	+210	+70

Note: Slope is defined as ten-year minus three-month rates. Positive number implies upward slope.

The table shows how a number of countries' yield curves have flattened recently. The UK yield curve has become steadily more inverted during the past six months. The US yield curve has moved from upward-sloping to flat.

In Germany and Japan, yield curves are still upward-sloping, though they have flattened moderately. The last time that yield curves in the G3 countries (and the United Kingdom) all flattened was in the late 1980s/early 1990s, towards the end of a long period of global expansion. There are two major differences now:

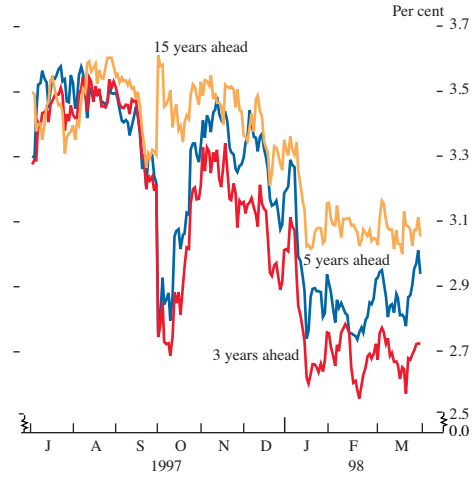
- The recent flattening has been less marked than in the late 1980s.
- The recent flattening has largely been caused by a fall in long-term rates. More typically, yield curve flattening in the United Kingdom and United States has been due to the short end rising.

The recent flattening of yield curves is consistent with the view that the international economic outlook is at an interesting balance, with an unusual blend of factors influencing market views: the effect of the Asian crisis; uncertainty about whether previous output-inflation trade-offs have changed permanently; and the run-up to EMU. The markets are uncertain how to weight these various factors. The modest flattening in yield curves during the past six months might suggest that, overall, markets are taking a view that there will be a gentle slowdown during the coming year.

Chart 8
Implied forward interest rates(a)

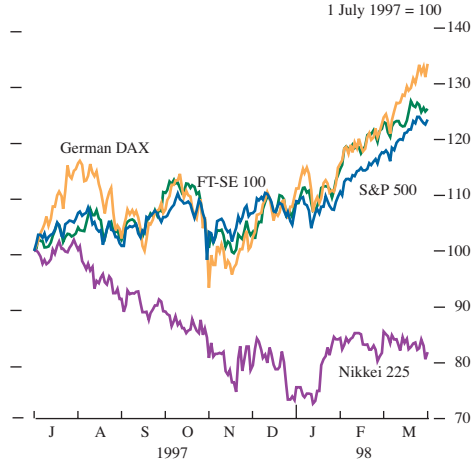
(a) Nominal six-month annualised interest rates, derived from the zero-coupon yield curve.

Chart 9
Implied forward inflation expectations(a)



(a) Six-month annualised inflation rates, derived by comparing yields on conventional and index-linked bonds.

Chart 10
Equity indices



lead to an immediate or obvious 'supply effect' on yields. Gilt yields rose initially in response to the Budget, as the market seemed to interpret the Budget as a whole as leaving some likelihood of a further interest rate rise. Separately, the continuing strength of sterling also attracted some international interest in the gilt market.

Credit indicators and spreads

Credit spreads tended to narrow somewhat in the first quarter, as the worst fears about the consequences of the Asian crisis receded. East Asian countries' bond yields widened to about 500 basis points over Treasuries during 1997 Q4, but narrowed to around 200–300 basis points during 1998 Q1. In the United Kingdom and the United States, corporate bond spreads were roughly unchanged during the quarter—the spread of a typical AAA-rated eurosterling bond fluctuated around 35 basis points over gilts, with A-rated eurosterling bonds trading at around 90 basis points over gilts. Credit spreads in the sterling interbank market narrowed during the quarter, as the premia paid by Japanese banks relative to other banks fell.

Equities

Equity markets in the major countries, except Japan, rose sharply in the first quarter, as Chart 10 shows. In the quarter as a whole, the FT-SE 100 rose by about 15%, the Dow Jones by 11%, and the German DAX by 20%. Price/earnings ratios reached their highest levels for four or five years in the United Kingdom and United States.

The rise in equity markets reflected a number of factors: lower long-term real interest rates; a recovery in East Asian markets; continued growth in the United Kingdom and United States, with little sign of inflationary pressure; rising equity markets in ERM countries, which benefited from lower interest rate expectations; actual and prospective merger and acquisition activity, particularly in the United Kingdom and United States, which helped to maintain interest from speculative buyers; and share buy-backs, which confirmed the healthy state of corporate finances. But not all of the UK news was positive for equities—a number of UK companies issued profit warnings, reflecting both the effects of the Asian crisis on future earnings and the impact of the high pound (other factors were also cited, such as slowing consumer demand around Christmas).

Foreign exchange

(i) International background

For much of the first quarter, the Japanese yen was at the centre of foreign exchange market developments (see Chart 11), reflecting news about the prospects for Japanese fiscal policy and the weakness of the Japanese stock market. Table A shows that the yen was relatively stable overall, though it traded in a wide range against the dollar from ¥123 to ¥135.

The dollar's steady appreciation against the yen was interrupted early in the New Year. The yen rallied in the first week of January, underpinned by market reports that the Bank of Japan had intervened, and by more stable East Asian currency markets. In the second half of January, the yen strengthened further on hopes that

Chart 11
Japanese yen exchange rates

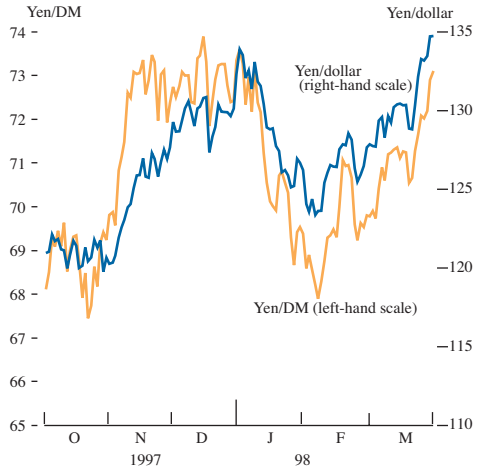


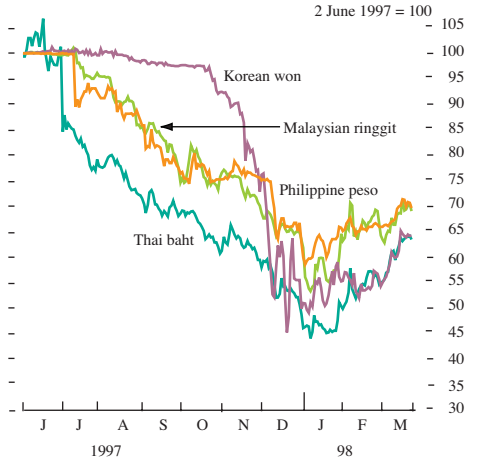
Table A
Exchange rates and effective exchange rate indices

	1992 15 Sept.	1996 1 Aug.	1996 31 Dec.	1997 31 Dec.	1998 31 Mar.	Percentage changes since 31 Dec. 1997
£ ERI	99.5	84.7	96.1	104.4	108.8	4.21
£/DM	2.78	2.29	2.64	2.96	3.10	4.75
£/$	1.89	1.56	1.71	1.65	1.67	1.77
$/DM	1.47	1.47	1.54	1.80	1.85	2.93
$/Yen	123.80	106.75	116.05	130.12	133.28	2.43
$ ERI	93.7	95.6	98.4	109.1	110.7	1.47
¥/ERI	113.5	135.6	125.6	118.9	117.2	-1.43
DM ERI	103.1	109.5	107.1	103.1	102.4	-0.68

Table B
Emerging market currencies versus US dollar

	1997 1 July	1997 31 Dec.	1998 31 Mar.	Percentage changes since 31 Dec. 1997
Indonesian rupiah	2,432	5,402	8,500	-36
Thai baht	24.4	47.0	38.9	21
Korean won	888.0	1,600.0	1,384	16
Malaysian ringgit	2.53	3.88	3.64	7
Philippine peso	26.4	39.5	37.7	5
Singapore dollar	1.43	1.68	1.61	4

Chart 12
Emerging market currencies versus the US dollar



an income tax cut might be introduced, and finished the month at ¥126, up ¥8 from its weakest point. Its steady appreciation continued until 12 February, when sentiment changed after the US Treasury criticised Japanese policy, ahead of the announcement of the latest fiscal package on 20 February. The yen weakened sharply in those eight days, from ¥122½ to more than ¥128 against the US dollar, and from ¥67½ to ¥71½ against the Deutsche Mark. During March, a similar pattern was evident. Optimism that Japanese fiscal policy would be relaxed before the end of the financial year supported the yen for a period. But the dollar appreciated to a new seven-year high at ¥135 in early April.

Japan's foreign exchange laws were relaxed on 1 April. Previously, non-financial institutions and individuals had to seek prior approval to transfer more than ¥5 million abroad. Similar changes occurred in France and Italy in the early 1980s, and foreign currency deposits as a proportion of the narrow money supply rose in both countries from around 2% to more than 6% between 1989–96. In Japan, foreign currency deposits represent 1% of the narrow money supply. A comparable increase in Japanese foreign currency deposits would lead to a marked rise in capital outflows from Japan, to levels that were last evident in the mid 1980s.

Table B shows that East Asian currencies, except the Indonesian rupiah, strengthened during the first quarter. A number of factors lay behind this. Thailand removed restrictions that had created an offshore market between foreign banks in its currency; Korea renegotiated the terms of its private sector debt; and the IMF expressed satisfaction at the progress that a number of countries had made in the implementation of structural reforms. Some private sector economists concluded that the depreciations had overshot estimates of equilibrium real exchange rates. The belief that the currencies of the region were undervalued at the start of 1998 contributed to the nominal appreciation. Chart 12 shows that all the currencies recovered at a similar time (the Indonesian rupiah was an exception for a period).(1)

The US dollar traded in a relatively narrow range against the Deutsche Mark, between DM 1.79–DM 1.84 for most of the first quarter. Chart 13 shows that the relative stability of the exchange rate was associated with a fall in implied volatility, as derived from currency option prices, to its lowest since late 1996. Periodically, the market rate was influenced by heightened political risk (such as tensions between the United States and Iraq in the Gulf, and US domestic politics). In late March, the US dollar briefly broke out of this range, reaching DM 1.85, a move that was accompanied by a flattening of the US money-market curve. For much of the period, the US money-market curve had been inverted, reflecting the view that US official interest rates were likely to be lowered (see money-markets section).

The Canadian dollar weakened by almost 4% against the US dollar in the fourth quarter of 1997, despite a tightening of Canadian monetary policy in December 1997. Chart 14 shows that the Canadian dollar continued to weaken during January, and it fell to an historic low of $0.6821 against the US dollar on 29 January. The Bank of Canada responded by raising its target range for the

(1) 'The International environment' article on pages 123–35 discusses macroeconomic developments in East Asia.

Chart 13
Deutsche Mark/dollar one-month implied volatility derived from currency options prices

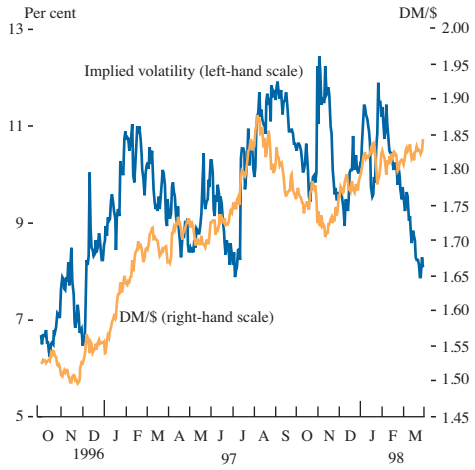


Chart 14
Canadian dollar and overnight interest rates

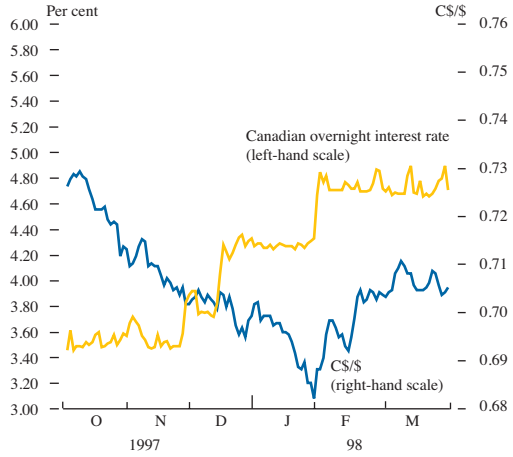
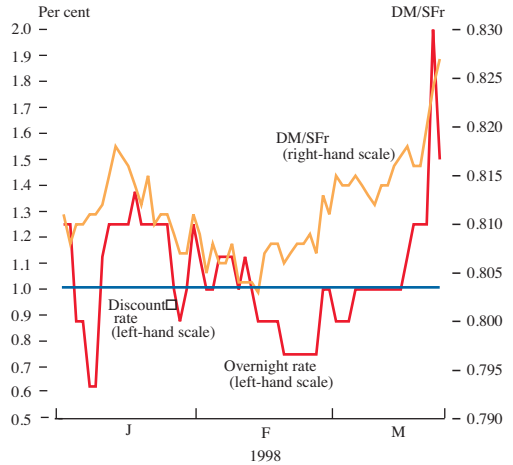


Chart 15
Deutsche Mark/Swiss franc and Swiss interest rates



overnight rate by a further 50 basis points to 4.5%–5%; the exchange rate recovered, and finished the first quarter little changed.

Within the ERM, the Irish punt's bilateral central rate against the Deutsche Mark was raised by 3% from DM 2.44105 to DM 2.48338 with effect from 16 March—the first such realignment of the ERM since the Spanish peseta and Portuguese escudo's central rates were reset in March 1995.(1) The Greek drachma joined the ERM on 16 March, and its Ecu central rate was set at 357 Greek drachma per Ecu. Minor technical changes were made to the bilateral central rates of various currencies. The Irish punt's revaluation brought its central rate more closely into line with its spot market rate at the time. Although its spot exchange rate remained above its central rate, its forward exchange rate for January 1999 was brought closer to its new ERM bilateral parity against the Deutsche Mark. The European Monetary Institute and the European Commission released their convergence reports(2) on 25 March. Neither report appeared to disturb the market view that eleven countries would enter EMU at the beginning of 1999.

Outside the ERM, European exchange rates were more volatile. Chart 15 shows that the Swiss franc appreciated against the Deutsche Mark towards SFr 0.80 during February (close to its all-time high, reached in September 1995). In the second half of February, the Swiss National Bank subsequently allowed overnight interest rates to fall below its key official rate. During the first quarter as a whole, the Deutsche Mark strengthened by 1.6% to SFr 0.8243. In Norway, official interest rates were raised from 5.50% to 5.75% on 18 March. After the announcement, the Norwegian krone strengthened modestly. However, during the first quarter, the Norwegian krone weakened by 3.2% against the US dollar, from NOK 7.38 to NOK 7.62, following weaker oil prices.

(ii) Sterling

Sterling rose by 4% to 108.8 on the effective exchange rate index between the end of 1997 Q4 and 1998 Q1. The rise was again more marked against the Deutsche Mark than against the US dollar (see Table A), with sterling peaking (intraday) against the Deutsche Mark at almost DM 3.11 on 31 March, its highest since May 1989. Chart 16 shows sterling against the Deutsche Mark and US dollar over the longer term; it rose by 36% and 9% respectively between 2 August 1996, when it started its recent appreciation, and 31 March 1998.

Sterling's first-quarter appreciation against the Deutsche Mark was steady. As a result, the volatility of the DM/£ spot exchange rate fell: DM/£'s rolling 30-day standard deviation fell to its lowest since late 1996. This partly reflected the relative stability of the DM/$; Chart 17 shows that DM/£ and DM/$ implied volatility also fell.

Sterling was supported during the quarter by the view that the level of UK interest rates was likely to be sustained. More generally, currencies such as sterling, the US dollar, and the Swedish krona

(1) Italy resumed its participation in the ERM in November 1996, and Finland joined in October 1996.
(2) As required by Article 109j of the Treaty establishing the European Community.

Chart 16
Sterling exchange rates

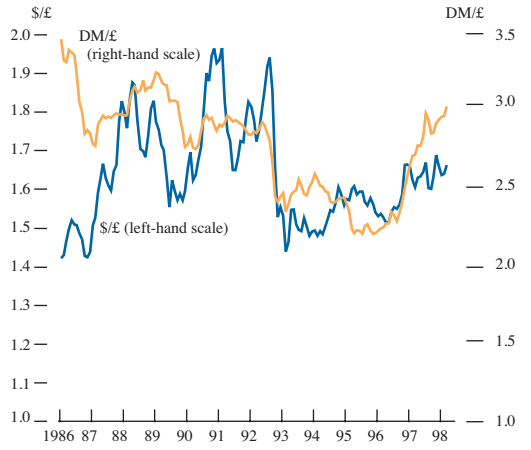
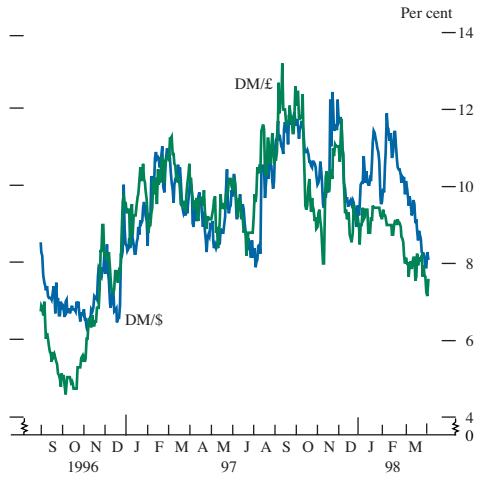


Chart 17
Deutsche Mark/sterling and Deutsche Mark/dollar one-month implied volatility(a)



(a) Derived from options prices.

Table C
Average daily money-market shortages

£ millions

1996	Year	900
1997	Year	1,200
1998	January	1,400
	February	1,800
	March	1,600

strengthened during the first quarter. By contrast, currencies with interest rates below US levels, such as the Japanese yen, Swiss franc, and Deutsche Mark, tended to weaken (the Canadian dollar was under pressure until the spread between Canadian and US official short-term interest rates was reduced). So it was more profitable than usual to borrow in a lower-yielding currency and to invest in a higher-yielding currency, assuming no exchange cover.

Expectations about sterling's longer-term prospects influenced the market during the first quarter. For example, at the start of the year, market forecasts suggested that sterling was likely to depreciate during 1998. A range of private sector forecasts predicted a fall in sterling's effective exchange rate of around 7% in the year to 1998 Q4 (financial market economists expected a slightly greater depreciation). This may have encouraged longer-term investors to establish bearish sterling positions at the start of the new year. Sterling's appreciation during the first quarter appeared to persuade some longer-term investors to close these short positions towards the end of the period. This may help to explain the pattern of sterling's movements, and the extent of its appreciation during March.

The market impact of publication, on 11 February, of the minutes of the MPC's January meeting was obscured by the release of weaker-than-expected UK data (for unemployment and average earnings) on the same day. Overall, sterling strengthened slightly, and it rose further an hour later, after the *Inflation Report* was published. Sterling closed up by 1% on the exchange rate index at ERI 104.4 on 11 February. During the next four weeks, sterling remained steady against the US dollar between $1.63–$1.65, but it rose with the US dollar against the Deutsche Mark from DM 2.93 to DM 3.00. At times, sterling strengthened independently, against both the US dollar and Deutsche Mark, for example following the release of the February MPC minutes on 11 March. Following the release of strong RPIX data and the Budget on 17 March, sterling rose by 0.8% on the ERI, to ERI 107.5, between the start of trading on 17 March and the close on 18 March. Sterling peaked (intraday) at ERI 109.3 on 31 March, its highest since January 1986.

Open market operations and gilt repo

Operations in the sterling money market

The stock of money-market refinancing held by the Bank was very high during the first quarter, reaching a peak of around £15.3 billion, at end February. The stock was high because gilt maturities and government spending were bunched toward the end of the financial year, whereas the gilt funding programme had been carried out at a relatively even pace through the year; the overfund of gilt sales over the year as a whole also contributed to the high stock of refinancing. This high stock of refinancing led to large daily money-market liquidity shortages, as Table C shows. The average daily shortage of £1,800 million in February was the highest since the reform of the OMOs in March 1997.

This high stock of refinancing, combined with retail banks' continuing need to hold sterling stock liquidity for supervisory purposes, meant that eligible collateral remained in short supply relative to its demand. Partly as a result, the large average daily liquidity need was occasionally difficult to relieve through regular

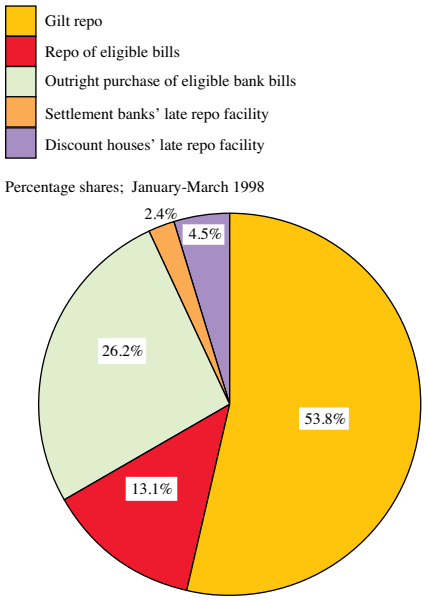
Table D
Influences on the cash position of the money market

£ billions; *not seasonally adjusted*
Increase in bankers' balances (+)

	1997/98	1998		
	Apr.–Dec.	Jan.	Feb.	Mar.
CGBR (+)	9.4	-10.0	-1.2	5.3
Net official sales of gilts (-) (a)	-12.4	0.9	0.1	5.2
National Savings (-)	-1.1	-0.3	-0.2	0.0
Currency circulation (-)	-1.0	0.7	-0.1	1.3
Other	3.7	1.3	-2.2	-5.9
Total	**-1.4**	**-7.4**	**-3.6**	**5.9**
Outright purchases of Treasury bills and Bank bills	0.1	0.2	-0.2	0.4
Repos of Treasury bills, Bank bills, and British Government stock and non-sterling debt	-1.7	5.4	2.3	-4.2
Late facilities (b)	0.0	0.6	-0.4	0.0
Total refinancing	-1.7	6.3	1.7	-3.7
Foreign exchange swaps	0.0	1.0	2.0	-2.3
Treasury bills: Market issues and redemptions (c)	-2.8	-0.1	0.0	0.0
Total offsetting operations	**1.1**	**7.4**	**3.7**	**-6.0**
Settlement banks' operational balances at the Bank	-0.3	-0.1	0.1	-0.1

(a) Excluding repurchase transactions with the Bank.
(b) Since 3 March 1997, when the Bank introduced reforms to its daily money-market operations, discount houses and settlement banks have been eligible to apply to use the late facilities.
(c) Issues at weekly tenders plus redemptions in market hands. Excludes repurchase transactions with the Bank (market holdings include Treasury bills sold to the Bank in repurchase transactions) and tap Treasury bills.

Chart 18
OMOs—instrument overview



OMOs and there was occasionally a larger-than-usual resort to overnight repo after the last round of OMOs. The short-dated money markets were also occasionally under sharp upward pressure, with spikes in the overnight interbank and GC repo rates late in the money-market day. As an illustration, the sterling overnight index average (SONIA) was, on average, 9 basis points above the Bank's repo rate during the quarter, compared with 2 basis points in the previous quarter.

In view of the larger stock of money-market refinancing that was likely to build up in Q1, the Bank announced on 29 January that it would supplement its usual money-market techniques by providing sterling liquidity through conducting foreign exchange swaps. Foreign exchange swaps are used routinely by some other European central banks for money-market management; those undertaken by the Bank are purely for liquidity management, and have no monetary or foreign exchange policy significance. The amount of foreign exchange swaps outstanding at the end of March was £700 million.

Separately, and to deal with the £8.2 billion redemption of 7¼% Treasury Stock on 30 March 1998, the Bank announced two further adaptions to its normal money-market operations on 9 March:(1)

- On appropriate days, the Bank would include invitations of repo to 30 March, either separate from, or combined with, its normal invitation of repos of approximately two weeks.

- From 10 March, up to and including 19 March, the Bank was prepared to buy the next-maturing stock in its daily money-market operations. (In the event, some £800 million was bought in OMOs.)

Chart 18 shows how the Bank's daily refinancing was provided during the quarter. The shares of different instruments was broadly similar to most of last year. Gilt repo relieved more than half of the daily shortage, with about a quarter provided through outright purchases of bills. Gilt repo now seems to be the swing element in the OMOs. In other words, when the stock of refinancing increases sharply (as in the first quarter), gilt repo tends to fill the refinancing gap. Before the reforms of last year, bills had performed that role. One reason for this may be that the supply of gilts for repo can be generated relatively quickly through specialist intermediaries, which borrow the stock from institutional investors collateralised by CDs (collateral swaps). The alternative—drawing extra bills for repo purposes—would take much longer.

Gilt repo market

The gilt repo market continued to expand sharply from its low last August (see Table E). According to the data supplied to the Bank, gilt repo outstanding was £83 billion at the end of February, compared with £72 billion three months earlier. Gilt reverse repo also rose, to £91 billion at the end of February. At least two factors boosted the repo market during the three months to February: the high stock of refinancing and the 'special' status of 9% Treasury 2008.

(1) These are similar to the adjustments made in the announcement on 13 August, described on page 337 of the November 1997 *Quarterly Bulletin*.

Table E
Maturity breakdown of outstanding repo and reverse repo over time[a]

		Total (per cent)						Total
		On call and next day	2–8 days	9 days to 1 month	1–3 months	3–6 months	Over 6 months	£ billions
Repos								
1996	Feb.	41	24	16	14	3	0	37
	May	20	34	23	15	7	1	35
	Aug.	19	33	33	11	4	1	56
	Nov.	19	36	22	19	2	2	68
1997	Feb.	20	29	33	15	3	0	71
	May	27	23	27	18	4	1	79
	Aug.	25	21	24	24	4	1	67
	Nov.	22	22	19	22	11	4	72
1998	Feb.	15	23	25	19	11	7	83
Reverse repos								
1996	Feb.	41	21	13	21	4	0	34
	May	20	30	20	23	6	2	34
	Aug.	22	29	29	14	5	1	54
	Nov.	21	34	21	20	3	2	60
1997	Feb.	18	32	26	21	3	0	67
	May	23	21	30	20	6	1	71
	Aug.	17	20	26	26	6	1	63
	Nov.	17	25	17	25	11	5	71
1998	Feb.	14	29	23	19	10	5	91

(a) From the data reported under the voluntary quarterly arrangements.

The high stock of refinancing and accompanying shortage of collateral meant that participants in the money market needed to 'reverse in' greater amounts of collateral in the form of gilts. The increased repo activity was also related to the delivery of 9% Treasury 2008 into the March long gilt futures contract: many of these positions would have been outstanding at the end of February. Looking at the maturity of the repos, much of the increase was in maturities out to one month. This is consistent with the two factors that boosted activity. Participants in the OMOs may have reversed in collateral for term, to cover what they saw as potentially large money-market shortages during most of March. And those reversing in the 9% Treasury 2008 stock would have wanted to span its long gilt futures delivery period, which ran until 9 March (see below).

In principle, repo and reverse repo activity should be identical. Why were they so different in February? It is likely that those reversing in gilts for the two reasons cited above were from the professional market, which is well covered by the Bank's survey. On the other side of these deals, some of the counterparties repoing the gilts may have been gilt custodians or others who may be less well covered in the Bank's survey.

Gilt repo data are also reported to the Bank for monetary statistics purposes. These data measure activity only by banks and building societies in the United Kingdom, and so are not directly comparable with the quarterly data (the quarterly data include securities houses and institutional investors, for example). Nevertheless, they show a similar sharp increase in repo and reverse repo activity in the three months to February. In February alone, gilt repo contributed £4.9 billion to M4 and gilt reverse repo £3 billion to M4 lending. In March, the monetary data showed that total repo and reverse repo activity fell from its highs in February.

One of the major features of the repo market in the first quarter was the 'special' status of 9% Treasury 2008. Specials trading is a normal repo market mechanism. The Bank welcomes the specials market, if it arises from the natural interaction of supply and demand for gilts. If conditions in the repo market become, or are likely to become, disorderly, the authorities reserve the right to reopen or repo a stock for market management purposes. As part of its routine monitoring of the market, the Bank also notes the stocks it receives in the course of its money-market operations and can, at its discretion, require counterparties to replace stock.

On 16 February, the Bank announced for the first time that it was prepared to repo a particular stock to facilitate orderly trading. The facility was for 9% Treasury 2008 in overnight repo at 0%. It was to be offered to GEMMs where they, or their customers, had experienced failed repo returns or failed deliveries in the cash market. The facility was kept open just beyond the period that 9% Treasury 2008 was deliverable into the March long gilt future on LIFFE.

Why did the Bank do this? The stock was by far the cheapest stock to deliver into the March LIFFE long gilt future contract.[1] Its price would have needed to rise by more than £1 per £100 relative to the

(1) Although the stock was 'dear' to the yield curve, the inversion of the curve and the fact that the notional coupon on the future was higher than prevailing market rates meant that it was still the cheapest to deliver into the futures contract.

other stocks in the basket for it to lose this status. The market was concerned that the stock might be squeezed around the delivery period, making it unobtainable or very expensive in the cash and repo markets. It was feared that some institutions might then deliberately fail to return stock on repo, in the hope that they would force their counterparties to deliver the other more expensive stocks into the futures contract. This would benefit those with long positions in the future, since they would receive the more expensive stocks.

Failures to return stock on repo might have spread, as the victims of failed trades were unable to return stock that they had borrowed. Speculation about deliveries of the more expensive stocks in the futures basket would have caused sharp movements in the futures price. These movements would have been out of line with prices in the gilt market more generally, potentially undermining the value of the future as a hedge (to some extent this had happened). This in turn might have reduced the willingness of dealers to go short, causing them to increase spreads and affecting liquidity in the cash market. And the risk of failed returns was likely to deter holders of the stock from repoing it out across the delivery period to those who were short.

The facility was intended to provide market participants with an alternative source of stock for onward delivery, if they experienced a failure by a counterparty delivering stock to them. Setting the repo rate at 0% ensured that there was no incentive for market participants to use the Bank's facility if 9% Treasury 2008 was available in the repo market. The facility removed the possible incentive for deliberate failure, by ensuring that those short of the stock as a consequence would still have 9% Treasury 2008 available to deliver into the future. As a condition for access to the facility, the Bank asked for details of the failed trades, including the identity of the counterparty. It stated its willingness to pass these details to UK or overseas regulators.

The market welcomed the announcement of this facility, particularly for the contribution it made to removing a source of uncertainty. The immediate reaction to the Bank's announcement was a reversal of the previous out-performance of the March futures contract compared with the June contract, and of 9% Treasury 2008 relative to neighbouring stocks. Thereafter, the existence of the facility brought some stability back to the relative values of the March contract and 9% Treasury 2008. Although two-week repo rates for the stock tightened a little in the approach to the delivery period, the facility gave holders of 9% Treasury 2008 the confidence to lend their stock, and the market remained liquid. Consequently, the facility was not used, and it expired on 13 March.

There was limited other specials activity in the first quarter. The ten-year benchmark, 7¼% Treasury 2007, was intermittently in demand in the specials market, influenced by the amount of non-government sterling bond issuance during the quarter. Several players used it as a hedge against such issuance. Limited strips activity meant that those strippable bonds that had traded at special premia toward the end of last year in anticipation of the strips market, such as 8% Treasury 2015 and 8% Treasury 2021, lost their value in the specials market.

During the past few months, market associations and their firms have been consulted about the redrafting of the Gilt Repo Code of Best Practice. The Stock Lending and Repo Committee will publish a final version of the Code shortly, in the light of their comments.

Gilt financing

Gross sales of gilts during the final quarter of 1997/98 amounted to £4.8 billion, bringing the total for the financial year to £25.8 billion. This represented a small overshoot of £0.4 billion of the £25.4 billion target for gilt sales announced following the *Pre-Budget Report* in November. Following the Budget in March 1998, the gilt sales requirement for the financial year 1997/98 was reduced to £20.6 billion, reflecting a significantly lower CGBR forecast of £6.1 billion, and implying an overshoot of gilt sales for the year of £5.1 billion. About £21 billion of the total was raised by conventional gilt sales, with the rest by index-linked gilts. Within conventionals, the distribution of sales across maturities was close to the target set in the 1997/98 Remit (28%/24%/28%), with shorts accounting for 27.4%, mediums 24.7% and longs 29.3% of total sales. Index-linked comprised 18.5% of total gilt sales, just below the Remit target of 20%.

Auctions

There were two auctions during the final quarter of the financial year: a new 30-year benchmark in January and the current ten-year benchmark in March. The auction schedule was announced on 30 December, following the usual consultation with market participants.

The auction of 6% Treasury 2028 in January reflected market demand for a new long bond, expressed at the Bank's quarterly meetings. The market generally felt that liquidity in the then-longest strippable bond, 8% Treasury 2021, had been built up sufficiently, with more than £16 billion outstanding; and there was a desire for a broader range of choice in maturities beyond 15 years. The selection of the 30-year maturity was consistent with issuance practice in other major government bond markets, allowing investors to compare long bond yields in the United States, France and Germany directly. It would also enable investors to extend the duration of their assets, especially when the stock became strippable. It was decided, however, to delay strippability until the outstanding nominal issue had reached £5 billion, to safeguard liquidity in the new long benchmark principal and coupon strips. The auction achieved an average price yielding just below 6%, though the cover, at 1.25 times, was lower than usual (some market participants attributed this to the difficulty of hedging because of the prevailing volatility of the long gilt future—see earlier); there was a 2 basis point yield tail.

For the March auction, the Remit clearly pointed to a medium-dated stock, and the market consensus was that the $7^{1}/_{4}$% Treasury 2007 should be reopened, with a view to this stock continuing as the ten-year benchmark until mid 1998. A new benchmark, serving for more than one year in view of the lower financing requirements expected, could then be issued in the second half of the year. The auction, the last of the financial year, went smoothly, with the stock yielding 5.9% at the average

Table F
Gilt issuance

Date	Stock	Amount issued (£ millions)	Price at issue (per £100 stock) (a)	Yield at non-competitive allotment price (b)	Yield at issue	Yield when exhausted (c)	Average yield (d)	Cover (e) at auctions	Tail (f) at auctions (basis points on yield)	Date exhausted
Auctions of conventional stock										
28.1.98	6% Treasury Stock 2028	2,000	100.1563	5.99	n.a.	n.a.	n.a.	1.25	2	28.1.98
26.3.98	7 1/4% Treasury Stock 2007	2,000	109.8438	5.90	n.a.	n.a.	n.a.	3.03	0	26.3.98
Tap issues of index-linked stock										
21.1.98	2 1/2% Index-linked 2003	200	193.3125	n.a.	2.94	3.16	3.16	n.a.	n.a.	21.1.98
13.3.98	4 1/8% Index-linked 2030	200	144.1875	n.a.	2.91	2.91	2.91	n.a.	n.a.	13.3.98

n.a. = not applicable.

(a) Non-competitive allotment price.
(b) Gross redemption yield per cent based on the weighted average price of successful competitive bids.
(c) Gross redemption yield or real rate of return (assuming 5% inflation), based on the price when the issue ceased to operate as a tap.
(d) Weighted average gross redemption yield or real rate of return (assuming 5% inflation), based on actual price at which issues were made.
(e) Total of bids divided by the amount on offer.
(f) Difference in gross redemption yield between the weighted average of successful competitive bids and the lowest accepted competitive bid.

accepted price; cover was strong at 3.03 times, and there was no tail.

The results of auctions for the first quarter are summarised in Table F. Some £21 billion nominal was issued at auction in total in 1997/98, compared with £33 billion the previous year, and with a smaller average auction size, £1.8 billion compared with £2.4 billion. Cover was slightly lower this year—on average 2.36 times, compared with 2.80 times in 1996/97.

The gilt 'shop window' shows the amount of stock in official portfolios available for resale or switching. Activity through the shop window was mostly switching of shorter-dated stock held in official portfolios to assist market liquidity, though there were a few outright sales of medium-dated stock. Total turnover through the shop window was around £400 million during the quarter.

On 19 March, the Treasury published the *Debt Management Report* for 1998/99. This included a financing Remit to the new Debt Management Office (which took over responsibility for debt management from the Bank on 1 April 1998—see the box on page 59 of the February *Quarterly Bulletin* for further details). The Remit is reproduced in the accompanying box. It continues the broad themes of the previous year's Remit, and the reforms in train to enhance openness, predictability and transparency in the gilts market. The main features of the 1998/99 borrowing programme are:

- Issuance strategy was determined by the low financing requirement, the interaction with index-linked auctions and liquidity considerations, specifically the need to build up maturity in the new ultra-long benchmark stock to enable it to become strippable. Index-linked issuance will therefore account for £3.6 billion of total sales, long conventionals £5.3 billion, and short and medium conventionals £2.7 billion each. The authorities do not intend following this issuance mix in future years, largely because of the lengthening of the portfolio that such a mix would imply.

- Auctions of index-linked gilts will start in October 1998. This will allow sufficient time for the Debt Management Office to establish a separate list of index-linked market makers (see section on index-linked auctions).

- Six auctions are scheduled in 1998/99, four for conventional gilts and two for index-linked. Each auction will be for one single stock. The auctions of conventional gilts will be for between £2–3 billion (nominal) of stock. The auctions of index-linked gilts will be for between £½–1 billion (cash) of stock.

Index-linked

At the start of the final quarter of 1997/98, £4.1 billion had already been raised through index-linked sales, leaving only £1 billion left to reach the Remit target of £5.1 billion. Index-linked generally underperformed conventionals in January, with breakeven inflation rates falling below 3%. The Bank was, however, made aware of specific demand for short-dated stock, and responded with a £200 million issue of 2½% Index-linked 2003 on 21 January. The stock was exhausted immediately at the certified price. The index-linked market rallied during February and March, as record equity prices took dividend yields below those of index-linked gilts, so enhancing the attractiveness of the sector. Demand for long-dated index-linked stock prompted the Bank to tap the market again on 13 March. The longest-dated stock, 4⅛% Index-linked 2030 had not been issued since December 1993, but had been the subject of strong institutional buying during the quarter, and had become expensive relative to other index-linked stocks. A tap of £200 million was issued and exhausted in the initial tender at a 1/16 premium to the certified price. The sales brought total index-linked funding for the year to £4.8 billion, close to the target of £5.1 billion.

Index-linked gilt auctions

The 1996/97 *Debt Management Report* stated that the UK authorities saw positive merit in moving to an index-linked gilts auction programme as soon as feasible, subject to, first, reviewing the impact of the initial US experience in auctioning inflation-indexed securities, and, second, conducting a further round of consultations with the market. In January 1998, the Treasury, in conjunction with the Debt Management Office and the Bank, conducted a consultation exercise with a wide range of market participants.(1)

Following the consultation, the Treasury decided to proceed with the introduction of an auction programme for index-linked gilts, starting in October 1998. Of the £3.6 billion (cash) index-linked supply, up to £1.5 billion will be available for taps for the first half of the year and up to £0.5 billion in the second half. In addition, the authorities have pre-committed to a minimum annual level of £2.5 billion cash as index-linked gross issuance for the foreseeable future, to help establish the success of IG auctions.

The planned index-linked auctions have a number of key features:

- the Government proposes to introduce a separate index-linked market-maker list. Index-linked market makers will have privileges and obligations in auction bidding;

- index-linked auctions will initially use a uniform price format, though this will be kept under review; and

(1) The results of this consultation are summarised in more detail in the 1998/99 *Debt Management Report*.

The Government's financing requirement and Remit to the Debt Management Office for 1998/99

Published as part of HM Treasury's *Debt Management Report 1998/99*.

1. The Debt Management Office (DMO), a candidate to become an Executive Agency of the Chancellor of the Exchequer, has among its declared objectives:

- to meet the annual Remit set by Treasury Ministers for the sale of gilts, with high regard to long-term cost minimisation; and
- to promote a liquid market for gilts and conduct operations in a predictable, transparent way with a view to reducing the overall cost of financing.

Quantity of gilt sales

2. The DMO, on behalf of the Government, will aim to issue approximately £14.2 billion of gilts in 1998/99, subject to confirmation of the size of the overshoot of the gilt sales target in 1997/98.

Pace of gilt sales

3. The DMO will aim to sell gilts at a broadly even pace through the year. Within-year seasonal fluctuations in the pattern of Central Government expenditure and revenue will be met by other financing means, including changes to the weekly Treasury bill tender and the Ways & Means advances.

Maturity structure of gilt issues

4. Over the year as a whole, the DMO will aim to make 25% of its gilts sales in index-linked stocks with the remainder in conventional stocks, spread across the maturity ranges. On current forecasts this implies index-linked gilt sales of £3.6 billion cash and conventional gilt sales of £10.7 billion. Four auctions of conventional stocks are planned in 1998/99; two in the long maturity area and one each in the short and medium areas. This implies Remit proportions in 1998/99 of 25% for index-linked gilts issuance out of total sales, and, within conventional sales, approximately 25% in both the short (3–7 years) and medium-dated (7–15 years) bands and 50% in the long (15 years and over) band. The Government does not intend to maintain these issuance proportions in future years. For 1998/99, there are no plans to meet the financing requirement with marketable instruments with a maturity of less than three years, but the authorities reserve the right to tap sub three-year gilts for market management purposes and to review the issuance of ultra short-term debt after the handing over of Exchequer cash management responsibilities to the DMO.

Auctions of conventional gilts

5. Auctions will constitute the primary means of conventional gilt sales. The calendar for the four conventional auctions is set out below. All auctions will be single auctions held on the day indicated. There is no intention to hold any dual auctions of conventional gilts in 1998/99.

6. Each single auction is planned to be for between £2 billion and £3 billion nominal of stock.

Auctions of index-linked gilts

7. Following consultation on this issue the Government intends that the DMO should initiate index-linked auctions in 1998/99. But to allow for sufficient time to establish a separate list in index-linked market makers, index-linked auctions will not start until October 1998.

8. In the first half of 1998/99, in the period before auctions can start, the DMO may issue up to a maximum of £1.5 billion cash of index-linked gilts via taps.

9. With the delayed start to the index-linked auction programme, the authorities plan to hold two index-linked auctions in the second half of 1998/99, on the calendar set out below. Auctions will be for between £0.5 billion and £1.0 billion cash of one stock on a uniform price basis.

10. In the second half of the financial year, but as a transitional measure to support market makers in maintaining liquidity whilst auctions are introduced, the DMO will be prepared to issue up to a further £0.5 billion cash of index-linked gilts through taps between auctions, for market management purposes, if necessary, to relieve any overall market shortages.

11. Over the medium term, the authorities would aim to issue index-linked gilts in such a way as to maintain liquidity in most maturity areas across the curve. However, given that auctions will only cover a single stock, it may not be possible to reopen every stock in each year.

12. To ensure the medium-term viability of the index-linked auction programme, the authorities remain

committed to a minimum gross supply of £2.5 billion cash of index-linked stocks in 1998/99 and for the foreseeable future.

13. In the longer term, the authorities intend that auctions will constitute the primary means of issuance of index-linked gilts.

The auction calendar

14. The calendar for auctions in 1998/99, covering auctions of conventional and index-linked stocks, is as shown.

Auction calendar 1998/99

Wednesday 20 May 1998	(Conventional)
Wednesday 29 July 1998	(Conventional)
Wednesday 28 October 1998	(Index-linked)
Late November/December 1998 (a)	(Conventional)
Wednesday 27 January 1999	(Index-linked)
Wednesday 24 March 1999 (a)	(Conventional)

(a) Subject to the Chancellor's decisions on the Budgetary timetable.

Announcements on details of each auction

15. At the end of each calendar quarter, following consultation with the gilt-edged market makers and end-investors, the DMO will announce plans for the auctions scheduled for the coming quarter. From September, this announcement will also cover auctions of index-linked gilts. For each auction, this will indicate either the stock (where relevant indicating a new stock) or, where further feedback on the choice of stocks would be valuable, the intended maturity range of stock. Towards the end of each quarter, the DMO will publish details of progress to date with the gilt issuance programme, any changes to the Government's financing requirement and any changes to the gilts auction programme.

16. The auction plan for the first quarter of 1998/99 will be announced at 3.30 pm on Tuesday 31 March 1998.

17. Full details of these, and subsequent, auctions will be announced at 3.30 pm on the Tuesday of the week preceding the auction.

Tap sales and repo operations

18. The programme of conventional gilt auctions may be supplemented by official sales of stock by the DMO 'on tap'. Taps of conventional stocks will be used only as a market management instrument in conditions of temporary excess demand in a particular stock or sector or when there is an exceptionally sharp general rise in the market. In 1998/99, it is envisaged that conventional tap issuance will not constitute more than about 5% of expected total issuance.

19. In 1998/99, it is envisaged that taps of index-linked gilts will constitute a maximum of £2 billion cash of total index-linked gilt sales, although most of this will be expected to take place during the first half of the financial year.

20. After an auction, the DMO will generally refrain from issuing stocks of a similar type or maturity to the auction stock for a reasonable period. Such stock will only be issued if there is a clear market management case.

21. For the purposes of market management, the DMO may repo out stock. Any stock used for this purpose will only be issued via temporary repo operations and therefore will not count towards financing the CGBR.

Coupons

22. As far as possible, coupons on new issues of gilts will be around gross redemption yields at the relevant maturity, at the time of issue.

Conversions

23. In order to build up the pool of strippable benchmark stocks further, the authorities envisage the DMO making offers for the conversion of unstrippable stocks into strippable benchmarks of similar maturity during 1998/99. Details of any such offers will be announced in due course, in the light of market conditions.

Reviews to the Remit

24. This Remit, and in particular the timing of auctions and the allocation between maturity bands and index-linked, may be varied during the year in the light of substantial changes in the following:

- the Government's forecast of the gilt sales requirement;
- the level and shape of the gilt yield curve;
- market expectations of future interest and inflation rates; and
- market volatility.

This Remit may also need to be extended or revised to take account of the cash management operations of the DMO when details are announced.

25. Any revisions to this Remit will be announced.

- only one stock will be auctioned at a time. The announcement on stock maturity will take place quarterly, at the same time as that for conventional gilts.

The consultation also considered the possible redesign of index-linked gilts. The consensus was that the benefits of redesign could not justify the transitional costs of fragmented market liquidity, if a new type of index-linked gilt were to be issued alongside the existing design, or of holding large-scale conversion offers. At present, the Government has no plans either to redesign index-linked gilts or to consider concentrating issuance on benchmark issues.

Sectoral investment activity

The latest ONS data, covering the period from October to December 1997, show total net institutional investment in gilts at a record high of £8.7 billion during the quarter. This partly reflected the relatively low level of redemptions falling during the quarter (around £1.2 billion), but probably also strong demand for gilts and other government bonds as a result of the flight to quality out of unsettled East Asian markets towards the end of the year. The continuing effect of the Minimum Funding Requirement (introduced under the Pensions Act in April 1997) and the changes to ACT tax credits (first announced in the July 1997 Budget) probably also continued to influence institutional demand for gilts. Pension funds invested a record net £5.8 billion in gilts during the quarter, an increase of £3.5 billion on the previous quarter. Net investment in gilts by long-term insurers, by contrast, fell slightly to £1.9 billion.

In the most recent quarter, January to March, gross gilt sales of £4.8 billion were outweighed by two large redemptions, amounting to £11 billion in total (see Table G). Despite the resulting net reduction in overall sectoral holdings of gilts, the domestic non-monetary sector (which includes pension funds and long-term insurers) increased its net holdings during the quarter, with demand encouraged by the auction in January of a new ultra-long benchmark stock. The overseas sector also made net purchases of £1.3 billion in the quarter, perhaps attracted by the strength of sterling. By contrast, there was a net reduction of holdings of £8.9 billion by banks and building societies.

Table G
Official transactions in gilt-edged stocks

£ billions: *not seasonally adjusted*

	1997/98	1998		
	Apr.–Dec.	Jan.	Feb.	Mar.
Gross official sales (+) (a)	21.0	2.4	0.0	2.5
Redemptions and net official purchases of stock within a year of maturity (-)	-8.5	-3.2	-0.1	-7.7
Net official sales (b)	12.4	-0.9	-0.1	-5.3
of which net purchases by:				
Banks (b)	1.1	-2.5	-2.2	-4.2
Building societies (b)	0.5	0.0	-0.1	0.0
M4 Private sector (b)	8.5	1.4	1.8	-1.9
Overseas sector	2.0	0.2	0.4	0.8
LAs & PCs (c)	0.4	0.0	0.0	0.0

(a) Gross official sales of gilt-edged stocks are defined as official sales of stock with over one year to maturity net of official purchases of stock with over one year to maturity apart from transactions under purchase and resale agreements.
(b) Excluding transactions under purchase and resale agreements.
(c) Local Authorities and Public Corporations.

Technical developments

Abolition of special ex-dividend arrangements

Following market consultations in 1997, the Bank announced on 18 February 1998 that provisions for special ex-dividend trading would end on 31 July 1998. The 'special ex-dividend' period is the period of 21 calendar days prior to the ex-dividend date.(1) During this period, parties to a transaction may at present agree bilaterally to trade on an ex-dividend basis, with the purchaser thus deciding to take delivery of the gilt without the right to the next dividend payment.

The abolition of the special ex-dividend period was supported by the majority of respondents to a Bank consultation on changes to

(1) The 'ex-dividend date' is the latest date that transfers of gilts can be registered to allow the new holder to receive the next dividend directly from the Bank of England Registrar.

gilt market conventions last year. It should contribute to reducing credit exposures in the gilt market, and will end a restriction on the times within each delivery month when gilts may be delivered into LIFFE contracts.

Changes to the calculation of accrued interest and decimal pricing for gilts

The Bank announced on 9 March that two further changes would come into effect this year. From 1 November 1998, the calculation of accrued interest will switch to using an 'actual/actual' daycount convention and will be rounded to six decimal places, and gilt prices will switch from being quoted in £$^{1}/_{32}$ per £100 to being quoted in decimals.

The daycount convention is part of the formula used to calculate the accrued interest payable to the seller by the buyer when gilts are traded between dividend payments.(1) When calculating accrued interest using the 'actual/actual' convention, the semi-annual interest payment is multiplied by the number of days between the last dividend date and the settlement date, and divided by the actual number of days in the dividend period.(2)

All trades settling before 1 November will use the 'actual/365' convention; trades settling after 1 November will use the 'actual/actual' convention. This ensures that all gilts will be subject to the same convention at all times.

The change to rounding accrued interest to six, rather than five, decimal places will also take place on 1 November 1998. This change was favoured by market participants, and will ensure that the market in coupon gilts trades similarly to the strips market (as strip settlement prices are rounded to six decimal places).

Also on 1 November 1998, gilts will switch to trading in pounds and pence per £100 nominal, in place of the current practice of trading in £$^{1}/_{32}$ per £100 nominal. Trading gilts in decimals will bring the gilt market into line with other European bond markets. The change has also been made at LIFFE, which will quote the June 1998 long gilt futures contract in decimals from 11 May (the September contract has been quoted in decimals since its listing, as has the new short gilt future).

All of these changes were favoured by the majority of respondents to a Bank consultation on gilt-market conventions last year. The 1 November start-date will allow market participants plenty of lead time to prepare, and ensures that the changes will be in place before the start of Stage 3 of EMU.

Gilt strips(3)

Activity in the strips market has been building slowly. The total nominal outstanding of strippable stock increased to £84 billion with the gilt auction of £2 billion of 7$^{1}/_{4}$% 2007 on 25 March. Strippable stocks constituted 26.7% of the total nominal of gilts outstanding at the end of March. In addition, £2 billion of the new 30-year benchmark, 6% 2028, was auctioned on 28 January. For liquidity reasons, this stock will not be strippable until at least

(1) Regular interest payments on gilts will not change in any way. Only the accrued interest calculations will change.
(2) See *Changes to Gilt Market Trading Conventions*, Bank/HM Treasury paper, March 1998.
(3) For further background on gilt strips, see pages 15–18, 55–59, and 66–67 of the February 1998 *Quarterly Bulletin*.

£5 billion is outstanding. The percentage of strippable stock held in stripped form increased steadily to 2.2% by 6 April.

Turnover in strips has been low: in the first three months of this year, strips turnover averaged £135 million a week—about ½% of turnover in the coupon gilts market. Much of the activity in the strips market appears to involve overseas investors taking views on sterling and seeking out arbitrage opportunities by switching between UK and foreign strips markets, such as in Germany and France. As the main customer interest is in principal strips, particularly in longer maturities, intra-market activity between GEMMs has been focused on trading principal strips against the underlying coupon-bearing gilt.

Several factors have contributed to low levels of activity in the strips market, including:

- As strips are not yet included in industry benchmarks, there is no pressure from actuaries to buy them, and pure 'index trackers' prefer to buy 8% 2021 and 6% 2028 coupon bonds.

- When the yield curve is downward-sloping, strips' yields lie below those of coupon-bearing gilts of the same maturity, and so strips may look expensive relative to coupon-bearing gilts. This is because, as zero-coupon instruments, strips' duration is much longer than that of coupon-bearing gilts of the same maturity. This means that strips' yields will usually be closer to the yields of much longer coupon-bearing gilts than to those of coupon-bearing gilts of similar maturities.

- Limited client interest in strips has constrained intra-market activity, and GEMMs' strips' quotes reflect this lack of liquidity, thereby increasing the cost of buying strips.

- The repo market in strips has been limited, which may also contribute to making strips' inventories difficult to manage and/or finance.

The Bank announced, on 22 April, that from 27 April gilt strips would be eligible in deliveries-by-value used as collateral in its daily money-market operations. The Bank now also accepts strips as eligible securities in intra-day repos for liquidity in the real time gross settlement (RTGS) system.

Other issues

HM Government euro issues

On 13 January 1998, the Bank of England published a UK Government euro Treasury Note Information Memorandum. This changed the denomination of the UK Government Ecu note programme into euro, and replaced the Ecu Note Information Memorandum issued in 1996.

Under the terms of the Note Information Memorandum, once Stage 3 of EMU begins, all payments of interest and repayments of principal will be made in euro (all interest and principal payments on euro notes will fall due after the scheduled Stage 3 start date of 1 January 1999). Before Stage 3 begins, all payments at tenders will be made in Ecu at a rate of 1 ECU for 1 euro.

The new Information Memorandum also states that the daycount convention for calculating interest on euro notes will initially be '30/360' days, as it is for international Ecu bonds at present, but will change to an 'actual/actual' daycount at the first coupon payment date after Stage 3 begins. This approach follows market recommendations for the euro market, and the Bank expects that the market will calculate yields on a '30/360' day basis until the first coupon payment, and on an 'actual/actual' daycount basis thereafter. Similarly, in line with market recommendations, interest and principal payments in euro will be made on any due date when TARGET is open.

Payments of interest and repayments of principal on all UK Government Ecu securities issued under the earlier Ecu Note Information Memorandum that become due after Stage 3 begins will also be made in euro, at a rate of 1 euro for 1 ECU. However, their daycount conventions for accrued interest will remain '30/360' throughout their life, in line with the Terms and Conditions under which they were issued.

€500 million of a new three-year euro Treasury note, the seventh in the programme of annual new issues, was auctioned on 20 January 1998. Cover at the auction for the 4.25% January 2001 issue was very strong at 5.8 times the amount on offer, and accepted bids were in a tight range of 4.37%–4.39%. The settlement date for the new issue was just after the redemption of the fourth Treasury note, which was €2.0 billion in size. The total of notes outstanding with the public under the UK note programme thus fell from €6.0 billion in the fourth quarter of 1997 to €4.5 billion in the first quarter of 1998. It was announced at the time of issue that further auctions of the new note were contemplated for April, July and October 1998.

HM Government Ecu Treasury bill issuance

The United Kingdom continued to hold regular monthly tenders of ECU 1 billion of Ecu Treasury bills during the first quarter, comprising ECU 200 million of one-month, ECU 500 million of three-month and ECU 300 million of six-month bills each month. The tenders continued to be oversubscribed, with issues being covered an average of 4.3 times the amount on offer in the first quarter of 1998, compared with the average cover of 4.0 times during the first quarter of 1997. During the first quarter, bids were accepted at average yields of 4–14 basis points below the Ecu Libid rate of the appropriate maturity. There are currently ECU 3.5 billion of UK Government Treasury bills outstanding. Secondary market turnover in the first quarter averaged ECU 1.1 billion a month, slightly lower than the average turnover of 1.2 billion a month in the fourth quarter of 1997.

In January the Bank also announced that it would be consulting market makers in both the euro Treasury note and Ecu Treasury bill programmes on the possibility of introducing in the next few months a facility allowing market makers to bid by telephone.

Sterling bond issues

Total fixed-rate issuance in the quarter was £13.8 billion, roughly equal to that in 1997 Q1. Short-dated issues amounted to £5.2 billion, boosted by a large number of swap-driven, retail-targeted deals during March; issuance of mediums and longs

totalled £4.2 billion and £4.4 billion respectively. Low long-term interest rates and the strength of sterling both helped to underpin sterling issuance during the quarter. Some issuers took the opportunity of low long-term rates to shift to a greater reliance on debt rather than equity finance. A change to the taxation of dividends has been cited as a structural factor leading to a switch from equity to debt finance. Strong institutional cashflows—which always tend to be high at the beginning of the year—meant that demand for new bonds was high (especially as some firms were buying back equities).

However, despite the favourable background of historically low gilt yields, the normal rush of sterling bond issues in the first quarter of the year was slow to materialise (bond issuance is usually high in the first quarter, as issuers want to get their funding under way and investors set out on their funding strategies and asset allocation for the year). With spreads still wide following the East Asian crisis, and with sterling expected to depreciate during 1998 on forecasts of lower UK interest rates (see exchange rate section), investors remained cautious and selective, forcing issuers to wait for opportunities. Shorter-dated issues met strong demand as defensive assets, but longer-dated and higher credit-rated bonds fared less well, with their spreads over gilts widening in secondary-market trading. As a result, only £3.5 billion fixed-rate bonds were issued in January, compared with more than £6 billion in the same month a year ago. The pace of issuance was fairly steady through February at just under £4 billion, but increased to £6.3 billion in March as the sharp appreciation in sterling (to DM 3.10) renewed interest in sterling assets, which continued to offer relatively high yields compared with other bond markets.

A large part of this issuance was by supranationals (for example, the European Investment Bank and International Bank for Reconstruction and Development), whose issues benefited from being seen as gilt substitutes at a time when gilt financing is forecast to fall (in March, the EIB's £500 million 30-year benchmark issue was increased to £750 million to satisfy demand). Historically low bond yields encouraged a variety of corporate issuers in the quarter, including several UK utilities. The strength of sterling and attractive swap rates also provided cheap funding opportunities for overseas issuers, encouraging firms such as Carlsberg, Ciba Geigy, Coca Cola and Toyota, and sovereign borrowers, such as Austria, Canada and Colombia to tap the sterling market during the quarter. Securitised deals again boosted total issuance, and the UK high-yield bond market also continued to develop, with issues by Diamond Cable, IPC Magazines, NTL and Punch Taverns.

In addition, there were three convertible bonds, including a £400 million ten-year issue for National Grid, and £3.7 billion of floating-rate notes (FRNs) issued in the quarter. Although there were a few short-dated FRNs by UK and overseas issuers, most FRN issues were longer-term secured deals, including a £1 billion six-tranche deal securitising the Student Loan book bought from the Government by National Westminster Bank.

The international environment

This article discusses developments in the international environment since the February 1998 Quarterly Bulletin. *The main news*[1] *is:*

- *The financial and economic situation in Asia now appears more stable.*[2] *Signs of contagion in other emerging markets have diminished.*
- *Growth in the United States slowed slightly in the final quarter of 1997.*
- *The Japanese economy has continued to slow, and Japanese output fell slightly.*
- *The recovery in Germany and France has continued, though growth slowed in Germany. Domestic demand continued to strengthen in France, but not in Germany.*
- *Equity prices in most major markets have continued to rise. After strengthening in January 1998, Japanese equity prices remained in a narrow range during February and March, but fell slightly in early April.*
- *Inflation has remained low throughout the major six (M6)*[3] *overseas economies.*
- *EU countries have released their fiscal debt and deficit figures for 1997. Based on these, the European Commission and European Monetary Institute recommended that eleven countries were eligible for membership of monetary union. The European Council decided to admit these countries to monetary union from 1 January 1999.*
- *Official interest rates have remained unchanged in most industrial countries. Bond yields remained at low levels.*

GDP in the M6 grew by 0.5% in the final quarter of 1997, down from 0.8% in Q3. US growth slowed, but remained strong. Activity in Japan continued to slow, and GDP fell slightly in Q4. In the European M6 countries, the pace of growth in Q4 was generally slower than in Q3.

US GDP grew by 0.9% in the fourth quarter of 1997 (see Table A), and was 3.7% higher than a year earlier. Growth was largely accounted for by private consumption and stockbuilding, with small contributions from net exports and investment. This contrasts with the earlier quarters of 1997, when investment made larger contributions and net exports made negative contributions to growth.

The positive contribution of net exports in Q4 occurred despite the continuing strength of the dollar and of domestic demand in the United States relative to its main trading partners. But there are more recent signs that these factors may have begun to increase the

Table A
Quarterly contributions to US GDP growth[a]

Percentage points

	1997			
	Q1	Q2	Q3	Q4
Domestic demand	**1.5**	**1.0**	**1.1**	**0.8**
Private consumption	0.9	0.2	0.9	0.4
Investment	0.2	0.5	0.5	0.0
Government consumption	0.0	0.1	0.0	0.0
Stockbuilding	0.4	0.2	-0.4	0.4
Net exports	**-0.3**	**-0.1**	**-0.4**	**0.1**
GDP	**1.2**	**0.8**	**0.8**	**0.9**

(a) Contributions may not sum because of rounding.

(1) Based on data up to 29 April 1998.
(2) Developments in Asia are discussed separately in the note on pages 133–35.
(3) The M6 comprises the G7 countries minus the United Kingdom, ie the United States, Japan, Germany, France, Italy and Canada.

Chart 1
US retail sales and industrial production

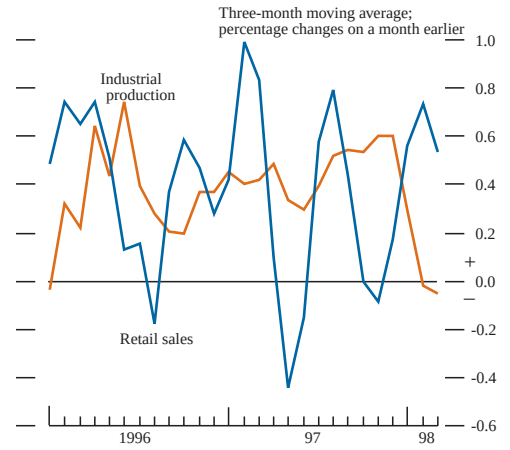


Chart 2
US non-farm payrolls and hourly earnings

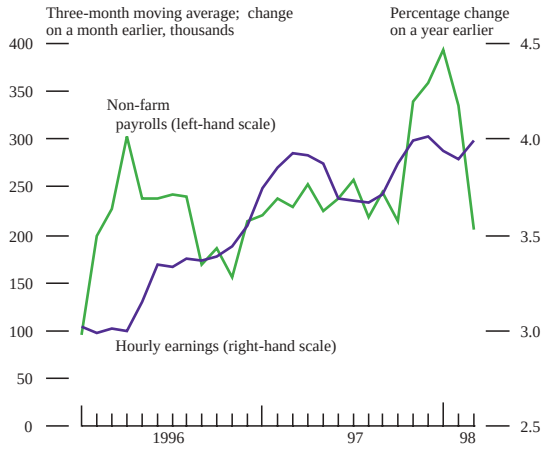


Table B
Quarterly contributions to Japanese GDP growth[a]

Percentage points

	1997			
	Q1	Q2	Q3	Q4
Domestic demand	**1.9**	**-3.8**	**0.9**	**-0.8**
Private consumption	2.3	-3.2	1.0	-0.5
Investment	-0.4	-0.8	-0.4	-0.2
Government consumption	-0.1	-0.1	0.1	0.1
Stockbuilding	0.0	0.3	0.0	-0.1
Net exports	**0.1**	**1.0**	**-0.1**	**0.6**
GDP	**2.0**	**-2.8**	**0.8**	**-0.2**

(a) Contributions may not sum because of rounding.

size of the trade deficit, which rose in January and February in contrast with its usual seasonal pattern. In February, it increased to $12.1 billion (from $11.6 billion in January) as a result of a sharp drop in exports, particularly to non-G7 countries. Though the bilateral trade figures are volatile and are not seasonally adjusted, figures for early 1998 show widening deficits with many Asian countries, compared with a year ago.

Retail sales rose by 1.8% in 1998 Q1, compared with average quarterly growth rates of 0.9% in 1997 and 1.2% in 1996. This suggests that consumption growth remained strong during the early months of 1998 (see Chart 1). Surveys indicate that consumer confidence also remained high during 1998 Q1.

Industrial production slowed. In the first quarter of 1998, it grew by only 0.2%, compared with 1.8% in the previous quarter. And in 1998 Q1, manufacturing output fell by 0.4%. But the production component of the National Association of Purchasing Managers (NAPM) index continues to suggest that manufacturing is expanding significantly, though at a slower rate than in 1997.

The US labour market continued to tighten in the early months of 1998; non-farm payrolls, the main employment measure, increased by a monthly average of 335,000 in the three months to February, compared with a monthly average of 267,000 in 1997, and 212,000 in 1996. But payrolls fell by 36,000 in March, the first monthly fall since January 1996 (see Chart 2). The US unemployment rate remained stable in 1998 Q1, at just under 4.7%, its lowest quarterly average since 1970 Q1. Rapid employment growth pushed up annual hourly earnings growth to 4% in 1998 Q1, from a monthly annual average of 3.8% in 1997 and 3.3% in 1996. The upward trend in labour costs is also seen in the Employment Cost Index, which provides a more comprehensive measure of labour costs. This rose by 0.9% in 1997 Q4, compared with 0.8% in the previous quarter, and was 3.4% higher than a year ago. The annual growth rate in employment costs in 1997 Q4 was the highest since 1993 Q4.

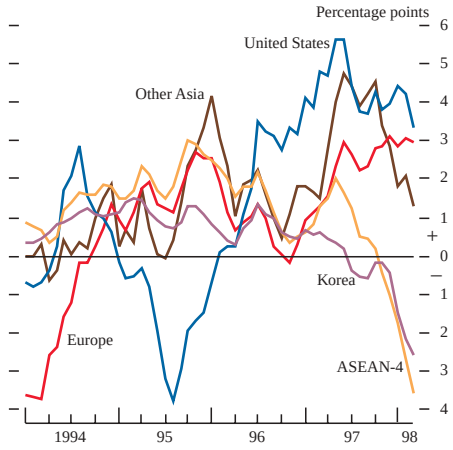
Recent developments in US consumer prices are discussed separately in the box on pages 128–29.

By contrast with the United States, the Japanese economy continued to slow. GDP fell by 0.2% in Q4, following growth of 0.8% in the third quarter, so that GDP was 0.2% lower than a year earlier. The fall was mainly accounted for by a reduction in private consumption, partly offset by a positive contribution from net trade (see Table B).

Private consumption declined by 0.9% during Q4, as real disposable incomes and consumer confidence fell. Reductions in overtime payments reflecting production cuts were the main reason for the fall in incomes. Non-residential investment slowed. Residential investment has continued to decline, as land prices have fallen further.

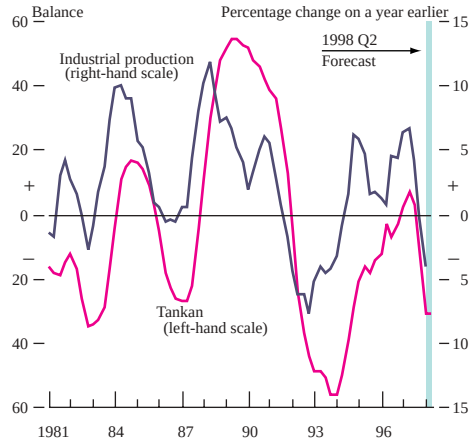
Imports on the customs-cleared basis in 1998 Q1 were 9.3% lower than a year earlier, following annual growth of 0.8% in 1997 Q4. This suggests that domestic demand remained weak in the first quarter of 1998. But the annual rate for 1998 Q1 may be biased downwards: imports were unusually strong in 1997 Q1, ahead of the consumption tax increase last April.

Chart 3
Japan: contributions to annual export growth[a]



(a) Current yen (not seasonally adjusted) three-month moving average.

Chart 4
Japan: Tankan[a] **Survey and industrial production**



(a) Major manufacturers' view of business conditions.

Table C
Quarterly contributions to German GDP growth[a]

Percentage points

	1997			
	Q1	Q2	Q3	Q4
Domestic demand	**0.6**	**0.3**	**-0.2**	**0.7**
Private consumption	0.0	0.5	-0.5	0.2
Investment	-0.4	0.1	0.1	0.0
Government consumption	0.1	0.1	-0.3	-0.3
Stockbuilding	0.9	-0.5	0.4	0.7
Net exports	**-0.2**	**0.7**	**0.9**	**-0.4**
GDP	**0.4**	**0.9**	**0.7**	**0.3**

(a) Contributions may not sum because of rounding.

The annual rate of export growth slowed further in 1998 Q1, to 3.9%, from 12.1% the previous quarter. And the signs of an effect from the Asian crisis became more clear: monthly average exports to the ASEAN-4[1] dropped to ¥350 billion, from ¥488 billion in 1997, though seasonal factors may account for part of this decline (see Chart 3).

The average level of industrial production in 1998 Q1 was 0.4% lower than in 1997 Q4, and 4% lower than in 1997 Q1 (see Chart 4). The Bank of Japan's March Tankan Survey indicated that business sentiment deteriorated in 1998 Q1, and that producers increasingly view their stock levels as excessive. This suggests that output in 1998 Q1 is likely to have fallen compared with 1997 Q4.

The impact of the fiscal package announced in March is difficult to assess. The proportion of new spending in the ¥16 trillion headline figure is unclear, as is the type of spending. The sharp falls in consumer confidence and the average propensity to consume, following several financial sector failures at the end of 1997, may also reduce the effectiveness of fiscal loosening.

Growth in the major continental European countries slowed slightly in Q4 compared with Q3. Slower growth in Germany reflected weakness in domestic demand. Quarterly growth also slowed in Italy, but this mainly reflected working-day effects. In France, Spain and the Netherlands, the pace of growth in Q4 was similar to that in Q3.

German GDP grew by 0.3% in the fourth quarter of 1997, and was 2.3% higher than a year earlier. Growth in Q4 was slower than that in the previous two quarters (see Table C). Private consumption made a small contribution, but remained weak: it was only 0.6% higher than a year earlier, and it remains below its 1996 Q3 peak. This weakness reflects slow growth in disposable income, and high and increasing unemployment during the quarter. Stockbuilding was the major contributor to domestic demand and accounted for two thirds of GDP growth in the year to 1997 Q4; how much of this was voluntary is unclear. As in Q3, government consumption fell significantly, possibly reflecting fiscal adjustments necessary to meet the Maastricht deficit criterion.

Net exports fell in Q4, after two quarters of strong growth, though their level remained high. The decline in net exports occurred because imports were 2.7% higher in Q4 than in Q3, while quarterly growth in exports fell to 1.3%, the lowest quarterly growth rate since 1996 Q2.

Data for the early months of 1998 suggest that the economy is recovering from its slowdown in the fourth quarter of 1997. Industrial production and orders (particularly of capital goods) were strong, pointing to increasing investment, and industrial confidence remained high (see Chart 5). Unemployment, one of the main factors thought to have been suppressing consumer spending, fell from 11.8% in December to 11.5% in March, though some of this fall may be the result of unseasonally warm weather. Consumer confidence improved in the final quarter of 1997, and strengthened sharply early in 1998, though it remains below the peak levels seen in 1990, when confidence was buoyed by prospects of

(1) Thailand, Indonesia, Malaysia, and the Philippines.

Chart 5
Industrial production

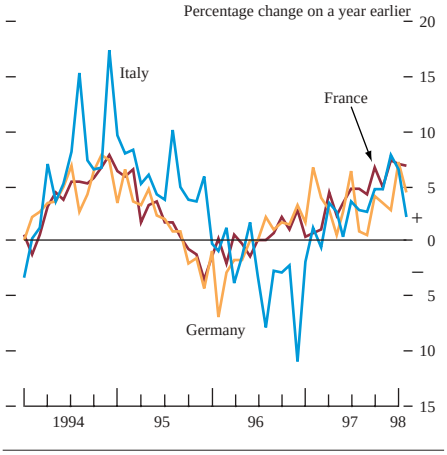


Chart 6
Retail sales

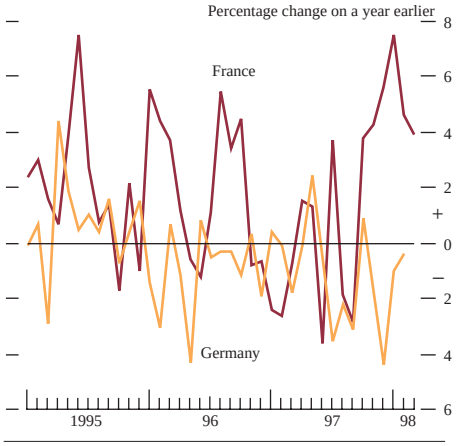


Table D
Quarterly contributions to French GDP growth[a]

Percentage points

	1997			
	Q1	Q2	Q3	Q4
Domestic demand	**-0.3**	**0.5**	**0.8**	**0.5**
Private consumption	0.2	0.1	0.7	0.6
Investment	-0.3	0.2	0.2	0.0
Government consumption	0.0	0.0	0.0	0.0
Stockbuilding	-0.2	0.2	-0.1	-0.1
Net exports	**0.5**	**0.6**	**0.0**	**0.3**
GDP	**0.3**	**1.1**	**0.9**	**0.8**

(a) Contributions may not sum because of rounding.

reunification. But despite these improvements, retail sales and confidence among retailers remain weak (see Chart 6).

French GDP increased by 0.8% in Q4 to a level 3.2% higher than a year earlier, slowing slightly compared with previous quarters (see Table D). Private consumption contributed significantly to growth, as employment and wage growth strengthened and consumer confidence improved. Investment fell slightly: growth in corporate investment slowed, and the level of household and public investment fell. However, the figures seem inconsistent with other Q4 investment data, such as capital goods imports, wholesale sales and production, and housing starts, all of which suggested continuing strength in investment during the quarter.

Net exports increased in Q4 from the previous quarter, and though their contribution was smaller than in the first half of the year, they accounted for just over half of growth during 1997 as a whole. The transport strike in November was one probable reason for the decline in net exports. But it appears that the lagged effects of the depreciation of the franc on export growth have also begun to wear off. The customs trade figures also appear to show an ‘Asian effect’: the French trade position with Asia shifted from a substantial surplus during 1997 Q3 into deficit in Q4, as a result of a fall in exports. The figures for January showed further growth of the bilateral deficit with Asia. But these shifts could be partly due to the lack of seasonal adjustment.

French business confidence remains strong, and according to the January investment survey, industrialists now plan to invest 10% more in nominal terms during 1998 than in 1997. In the previous survey, the planned increase in investment was only 3%. Fiscal incentives designed to encourage construction of apartments for rental should also encourage residential investment during 1998. Consumer confidence remains close to its peak of the late 1980s. Employment grew by 0.5% in the fourth quarter of 1997, and was 1.2% higher than a year earlier. Retail sales grew strongly in the early months of 1998 (see Chart 6).

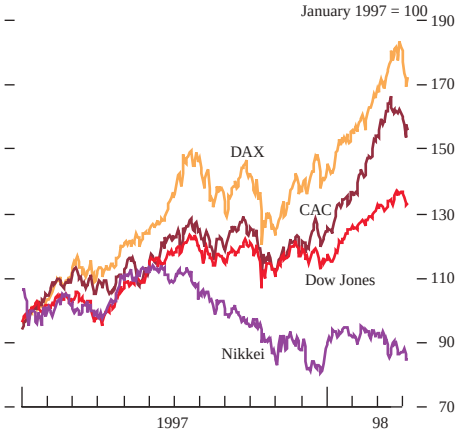
GDP in Italy grew by 0.2% in 1997 Q4. This followed quarterly growth rates of 0.6% and 1.9% in Q3 and Q2 respectively, suggesting a slowdown. But this was because there were fewer working days in 1997 Q4 than in the earlier quarters of the year, and this is not taken into account in the GDP statistics. Annual growth has been increasing: between 1996 Q4 and 1997 Q4, which had the same number of working days, GDP grew by 2.8%, compared with annual growth rates of 1.9% and 2.2% in 1997 Q2 and Q3 respectively. And industrial production growth increased in Q4, to 1.2%, from 0.5% in Q3. Growth in Q4 was broad-based, suggesting that the government’s car-purchase incentive scheme continued to support consumption, and that the Asian slowdown had yet to affect net export growth significantly.

Output elsewhere in Europe grew strongly in 1997, picking up during the second half of the year. Spanish GDP was 3.4% higher in 1997 than in the preceding year, with quarterly growth stable in the 0.8%–0.9% range. GDP in the Netherlands grew by 3% in 1997, and the quarterly growth rate picked up to 1% in Q4. In Sweden, GDP grew by 1.8% in 1997, and was 3.3% higher in Q4 than a year earlier. Growth in these European economies has been broadly based, and domestic demand has been strong.

The buoyancy in most major equity markets last year continued in the opening months of 1998, with equity prices in most industrial countries reaching historic highs, though they have since fallen slightly. Japan was the exception; share prices there recovered only a little.

US equity prices increased sharply in the opening months of 1998, following a period of volatility during the latter part of 1997. At the end of April, equity prices in Germany and France were 19% and 24% respectively above their average levels in January (see Chart 7).

Chart 7
Equity markets(a)



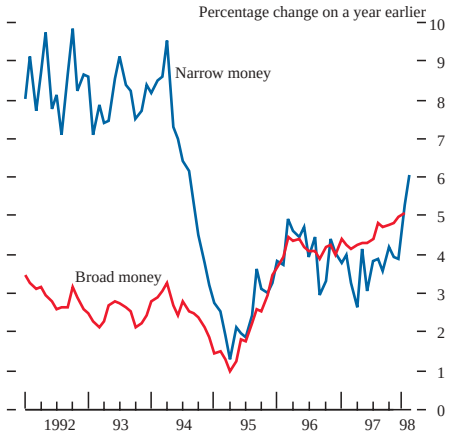
(a) In local currencies.

By contrast, Japanese equity prices recovered only moderately, and have remained within 15% of the lowest levels recorded during the 1990s. The fiscal package announced on 26 March contributed to a recovery of share prices, but these remained below ¥17,500, and fell when Moody's changed the outlook for Japanese government debt from 'stable' to 'negative' on 2 April, citing 'uncertainty about the ability of the authorities to achieve a policy consensus that would help promote a return to economic growth and fiscal balance'. Moody's announcement was also accompanied by a slight increase in long-term bond yields, though this has since unwound.

Narrow and broad money growth in the M6

The GDP-weighted average of annual growth in narrow and broad monetary aggregates in the major six economies rose modestly during 1997 (see Chart 8). In the final quarter, average broad money growth was 4.6%, compared with 4.5% in Q3, whereas average narrow money growth rose from an annual rate of 3.5% in Q3 to 3.8% in Q4. In real terms, average annual narrow money growth rose from 1.4% in September to 2.1% in November 1997. Real broad money growth in the M6 reached its highest level since March 1991 in November, when its annual rate reached 2.6%. In 1997, average inflation was below average real broad money growth in the M6. In the absence of velocity shifts, this suggests that nominal demand may rise slightly in the future.

Chart 8
Average narrow(a) **and broad**(b) **money growth in the M6 economies**



(a) M1.
(b) M4 for the United Kingdom.
M3 for France and Germany.
M2 and CDs for Japan.
M2+ for Canada.
M2 for the United States and Italy.

Since the end of Q3, narrow money growth has risen in the United States and Japan, though annual US growth remained negative. Japanese M1 grew at an annual rate of 10.7% in February 1998, its highest rate since October 1996. This may reflect liquidity injections into the Japanese banking system by the Bank of Japan at the end of 1997. The record low deposit rates in Japan may also have encouraged increased narrow money holdings. Despite two 50 basis point rises in Canada's bank rate (in December 1997 and January 1998), M1 growth rose to 13.2% in February. By contrast, narrow money growth in Germany and Italy slowed in 1997 Q4.

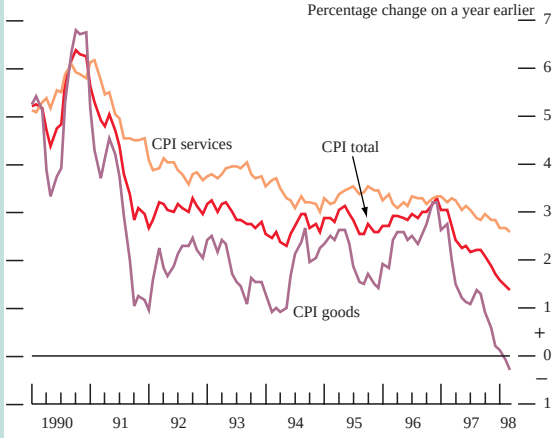
The United States and Japan also accounted for most of the increase in the growth rate of broad money in the M6. Broad money growth in Japan has picked up since October 1997, and rose by 4.8% in the year to February. US M2 growth has moved further away from the upper end of its range (of 1%–5%) since the end of Q3. In February, US M2 increased at an annual rate of 6.3%, the highest rate behind Italy within the M6. French broad money growth picked up strongly to 3.1% in January.

Broad money growth in Germany has fallen further since the previous *Quarterly Bulletin*. In February, M3 grew at an annualised rate of 2.8%, relative to its average level in 1997 Q4, which forms

US consumer prices

Consumer price inflation in the United States fell last year to an average of 2.3%, compared with 2.9% in 1996 (see Chart A). The easing of price pressures was particularly noticeable in the last quarter of the year, with the year-on-year inflation rate standing at just 1.7% in December 1997. This decline in the headline inflation rate was unexpected. In December 1996, the market consensus was that consumer price inflation in 1997 would remain at 2.9%; by June 1997, the consensus forecast had been revised downwards, but only to 2.7%. Any dissipation of inflationary pressures seemed unlikely at the time: the United States was in its seventh year of expansion, driven by particularly strong domestic demand growth (which averaged 4.1% annually in 1997), with the long upswing reflected in historical tightness in the labour market. But it is possible to explain recent US inflation performance in conventional terms, by considering separately the trends in goods and services inflation, and by discussing the role of commodity prices, the dollar, wage pressures and productivity.

Chart A
US consumer price inflation



The decline in US consumer goods inflation was evident in all parts of the price chain (see Chart B). Upstream input price (PPI crude goods) inflation averaged -2.3% in 1997, compared with 10.7% in 1996; output price (PPI finished goods) inflation fell to 0.4% in 1997, from 2.6% in 1996. Final retail price (CPI goods) inflation fell to 1.4%, from 2.5% in 1996. With goods accounting for 43% of the total CPI, the fall in retail price inflation was significant in moderating 1997 headline consumer price (goods and services) inflation in the United States.

Several factors lie behind these trends in goods prices. First, non-food commodities prices fell significantly on world markets for most of 1997, driven by both supply and demand factors (see Chart C). With commodities priced in US dollars on world markets, this was reflected in US input prices and passed through fairly directly to the 'energy' component of the CPI (comprising 4% of the CPI). Less directly, it also helped to depress inflation in the 'core

Chart B
US goods prices

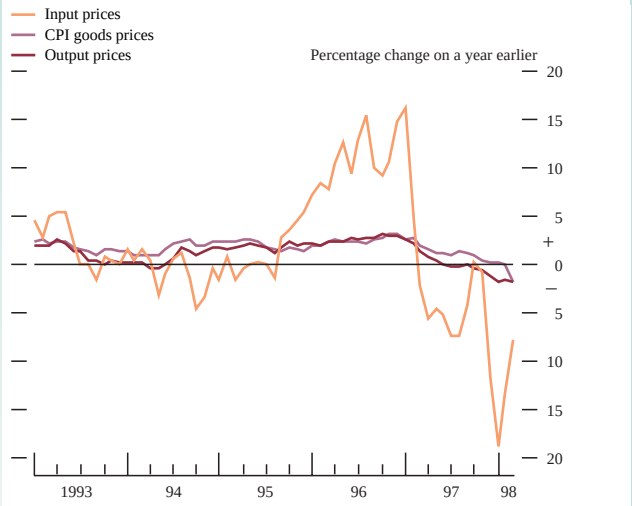
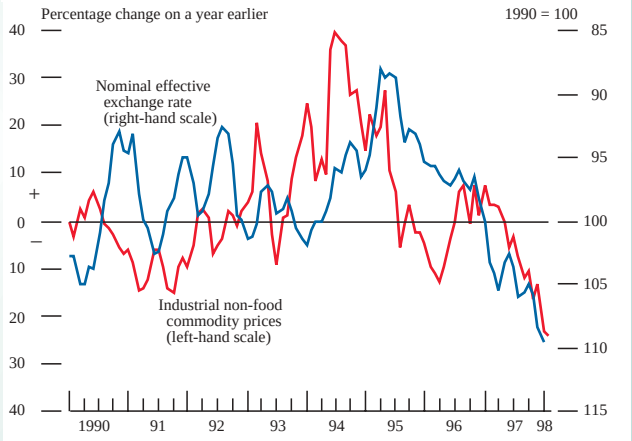


Chart C
Influences on US goods prices



Sources: IMF, the Economist Commodity Price Index.

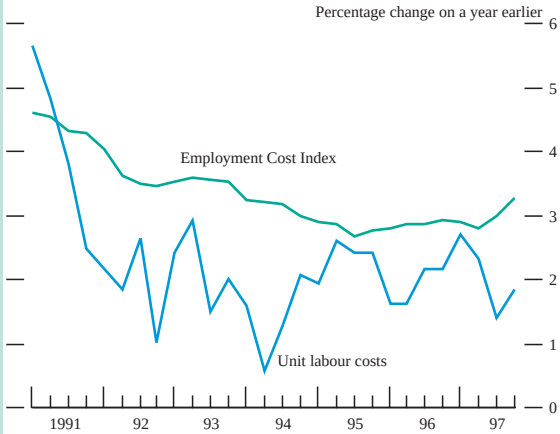
goods' component of CPI (goods excluding food and energy, comprising 23% of the CPI). The prices of these tradable core goods was also held down by significant dollar appreciation; the nominal effective exchange rate index rose by 5.5% during 1996 H2 and 1997 H1, when dollar movements might have been expected to affect 1997 retail goods prices. Finally, though world food commodity price inflation did not fall in 1997, US consumer food price inflation declined to 2.6% in 1997, from 3.3% in 1996, reflecting strong domestic harvests (and also muted labour cost pressure). With food comprising 16% of the overall CPI, this accounted for a significant component of the reduction in headline inflation in 1997.

Computer prices also made a small negative contribution to CPI growth during 1997. Though they account for only 0.2% of CPI goods, the US computers-at-home deflator fell by 33% in 1997. Other changes in CPI measurement by the US Bureau of Labour Statistics (BLS) have also contributed to the fall in CPI goods inflation (see below).

Service sector prices account for 57% of the US CPI.(1) The services included in CPI are broadly non-tradable, and therefore little affected by the dollar appreciation. Inflation in the services component of the CPI has been higher than consumer goods inflation in 1997, but has also fallen, from 3.4% in 1996 to 2.9% in 1997 (see Chart A). The behaviour of the cost of labour, the service sector's key input cost, is likely to have played a role in this decline.

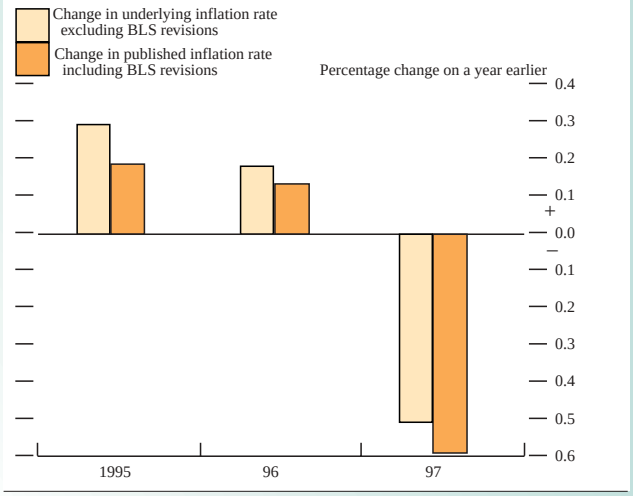
Labour cost pressure as measured by the US Employment Cost Index (ECI) was moderate in 1997, considering the contemporaneous tightening of the US labour market. The ECI rose by 3% in 1997, little more than its 2.8% rise in 1996 (see Chart D). Signs of a pick-up in the ECI were visible in Q4, and as early as Q3 in the service sector. However, two factors may have limited the effect of this on consumer services price inflation. Anecdotal evidence suggests that the upturn in the 'services' ECI was largely due to rises in bonuses and benefits paid to workers in the producer-oriented (rather than household) service sector, such as in high-value financial services. More generally, wage pressure on overall consumer price inflation in the United States was mitigated by strong productivity growth in 1997 Q2 and Q3. As a consequence, US unit labour costs rose by only 2.1% on average in 1997. Also, US service sector inflation in 1997 was limited by special influences on the price behaviour of medical care services, which comprise 11% of CPI services (6% of total CPI). They continued to show declining inflation (to 2.9% in 1997, from 3.7% in 1996), reflecting the recent shift in the United States into cheaper 'managed-care' health insurance schemes.

Chart D
US labour cost pressure



One final factor in the analysis of US inflation is CPI measurement. There have been revisions to the calculation of the US CPI each year since 1995 to deal with potential sources of (upward) bias in the index. Official BLS estimates suggest that the full programme of revisions will reduce measured CPI inflation in total by 0.62 percentage points by 1999, and that the revisions introduced in 1997 accounted for 0.08 percentage points of the fall in the 1997 inflation rate (see Chart E). Details of the revisions show that they lowered inflation in both the goods and services components of the CPI in 1997.

Chart E
Role of CPI revisions in year-on-year changes in US inflation



The distinction between goods and services is helpful in considering the likely direction of US inflation in 1998. Certainly, there are expectations of continued declines in non-food commodity prices because of developments in Asia, Iraq and OPEC; the Economist Intelligence Unit now forecasts a 7% fall in world commodity prices in 1998. The dollar has also continued to appreciate in 1997 H2 and early 1998 (see Chart C). So these external factors should continue to limit goods price inflation in the near term. The headline CPI inflation rate should be further depressed, at least cosmetically, by the incremental BLS revisions to CPI measurement in 1998: these are expected to lower the measured inflation rate by a further 0.15 percentage points this year. These factors have led some commentators to discuss the possibility of deflation in the United States. But there are signs that the tightness of the labour market is finally being reflected in increasing labour cost pressures, and medical care costs are beginning to rise again as the effect of the institutional changes noted above begins to wane. These factors should put particular upward pressure on prices in the service sector, the main component in the CPI. So despite continued benign external influences on the 'goods' part of the CPI in 1998, growing domestic inflationary pressures on the majority of the CPI can be expected to dominate by the second half of the year.

(1) The US CPI weights are split into 43% for goods and 57% for services. This is in marked contrast with the UK RPI index, where goods account for 56% of the index and services for only 35% (the balance being items not classified as either). In fact, these US weights understate the importance of 'service-type' components in US consumer prices, since one third of the US 'food' index (which accounts for 16% of CPI goods) is in the 'food away from home' category. This behaves much like the service sector in terms of its input cost base and price behaviour.

Chart 9
US inflation

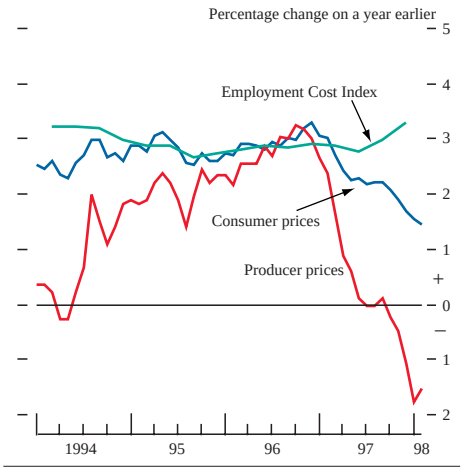
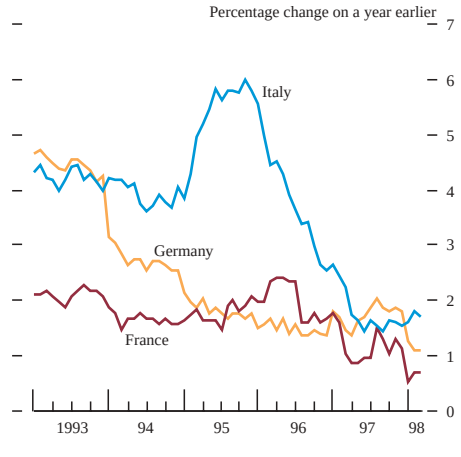


Chart 10
French, German and Italian consumer prices



the baseline for the Bundesbank's target growth rate. M3 growth has been within its target range since June 1997. Canada was the only major country where broad money growth was negative, at an annual rate of -1.5% in January.

Despite continued strong activity in most of the M6, inflation fell. On the harmonised basis, inflation rates in the European Union remained low and within a narrow range.

Despite low unemployment and rapid output growth, consumer price inflation has remained low in the United States, edging down to 1.4% in March, from a peak of 2.2% last summer (see Chart 9).(1) Declining energy and commodity prices held down the headline inflation figure; core consumer prices, which exclude food and energy prices, were 2.3% higher in March than a year before. Producer prices fell by 1.8% in the year to March, and have fallen in each month since November, reflecting similar factors.

By contrast, labour cost growth has increased slightly: after remaining below 3% from mid 1994, the annual rate of growth in the Employment Cost Index rose to 3.3% in 1997 Q4. However, increased productivity growth has moderated growth of unit labour costs to 1.8% in Q4, from a peak of 2.7% in Q1.

Adjusted for the effects of the consumption tax increase in Japan last April, the consumer price index has been stable, reflecting weak domestic demand. Consumer price inflation fell from 2.5% in October to 1.9% in January—a figure entirely accounted for by the impact of the consumption tax increase. Producer price inflation has fallen to below 1%, partly because of the stabilisation of the yen and lower import price inflation.

German consumer price inflation continued to fall, from a peak annual rate of 2.1% in August 1997 to 1.1% in March 1998, as a result of several factors (see Chart 10). The slight appreciation of the Deutsche Mark, following its 6.9% depreciation in the year to August 1997, helped to reduce import price inflation, as did the fall in world commodity prices. And rent controls in eastern Germany were eliminated this year. These had previously led to sharp increases in rents each January; the absence of these increases reduced the annual inflation rate by 0.5 percentage points this year.

During the early months of 1998, consumer price inflation in France remained below that in Germany, as it has done since the beginning of 1997. But the margin between the annual rates narrowed significantly, partly as a result of the elimination of rent regulation in eastern Germany. From April, the German VAT increase is likely to lead to some divergence in headline annual inflation rates, though the lack of inflationary pressure in Germany suggests that this is unlikely to have second-round effects.

In Italy, annual CPI inflation edged up to 1.7% in the year to March, having fallen to 1.4% in September 1997, its lowest level since 1968. This increase was largely the result of further pass-through of last October's VAT increase, which has been slow, reflecting continuing tight monetary and fiscal policy. In addition, import price inflation in Italy was well below that in Germany

(1) US consumer prices are discussed in more detail in the box on pages 128–29.

during 1997: the lira effective exchange rate was stable during 1997, while the Deutsche Mark depreciated by around 3% in effective terms during the year, and by 4% during 1996.

Inflation across the European Union remains low and uniform. According to the harmonised data, the average inflation rate for EU countries (excluding Greece) increased slightly towards the end of 1997, but then fell back a little in January, reflecting unseasonally weak food prices and the decline in commodity and oil prices. These factors are likely to reverse to some extent in 1998. The standard deviation of inflation rates has increased marginally since the summer; the drop in average inflation since then has resulted from marked declines in inflation rates in Germany, France, Belgium and the Netherlands, partly offset by increases in Italy, Spain, Portugal and Ireland.

Most countries met the Maastricht criteria for inflation and bond yields, leading to the decision to admit eleven countries to monetary union from January 1999. The cyclical upturn in the second half of 1997 helped to bring the deficits of all EU members, apart from Greece, below the 3% limit. Only France, Finland, Luxembourg and the United Kingdom achieved debt ratios below 60%.

Table E shows performance against the Maastricht criteria in 1997. As was the case earlier in the year, inflation rates converged markedly, at low levels, across the European Union. This led to a high degree of yield convergence.

Achievement of the deficit targets was assisted by the strength of the cyclical upturns in many of the smaller European countries, and the low level of interest rates. In France and Italy, deficit reduction was also helped by strengthening domestic demand in the second half of 1997, together with additional fiscal consolidation measures, some of which will unwind in the next few years.

The reduction in deficit ratios and the increase in growth have helped to reduce debt to GDP ratios, though these have remained above 60% in most potential EMU Member States.

The EC and EMI reports were positive about these figures, and recommended, as the markets had been expecting, that eleven countries (the 'EU11') were eligible for membership of monetary union.(1) The European Council decided to admit these countries to monetary union from 1 January 1999. The EMI did, however, express 'ongoing concerns' about the pace of fiscal consolidation in Italy and Belgium, and in Greece, which aims to join EMU in 2001. And substantial real differences persist between the members of the monetary union (see Table F).

Official interest rates remained unchanged in most industrialised countries. Canada and Finland increased their base rates. Italy and Portugal cut official rates.

US official interest rates were left unchanged by the Federal Open Market Committee in 1998 Q1, as they have been since March 1997. During March, the US yield curve rose slightly at the short end. This change was sharply reversed on 3 April 1998,

(1) The EU Member States excluding Greece, Denmark, Sweden and the United Kingdom.

Table E
Maastricht criteria outturns

	Deficit/(surplus) as a percentage of GDP	Debt as a percentage of GDP	HICP (a)	Long-term government bond yields
Target	3.0%	60%	2.7%	8.0%
Austria	2.5	66.1	1.2	5.7
Belgium	2.1	122.2	1.5	5.7
Denmark (b)	(0.7)	64.1	2.0	6.2
Finland	0.9	55.8	1.2	5.9
France	3.0	58.0	1.3	5.6
Germany	2.7	61.3	1.5	5.6
Greece (b)	4.0	108.7	5.5	9.7
Ireland	(0.9)	67.0	1.2	6.3
Italy	2.7	121.6	1.9	6.6
Luxembourg	(1.7)	6.7	1.4	5.6
Netherlands	n.a. (c)	n.a. (c)	2.0	5.6
Portugal	2.5	62.0	1.9	6.2
Spain	2.6	68.3	1.9	6.2
Sweden (b)	n.a. (c)	n.a. (c)	1.9	6.6
United Kingdom (b)	1.9	53.4	1.9	6.9

(a) Harmonised index of consumer prices.
(b) Denmark, Greece, Sweden and the United Kingdom have no plans to participate in the first wave of EMU.
(c) n.a. = not available.

Table F
Selected economic indicators and forecasts for the EU11

	GDP growth (a)		Output gap forecast (a)		Unemployment level (b)	Productivity (c)
	1998	1999	1998	1999	1998	1994
Germany	2.7	2.9	-1.4	-1.0	11.1	111
France	2.9	2.8	-1.4	-0.8	11.3	114
Italy	2.4	2.7	-1.8	-0.9	11.8	87
Austria	2.7	2.9	-0.8	-0.3	5.9	100
Belgium	2.7	2.8	-1.4	-0.6	11.9	116
Luxembourg	3.4	3.5	n.a. (d)	n.a. (d)	3.5	n.a. (d)
Finland	4.2	3.0	0.8	0.4	11.0	80
Ireland	8.6	6.6	3.1	2.3	8.2	86
Netherlands	3.7	3.2	0.7	0.6	4.8	114
Portugal	3.8	3.2	-0.2	0.1	6.0	49
Spain	3.5	3.3	-1.2	-0.9	18.4	88
EU11	3.7	3.4	-0.4	-0.1	9.4	103
Standard deviation	1.7	1.1	1.5	1.0	4.3	21

(a) Percentage of potential output. Source: OECD *Economic Outlook*, May 1998.
(b) Standardised percentage rate.
(c) Index, United States = 100. Source: N Crafts 1997, 'Economic Growth in East Asia and Western Europe since 1950: Implications for Living Standards', *National Institute Economic Review*.
(d) n.a. = not available.

following the release of payroll data that showed a decline of 36,000 in March, and reflected a marked downward reassessment of the chances of interest rate increases in the near term.

Official rates were increased in Canada by 50 basis points, to 5%, in January. This was the third increase in as many months, and was primarily designed to offset the impact of the depreciation of the Canadian dollar on the monetary conditions index targeted by the central bank.

The Bank of Finland raised its tender rate by 15 basis points in March, to 3.4%, citing concerns about inflationary pressures.

The Bank of Italy cut its official discount rate by 50 basis points on 21 April, reflecting the expectation that inflation had stabilised at 1.7% in March and April, following its slight increase in February.

The Bank of Portugal cut official rates by 20 basis points in March, continuing convergence of its short-term rates with France and Germany.

Developments in East Asia

The February 1998 *Quarterly Bulletin* included a note discussing developments in Asia up to the end of January 1998.(1) Since then, the situation appears to have stabilised a little. Further international financing packages, linked to undertakings to accelerate macroeconomic and structural adjustment, have to some extent helped to restore the confidence of international investors, allowing the currencies and stock markets of the affected countries to stabilise or strengthen from the very low levels reached at the beginning of 1998. Fears that other emerging markets would be destabilised have not so far been borne out.(2)

The ASEAN-4(3)

Since the beginning of February, there have been a number of positive developments. In Thailand, the IMF has agreed a target budget deficit of 1%–2% of GDP for 1998, and released another $270 million tranche of its $3.9 billion loan. The Asian Development Bank has approved a $500 million loan to Thailand, and the United States has agreed to provide $1.7 billion. The Thai central bank has announced its willingness to fund the write-off of $11.6 billion of the banking sector's bad loans, reporting that it has spent $25.6 billion on supporting the banking sector since mid 1996.

The Malaysian government has announced a package of reforms designed to restore the confidence of international investors. The Philippine government has raised $600 million from private banks to supplement its currency reserves; World Bank President Wolfensöhn commented that the Philippine government has responded correctly to the economic situation.

Developments in Indonesia have been more difficult to interpret, following the decision in January to accelerate implementation of the package of reforms agreed with the IMF last October. A number of measures have been undertaken. Tariffs and export taxes have been reduced, budgetary support for certain sectors is to be ended, a programme to rehabilitate the banking sector has been announced, and new bankruptcy laws are being developed. Indonesia has also raised some bilateral financing: Japan is reported to have pledged $560 million, and Singapore has offered $2 billion of trade finance. However, early in February, Indonesian Finance Minister Ma'rie Mohammed announced plans to link the rupiah to the US dollar via a currency board. The IMF considered this to be outside the terms of Indonesia's agreement, and threatened to withdraw its $43 billion assistance plan. It also delayed release of the second, $3 billion, tranche of assistance scheduled for 15 March, which triggered a delay in the release of $2.5 billion of World Bank and Asian Development Bank funds. Uncertainty continued until mid March, when the plans for a currency board appeared to have been dropped. Renegotiation of the IMF's assistance plan was concluded on 8 April, which should shortly lead to the release of further IMF and associated funds. The plan is intended to reduce inflation rapidly, stabilise the exchange rate, and restore normal trade flows and economic growth. It calls for more comprehensive and rapid structural reform and banking sector restructuring, and for funding to be released more frequently, in smaller tranches, associated with a higher-frequency monitoring and review programme.

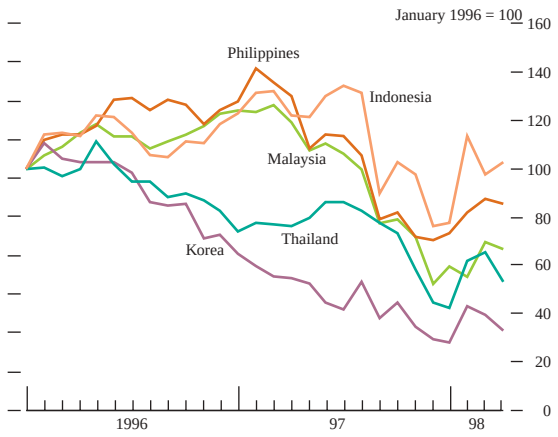
Korea

The situation in Korea now appears to be more stable. Korea's compliance with most of the components of the IMF's package helped to regain the confidence of international investors, leading to an agreement with commercial creditors to exchange $22 billion of short-term debt for longer-term government-guaranteed loans; of this, $21.4 billion had been rolled over by mid March. This reduced the proportion of foreign debt with a maturity of less than one year to 30%, from 44% at the end of 1997. Following the passage of labour reforms specified by the assistance package, the IMF approved a further $2 billion tranche of funds. The Korean government's first overseas bond issue was heavily oversubscribed, and raised $1 billion more than expected ($4 billion in total).

Market reactions

Market reactions to the developments described above have generally been favourable. Equity markets in the ASEAN-4 and Korea recovered sharply in early February 1998, though

Chart A
Asian share prices

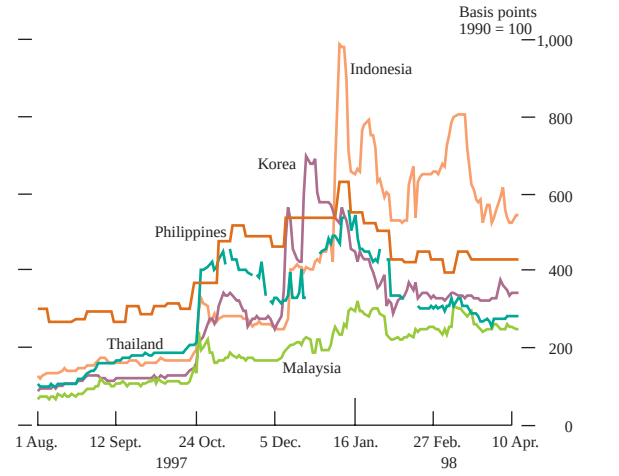


(1) See the February 1998 *Quarterly Bulletin*, pages 26–29.
(2) This note is based on events up to 21 April 1998.
(3) Thailand, Malaysia, Indonesia and the Philippines.

they have since fallen back (see Chart A). Data for Korea suggest that foreign purchases of equities were a significant factor in the recovery: these amounted to $2.5 billion in January and February, compared with net sales of $1.3 billion in the last quarter of 1997. Equities in Thailand, Malaysia and Korea subsequently lost around half of their gains, but now stand about 20% above the lowest levels in January. In the Philippines and Indonesia, equities have fallen back rather less, and are currently 50%–60% above their lowest levels in January, though as with in all five countries, they remain well below the peak levels of 1997.

Bond spreads over US Treasuries in the ASEAN-4 and Korea dropped sharply at the beginning of February, and have been stable since then in Thailand, Korea and Malaysia, though remaining above the levels of 1997 H1 (see Chart B). By contrast, the bond spread in Indonesia rose significantly during March, though it has since fallen back close to the low level reached in February. This instability may have reflected uncertainty in the markets about the status of Indonesian negotiations with the IMF.

Chart B
Asian benchmark bonds: spreads over US Treasuries

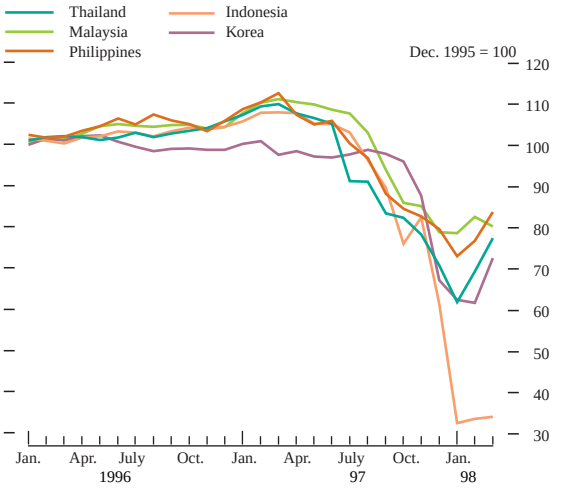


Source: Datastream; some data for Thailand unavailable.

Exchange rates have also stabilised (see Charts C and D). By February, the real exchange rates of Thailand, Korea and the Philippines had appreciated significantly from their levels in December 1997. The Indonesian and Malaysian real exchange rates were little changed during this period. Nominal exchange rates suggest that real exchange rates for the ASEAN-4 and Korea were stable in March and April. Official reserves stabilised in Thailand, Indonesia and Malaysia during the early months of 1998. Korea and the Philippines were able to rebuild their reserves, presumably reflecting improved access to credit lines.

The stabilisation of exchange rates has been associated with reductions in short-term interest rates, particularly in Korea and the Philippines (see Chart E). Perhaps because the increases in short-term rates during 1997 were smaller, the declines in short-term interest rates in Malaysia and Thailand were less marked. In late March, Indonesia raised its 90-day interbank rate from 21% to its current level of 30%. This is above the levels that occurred shortly after the

Chart C
Asian real exchange rates



Source: J P Morgan.

Chart D
Dollar exchange rates

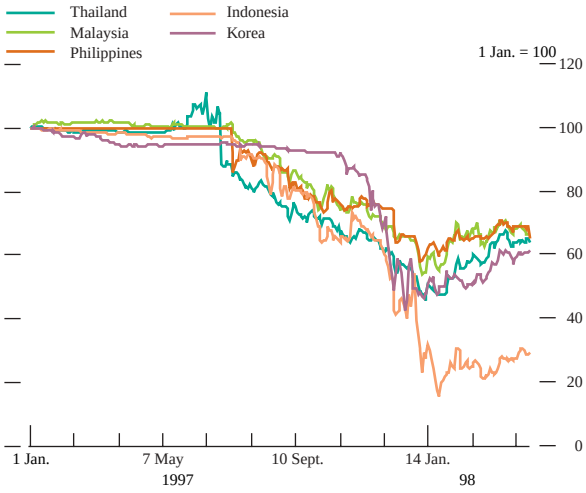
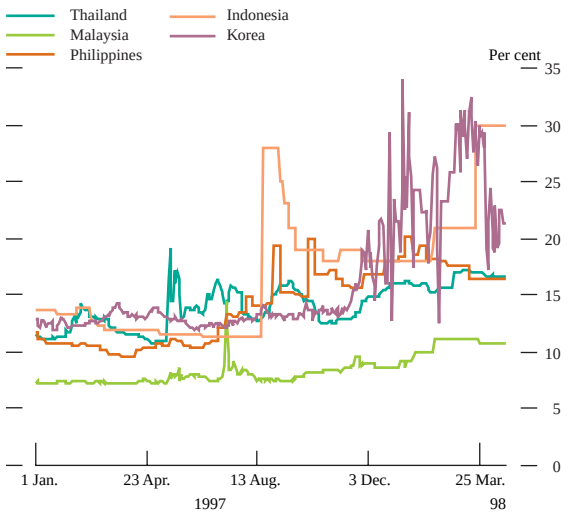


Chart E
Asian short-term interest rates



Indonesian rupiah first came under pressure in August 1997, though the real rate is now much lower, since inflation has picked up sharply.

Effects on ASEAN-4 and Korean economies

The effects of the East Asian currency depreciations are now beginning to show more clearly in other economic indicators (see Table 1). Inflation has picked up a little in Thailand, Malaysia and the Philippines. Prices have increased sharply in Indonesia, reflecting the relatively large depreciation of the rupiah, and the impact of the drought on food prices. Output has been falling in Thailand, Malaysia and Korea.(1)

Table 1
Selected economic indicators

Percentage change on a year earlier, based on non seasonally adjusted data

	Consumer prices		Industrial production (a)	
	March 1998	August 1997	Most recent available (b)	August 1997
Thailand	+9.5	+6.6	-8.6	-2.2
Malaysia	+5.1	+2.4	-2.1	+13.8
Philippines	+7.3	+4.5	+19.4	+3.7
Indonesia	+39.1	+5.7	n.a. (c)	n.a. (c)
Korea	+9.0	+4.1	-1.9	+8.5

(a) The figures for Thailand and the Philippines are for manufacturing production.
(b) The figures given are for January 1998, February 1998, November 1997 and February 1998, respectively.
(c) n.a. = not available.

The East Asian currency depreciations have led to shifts in the trade patterns of the affected countries, as Table 2 shows. In dollar terms, imports have generally declined, though by varying amounts. Exports have typically increased by 5%–10%. There have been reports that shortages of working capital and difficulties obtaining imported inputs have constrained export growth. Several countries have arranged additional finance specifically to alleviate these problems. The impact of the depreciations on domestic demand and employment is difficult to assess, because of lags in both the economic effects of these shocks, and in the publication of data.

Table 2
Trade flows

Change between 1997 Q2 and Q4, dollar terms

	Imports percentage	Exports percentage	Net exports $ billions
Thailand	-26.2	+9.1	+5.2
Malaysia	-15.9	-5.8	+2.1
Philippines	+0.7	+10.9	+0.6
Indonesia	-7.8	+5.3	+1.9
Korea	-7.6	+3.4	+4.2

Spillovers to emerging markets

Pressure on currencies in other emerging markets has eased. The Czech koruna, Brazilian real, Russian rouble and Slovak koruna have strengthened or stabilised, allowing a modest easing of interest rates. Interest rates in Argentina and China have also been reduced, although in the latter case, this may reflect easing of domestic inflationary pressures. Spreads on most emerging market debt have continued to narrow in the opening months of 1998, though they typically remain wider than during 1997 H1.

The outlook

Though the situation appears to have stabilised somewhat, considerable uncertainty remains. Recent improvements in market sentiment may not persist, particularly if adverse developments in the real economies of affected countries create pressure for policy reversal, or delays in implementation. And it will be some time before the effectiveness of reforms can be fully ascertained. In addition, developments in Japan will critically influence the recoveries of the East Asian economies.

Between December 1997 and May 1998, the IMF revised down its projection for world growth in 1998 from 3.5% to 3.1% (see Table 3). This compares with world growth of 4.1% in both 1996 and 1997, but is stronger than the global slowdown in 1990–93, when world output was rising at annual rates of $1\frac{3}{4}$%–$2\frac{3}{4}$%.

Table 3
IMF and OECD forecasts for GDP growth in 1998

	IMF			OECD		
	May 1998	Dec. 1997	Oct. 1997	June 1998	Dec. 1997	June 1997
World	3.1	3.5	4.3	n.a.	n.a.	n.a.
OECD	n.a.	n.a.	n.a.	2.4	2.9	2.7
NICs	1.8	3.6	6.0	n.a.	n.a.	n.a.
ASEAN-4	-2.7	1.7	5.4	n.a.	n.a.	n.a.
Japan	0.0	1.1	2.1	-0.3	1.7	2.9
United States	2.9	2.6	2.6	2.7	2.7	2.0
European Union	2.8	2.8	2.8	2.7	2.8	2.7

Note: n.a. = not available.

The IMF's downward revision to its projection for world growth largely reflects reductions in its growth forecasts for Asia. For the newly industrialised economies (Korea, Taiwan, Hong Kong and Singapore), the IMF reduced its forecast for 1998 from 3.6% in December to 1.8% in the May *World Economic Outlook (WEO)*. For the ASEAN-4, the forecasts were reduced from 1.7% in December to -2.7% in May. The outlook in Japan has also weakened, owing mainly to a fall in domestic demand; the May *WEO* projects zero growth in Japan in 1998, compared with the IMF's December 1997 projection of 1.1%.

Revisions since December to forecasts for other regions are smaller. The IMF projection for US growth in 1998 has been revised up to 2.9% from 2.6% in October 1997. The projection for EU growth is unchanged from the October projection of 2.8%.

The OECD has also revised its forecasts, taking account of events since November 1997, the cut-off date for its previous forecast, including the deterioration in Korea and the worsening domestic environment in Japan. GDP growth in the OECD region(2) is expected to be 2.4% in 1998, down from 2.9% in the November forecast. This mainly reflects a large downward revision to expected growth in Japan, to -0.1%, from 1.7% in the November 1997 forecast.

(1) Recent figures for Indonesia are not available.
(2) The OECD area excludes the ASEAN-4 countries but includes South Korea.

Recent developments in financial markets

By David Collins of the Bank's Markets and Trading Systems Division.

This article discusses major trends in the financial markets during the past 18 months, focusing in particular on the impact of the problems in East Asia, EMU-related issues and the growth of electronic trading.

The major global event in financial markets was the emergence last summer of difficulties in the Asian tiger economies, which have had a widespread impact on financial markets. The associated downturn in major equity markets outside the region was quickly reversed, and concerns are again being expressed (as they were before the Asian crisis) about the sustainability of current equity index levels. Financial markets in Europe—particularly the bond markets—have been heavily influenced during the past year by the prospects for Economic and Monetary Union at the start of 1999. Government bond yields of likely member countries fell towards those of Germany, though 'convergence trading' has now largely ceased.

Electronic trading continues to make inroads into more traditional methods of financial market activity, especially exchange-traded futures—where the Deutsche Terminbörse (DTB), in particular, has made substantial gains. The rate of growth of on-exchange business continues to lag behind that of over-the-counter (OTC) derivatives.

East Asia

Problems for the 'tigers' . . .

The economic and financial difficulties in Asia have been a major influence on world financial markets since mid 1997.(1) The problems initially centred on the ASEAN-4: Indonesia, Malaysia, the Philippines and Thailand. These countries had enjoyed strong economic growth with generally modest inflation for several years, and had attracted large foreign capital inflows—including a large element of foreign currency borrowing by residents from both domestic and foreign banks. These borrowings were mainly short-term and unhedged. They supported ever-higher levels of investment, often in real estate or other projects giving rise to substantial maturity mismatches that exposed the borrowers to liquidity risk.

It is difficult to identify a single trigger for the crisis. Exports from the ASEAN-4 had fallen in 1996, and lower world prices had reduced profits in a number of important manufacturing sectors for the region. At the same time, the real effective exchange rates of the ASEAN-4 were appreciating steadily, both because inflation within Asia was higher than in many of their trading partners' economies and because their currencies were pegged to the US dollar, which was also appreciating. So the ASEAN-4 were losing international competitiveness, especially against Japan, a key export market; but mounting domestic pressure for lower interest rates was resisted, to maintain the exchange rate pegs to the US dollar.

As these tensions became more evident, there were an increasing number of attacks on Asian currencies in the foreign exchange markets. The Thai authorities, having failed to stem speculative onslaughts by raising interest rates and intervening heavily on the foreign exchange markets, finally broke the peg to the US dollar on 2 July; the baht depreciated by 20% in its first month of free floating. Currency unrest spread quickly to Malaysia, Indonesia and the Philippines. All these countries abandoned their ties to the US dollar within the following six weeks.

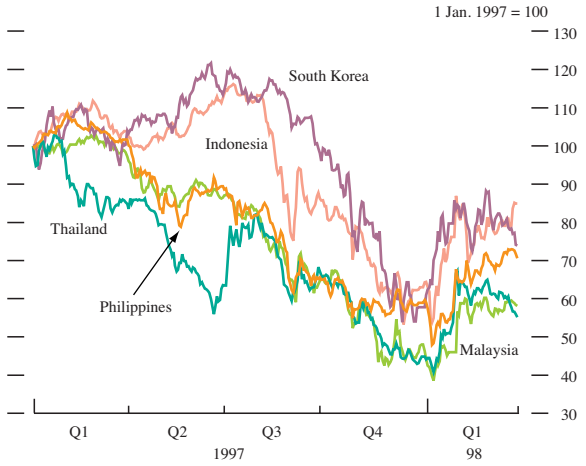
Attention then turned to the underlying domestic economic situation in these countries, and it became clear that their financial infrastructures were under severe strain. A combination of lax regulation, imprudent lending and a degree of political interference had left them poorly prepared for such setbacks, and unable easily to repair the damage unaided. Recognising this, Thailand and Indonesia turned to the IMF for assistance, and two rescue packages were put in place: US$17 billion for Thailand on 11 August and US$23 billion for Indonesia on 31 October.

Until August, South Korea had been relatively unaffected by this currency speculation—partly because its currency was not pegged to the US dollar, and so had depreciated by 10% in 1996. But as foreign investors began to question the underlying economic strength of the ASEAN-4, they also became concerned about South Korea, where similar weaknesses were apparent in the banking system and corporate structure. The Korean won therefore came under attack, and depreciated by 45% during 1997 Q4. With overseas confidence in the Korean banking system much reduced and its foreign exchange reserves running low, South Korea also needed assistance, and an IMF package of US$57 billion was announced on 3 December.

(1) See the February 1998 *Quarterly Bulletin* and *Inflation Report* for greater detail, and the note on Asian developments on pages 133–35 of this issue.

Equity markets in the region reflected the declining investor confidence in the second half of 1997 (see Chart 1): at the height of the problems in the autumn, some had fallen by more than 50% since the start of the year. Equity prices have since recovered some ground as sentiment has slowly improved, but they remain well below their previous levels.

Chart 1
Asian equity markets



Source: Individual exchanges, in local currencies.

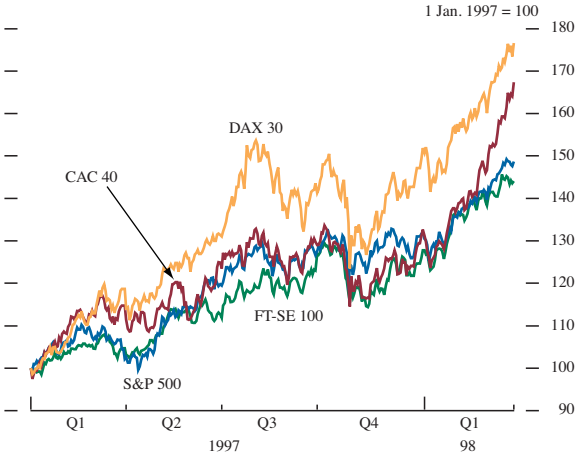
In the bond markets, spreads on emerging market paper narrowed throughout the first half of 1997 as investors, faced with falling yields in G7 markets, sought higher returns; a lack of differentiation in credit risk perceptions also became apparent, as spreads between different issuers narrowed. In October, however, the concerns about the ability of Asian sovereigns, banks and corporate borrowers to service their foreign currency debts prompted sharp increases in the extent and volatility of bond spreads. Bond prices fell rapidly and secondary-market trading effectively dried up, with investors and proprietary traders reluctant to crystallise large losses or to take on any further exposure to Asia. Issuance was also badly affected.

. . . were echoed around the world . . .

The turmoil in Asia quickly spread to other emerging markets. The Brazilian authorities intervened heavily in the foreign exchange market and doubled interest rates to support their currency. Argentina, Russia, Mexico and many other developing countries also faced pressure in the bond and foreign exchange markets. Although the effects elsewhere were not as severe as in Asia and recovery was generally swifter, spreads over benchmark bonds widened for all emerging market countries, and many issuance programmes were suspended.

Equity markets bore the brunt of the impact in developed countries, with a series of sharp falls towards the end of October (see Chart 2). These started with a sharp drop in the Hang Seng index, as the Hong Kong dollar came under pressure on the foreign exchanges, and quickly spread to other markets, triggering an automatic trading suspension on

Chart 2
World equity markets



Source: Individual exchanges, in local currencies.

the NYSE on 27 October. But the falls were short-lived, and most of these markets recovered their lost ground by the year-end. In contrast, major bond markets—especially the US Treasury market—were beneficiaries of the problems in Asia, as investors sought a safe home for their funds.

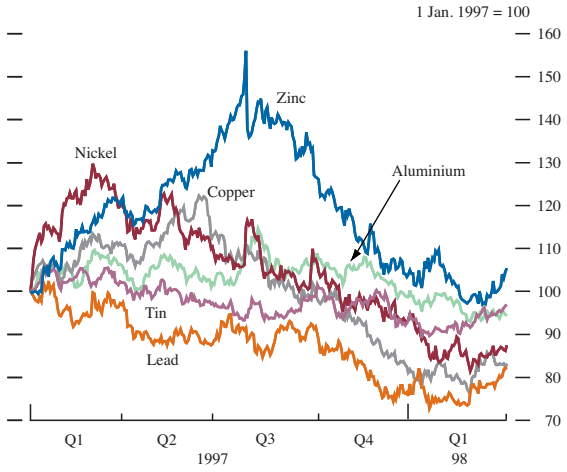
. . . but have now been stabilised

Despite the continuing debate about the appropriateness of the official response to these problems and the lessons to be learnt from them, it is clear that the various IMF packages and associated reforms have helped to bring a degree of stability to the region. As a result, the confidence of foreign investors has begun to return, albeit selectively. The equity markets in the ASEAN-4 and South Korea all recovered substantially in the early months of 1998. Some liquidity has returned to the bond markets, but the investor base remains wary of the countries most affected. Although two-way trading has increased in some emerging market issues, little new paper came to the market in the first quarter of 1998, and none at all from the ASEAN-4 or South Korea. Funding for banks and companies in these countries will therefore remain difficult and much more expensive than a year ago. But even in the worst-affected Asian countries, there are now signs that foreign investors' confidence is returning: South Korea came back to the bond market on 2 April (with a US$3 billion, eight-year issue priced at a spread of around 300 basis points) and other issues have followed.

The long-term effects of these events in East Asia are still far from clear. There was an impact on commodity prices, especially metals (see Chart 3): most prices on the London Metal Exchange fell by around 10%–20% during the second half of 1997, but have since recovered some of their lost ground. Imports by the Asian countries have fallen sharply, and the currency weakness has given their exports a small boost. The IMF has revised down its projection of world growth, with large reductions in its growth forecasts for Asia and especially the ASEAN-4.[1]

(1) See page 135 of 'The international environment' article for further details.

Chart 3
Metal prices



Source: London Metal Exchange.

Bond markets

Low inflation . . .

The objectives and credibility of monetary policy in most industrialised countries have led to a growing acceptance by the financial markets that these economies are entering a phase of low inflation and sustainable growth—the so-called 'Goldilocks' effect in the United States. Although events in Asia created a degree of turbulence in global financial markets, they have not dented the markets' view that the developed economies are, by and large, enjoying greater stability than for many years. More importantly, they expect this to continue. Indeed, the impact of the Asian problems on world activity and on commodity prices has helped to moderate any global inflationary pressure. On the other hand, the financial markets have judged that monetary policy may ease somewhat in response: short-run interest rate expectations in the United States and Germany fell during 1997 Q4.

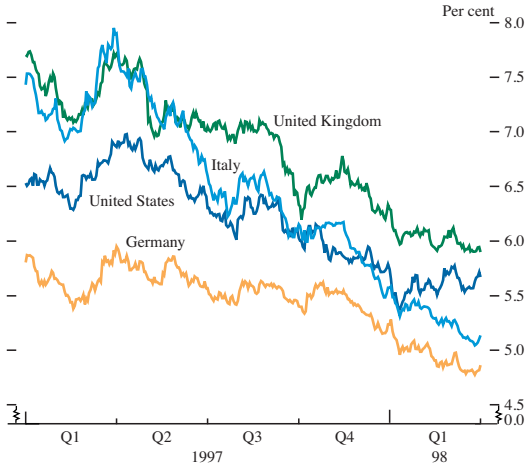
Low yields on government paper have been a catalyst for some investors to look elsewhere for higher yields, and have helped to create a ready market for Brady bond conversions and issues in the embryonic European high-yield market. Equity markets around the world have also been very strong throughout the period (as discussed further below). This may partly reflect the historically low yields on bonds, which may have encouraged some investors to switch away from debt in the search for higher returns.

This view that low inflation and greater stability are likely to persist is demonstrated by the US market, where yields on ten-year Treasury bonds fell from 6.5% at the start of the year to 5.7% by the end of 1997, and reached a low of 5.374% on 12 January 1998. Demand for US paper, especially government paper, increased following the Asian problems in October and contributed to the downward pressure on rates, confirming the 'safe-haven' status of the US dollar (gold, by contrast, did not find similar favour).

. . . and EMU-related convergence . . .

Long bond yields have also been falling in Europe—in some cases, even faster than in the United States. Here, a pervasive factor has been the convergence of interest rates of countries thought likely to be in the first wave of members of EMU (see Chart 4). German ten-year rates, closely tracked by French and Belgian rates, moved in a narrow range during 1997, but fell by 57 basis points overall. Yields on government bonds issued by other countries expected to join EMU have, however, moved sharply towards the benchmark Bund yield. For example, the spread on Italian ten-year bonds over the German equivalent narrowed from 170 to 30 basis points, as market confidence that Italy would join the first wave of EMU increased. The yield on UK ten-year gilts has also fallen, by around 1 percentage point, even though the government has ruled out participation in EMU with the first group of countries. The spread of gilts over German rates was nevertheless still around 100 basis points at the end of March.

Chart 4
Ten-year government bond yields



Source: Datastream.

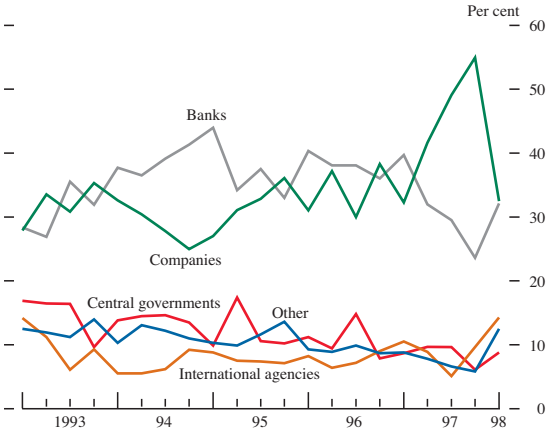
. . . have encouraged issuance

The sustained period of low interest rates has encouraged active eurobond issuance, predominantly in US dollars. Gross issuance in 1996 was 50% up on the previous year, and in 1997 was a further 13% higher, despite a fall-off in the final quarter as a result of the Asian crisis. Much of the growth during 1997 came from the corporate sector: its share of international bond issuance rose from around one third in 1996 to more than half of all issues in the final quarter of 1997 (see Chart 5). With companies tapping the markets directly, there was less need for bank intermediation, and bond issuance by banks almost halved during the same period.

During the first quarter of 1998, issuance rose yet again to almost US$250 billion (see Table A), more than 40% higher than in 1997 Q1, but the pattern of 1997 was reversed, as the share of issuance by companies fell and that by banks rose. Nevertheless, the trend towards direct borrowing is

expected to continue during the coming year, especially within Europe. Issuance by international agencies was also sharply higher in 1998 Q1.

Chart 5
Gross international bond issuance by industry



Source: IFR Omnibase.

Table A
International bond issues by sector

$ billions; by announcement date

	1997					1998
	Q1	Q2	Q3	Q4	Year	Q1
Straights	172.8	171.0	149.9	97.2	590.9	262.7
Equity-related	11.7	20.5	18.3	14.8	65.3	14.4
of which:						
Warrants	*1.0*	*1.5*	*1.2*	*0.3*	*4.0*	*0.0*
Convertibles	*10.7*	*19.0*	*17.1*	*14.5*	*61.3*	*14.4*
Floating-rate notes	52.4	53.5	69.9	51.0	226.8	60.9
Total	**237.0**	**245.0**	**238.1**	**162.9**	**883.0**	**338.1**

Source: IFR Omnibase.

1997 also marked the emergence of a recognisable European high-yield bond market, with a number of sub investment grade issues from Germany, France and the United Kingdom. The calendar for 1998 suggests that the high-yield sector within Europe could grow quite rapidly. Though it remains a specialist market, the introduction of the euro at the start of 1999 should create better opportunities and a wider investment base, by removing currency risk from investors in EMU member countries and consolidating it for non-euro investors. In addition, falling yields on government bonds and highly rated corporate debt should stimulate investor appetite for the higher *ex ante* returns offered by this market and further assist its development.(1)

Latin American government issuers responded to investors' preference for higher yields by buying back Brady bonds and issuing global bonds in their place. Brady bonds are backed by US Treasuries, so investors are only exposed to the issuer for the interest payments. By replacing these with global bond issues, investors were given the opportunity to increase their return, by accepting exposure to the government of the issuing country on the principal as well as the coupon. Most of these exchanges took place during last summer: Brazil made a US$3 billion issue in June, and was followed by Venezuela in September with a US$4 billion global bond. Both issues were highly successful, illustrating the growing popularity of 'jumbo' issues. Investors began to show a marked preference for such highly liquid issues during the second half of 1997, and this preference has strengthened this year: there were six issues of more than US$3 billion in the first quarter of 1998, compared with only four in the whole of 1997. The Brady retirement programmes were put on hold in the fourth quarter, following the turbulence in Asian markets.

The impact of EMU was also evident in the currency choice for new issues during 1998 Q1 (see Table B): more than 16% of issuance was denominated in Ecu or Deutsche Marks (the two favoured proxies for the euro), compared with less than 10% during 1997. Yen issuance in the first quarter was sharply lower at 2.4%, compared with an average of just below 8% in 1997.

Table B
Currency composition of international bond issues

Per cent

	1997					1998
Currency denomination	Q1	Q2	Q3	Q4	Year	Q1
US dollar	45.2	57.6	55.0	52.5	52.6	48.8
Sterling	11.4	6.0	6.1	9.7	8.1	9.3
Deutsche Mark	8.3	6.5	7.5	10.7	8.0	10.2
Yen	10.2	6.9	8.5	5.3	7.9	2.4
French franc	4.5	4.4	6.3	5.9	5.2	3.9
Italian lira	4.8	3.8	4.2	5.3	4.5	4.7
Swiss franc	2.9	2.5	2.0	2.9	2.5	2.4
Ecu	2.2	0.3	1.5	0.3	1.1	6.4
Other	10.2	12.2	8.9	7.4	10.1	11.8
Total (US $ billions)	**237.0**	**245.0**	**238.1**	**162.9**	**883.0**	**338.1**

Source: IFR Omnibase.

Equity markets

Record levels for the main indices . . .

Most major equity markets posted substantial gains in 1997, with the exception of Japan, where the Nikkei 225 fell by 21% during the year. The other major indices all rose during 1997, by between 25%–39% (see Chart 2). This period included the setbacks as a result of the problems in Asia, which caused sharp falls on most world stock markets at the end of October. The FT-SE 100 in the United Kingdom fell by 8% in the last two weeks of October, but had recovered all of this fall by the year-end—a pattern reflected in other major equity markets. The implied volatility of the FT-SE 100 contract on LIFFE rose sharply, from below 20% to a peak of more than 40% at end October.

This year, equity markets have continued the strong upward trend of late 1997, and many have already exceeded most analysts' full-year forecasts. In the United Kingdom, for example, the FT-SE 100 rose by 15.5% in the first quarter. Although implied volatility has also fallen, it has stabilised

(1) See pages 62–68 of the autumn 1997 edition of the *Financial Stability Review*. Copies can be obtained from the Bank of England (tel 0171–601 3823/4439).

at a significantly higher level than in 1997 Q1 (see Chart 6).

Chart 6
Implied volatility of the FT-SE 100 future

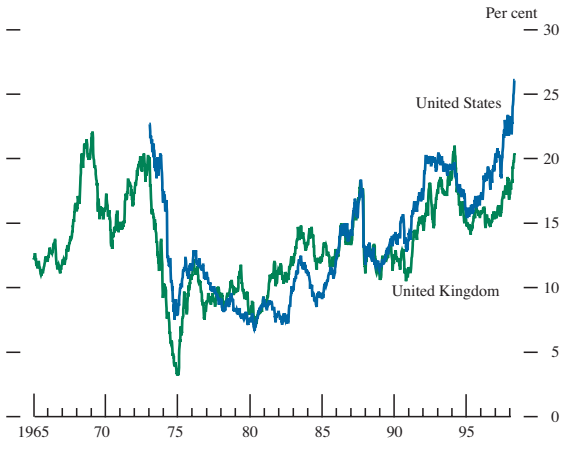
Source: LIFFE.

. . . have raised concerns about market valuation . . .

The strength of major equity markets has inevitably raised concerns about the sustainability of the levels they have achieved. Some unease was already apparent in the middle of last year, as most conventional valuation methods showed that the markets were approaching record levels—previously, the signal for a correction. The Asian crisis prompted some downward adjustment, but this was short-lived and the markets soon recovered their upward momentum.

On most conventional valuation methods, the UK and US markets now look expensive in relation to past experience. Charts 7 and 8, for example, show the long-term trends in the P/E ratio and dividend yield for the UK and US markets. The UK total market P/E ratio stood at 20.3 at end March 1998—its highest level since February 1994. Chart 7 also illustrates the difference between the two most recent major market corrections: in 1987, the market fell sharply

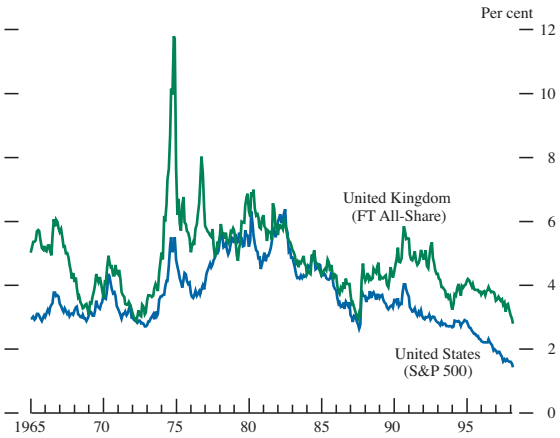
Chart 7
UK and US total market price/earnings ratios



Source: Datastream.

but then resumed a steady upward trend; in the early 1970s, by contrast, P/E ratios declined steadily for three years, from around 20 at the start of 1972 to below 5 by the end of 1974.

Chart 8
Dividend yields in the United Kingdom and United States



Source: Datastream.

UK dividend yields (see Chart 8) have fallen to a record low of 2.8%. The last time they approached these levels was in July 1987, when a figure of 2.95% was recorded. However, dividend yields on their own are not conclusive evidence of an overvalued market—for example, share buybacks may affect the level of yields in the short term, by reducing the dividend declared or by increasing the share price. Share buybacks have been a feature of the UK markets in recent years, but have been more frequent since 1994.

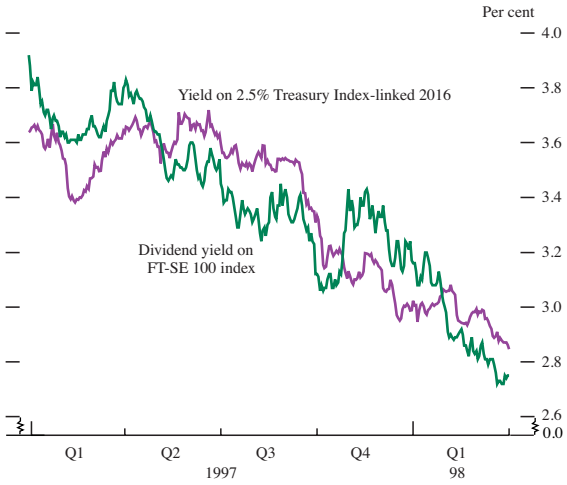
The position in the United States is more extreme than in the United Kingdom on both the above measures: the US P/E ratio for the S&P 500 currently stands at just above 30, against a long-run average for the US market of 13.7, and is now higher than before the onset of recession in 1972. More dramatically, the dividend yield on US equities was 1.31% at end March—its lowest level for 60 years.

Lower dividend yields may partly reflect a greater willingness by investors to accept a lower risk premium for holding equities, consistent with views on stability and on the likely persistence of low inflation noted earlier. But the yield gap between equities and index-linked gilts (see Chart 9) shows that the return on holding UK equities is now lower than on government bonds, which is surprising.

. . . and prompted comparisons with 1987

The continued rise of the markets through the third quarter of last year prompted comparisons with the stock market crash in October 1987, but closer examination reveals considerable differences between the two periods. Chart 10 shows that the FT-SE 100 index almost doubled between January 1985 and its peak in July 1987, with some erratic price movements between the two dates; during 1995–97, however, the index has risen more or less

Chart 9
UK yield gap



Sources: Datastream and the Bank of England.

consistently. The chart clearly shows that the surge in the early part of 1987 was far more rapid than any growth during 1997, though it does have some parallels with the sharp rise in the FT-SE 100 index in 1998 Q1.

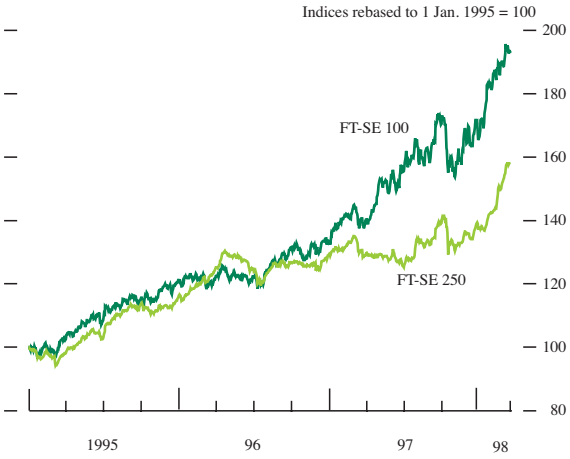
Chart 10
FT-SE 100 index 1985–88 vs 1995–March 1998

Source: London Stock Exchange.

It is also notable that the rise in the UK equity market during 1997 was much more narrowly based than in 1987. From 1985–88, the FT-SE 250 index closely tracked the FT-SE 100 index. In contrast, during the more recent period (see Chart 11) the FT-SE 250 moved roughly in line with the FT-SE 100 until the start of 1997, when the two diverged as the FT-SE 100 moved sharply higher—the FT-SE 100 index climbed by 25% in 1997, while the FT-SE 250 index rose by only 6%. The FT-SE 250 has, however, grown more in line with the narrower index during 1998 Q1.

A closer examination of the FT-SE 100 index shows that, even within this group of leading shares, the recent strong performance of the market has been narrowly based. Two

Chart 11
UK equity markets in the 1990s



Source: London Stock Exchange.

sectors dominated the strong performance: retail banks (+43%) and pharmaceuticals (+42%). The strong performance of the former reflects a combination of demand for demutualisation stocks, strong profits and merger speculation. (Demutualisations increased the weight of retail banks in the FT-SE 100 from 14% at the start of 1997 to 20% at end March 1998.) The strong performance of banking shares has not been confined to the United Kingdom—there were similar rises in bank shares in France, Germany, Italy and the United States during 1997—and is generally attributed to the expectation of further consolidation within the sector. The pharmaceutical sector's performance is likewise part of a global trend, also against a background of expected rationalisation within the industry.

Issuance has been subdued

In contrast with the buoyant performance of the secondary market, equity issuance in the United States and the United Kingdom during 1997 was lower than in the previous year, by 13% and 30% respectively. To some extent, this is the counterpart to the higher levels of international borrowing by the corporate sector. Other factors relate to the weak performance of the mid-cap markets in both countries relative to the main index: with a clear investor preference for blue-chip stocks in the secondary markets, medium-sized companies may have been less keen to approach the market.

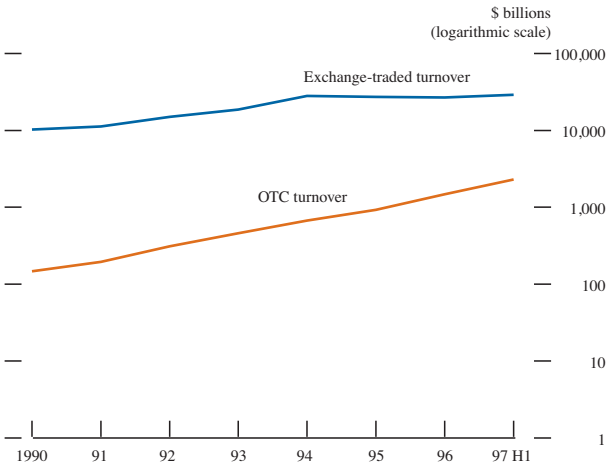
On the other hand, new issues in continental Europe were up by 14% on 1996 figures, at US$123 billion. The major reason was a number of large privatisations, especially in the telecommunication sector, as governments sought to reduce their deficits to meet the Maastricht criteria for membership of EMU.

Derivative markets

OTC business buoyant . . .

The over-the-counter derivatives markets grew strongly in the period to end September 1997 (see Chart 12), the latest date for which data are currently available. Anecdotal

Chart 12
OTC vs exchange-traded average monthly turnover



Source: BIS.

evidence suggests that activity was quieter in Q4, partly because of the usual seasonal downturn, but also in response to the situation in Asia and the consequent lower levels of bond issuance activity. Activity appears to have picked up again in the first quarter of this year.

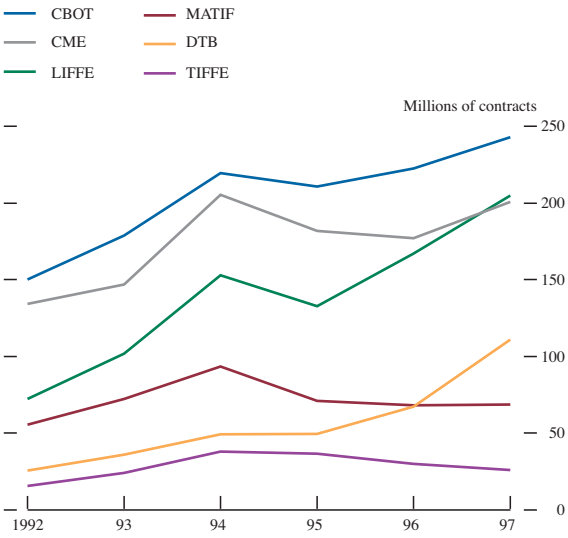
The continuing rapid growth in the use of OTC derivatives reflects the flexibility that they offer, together with greater use (and acceptability) of customised products and improvements in risk management. Increased use of collateral has also contributed, by freeing up credit lines and allowing lower-rated companies to tap the market to an extent that would not have been possible without this protection for their counterparties. EMU-related trading, which gave rise to profit opportunities linked to convergence in (and different views about) the underlying cash markets in the approach to monetary union, is also likely to have been important. This has probably been less significant in recent quarters than in the early part of last year, since much of the expected convergence has now taken place.

A comparison between the International Swaps and Derivatives Association survey of outstandings at end June 1997 and data for US and UK banks suggests that continental European firms (mainly large German, French and Swiss houses) have significantly increased their share of the market. This is consistent with the view that much of the increase in activity can be attributed to trading in advance of EMU. Confirmation may come from the BIS triennial survey taking place in April and at end June, the results of which should be available later in the year.

. . . but only modest gains on exchanges

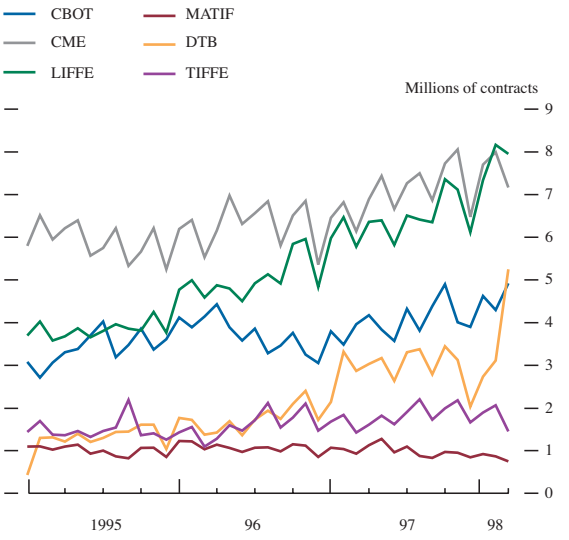
Exchange-traded turnover grew only modestly in 1997, though open interest grew more rapidly. There were, however, significant differences in the growth of turnover and open interest between different derivative exchanges (see Charts 13 and 14). LIFFE and the DTB both experienced rapid growth of volumes and open interest:

Chart 13
Annual turnover on major derivatives exchanges



Source: FIA and individual exchanges.

Chart 14
Open interest on major derivatives exchanges



Source: Individual exchanges.

like the OTC market, they doubtless benefited from the uncertainties—and therefore the trading opportunities—associated with EMU. A related factor was that the convergence of European bond yields has meant that some holders of European bonds are now choosing to hedge their positions with more liquid Bund futures, rather than contracts on their home exchanges.

Turnover on other major exchanges, such as TIFFE and MATIF, has been declining. The major US exchanges, the CBOT and the CME, have experienced steady, if unspectacular, growth. The CME's halving of the tick size for the eurodollar contract in March 1997 seems to have achieved its aim of boosting turnover by attracting some business back from OTC products. (LIFFE and DTB also made similar changes to their euro-Deutsche Mark interest rate contracts in January 1998, although they were not suffering the same loss of business to the OTC markets as the US exchanges.)

Structural developments

There have been a number of significant developments in the trading infrastructure during the past year, many related to the increasing scope offered by electronic technology to enhance, and reduce the costs of, the trading process.

Electronic trading is now firmly established . . .

The availability of increasingly powerful and sophisticated technology influenced the financial markets in a number of ways during 1997. In particular, use of electronic trading systems increased to an extent that has begun to affect market structures. Such systems allow access to markets without the need for a physical presence, facilitating trading from remote sites and removing the capacity constraints that have beset floor-traded markets.

SETS—the London Stock Exchange's electronic trading system for FT-SE 100 stocks—went live on 20 October 1997. Investors can now choose whether to use SETS (order-driven) or continue trading bilaterally over the telephone (quote-driven). SETS currently accounts for around 30% of FT-SE 100 trading by value, a level reached in the first few days of operation, but so far the level of use by institutional investors has been below expectations. Because trading is concentrated in the mid morning and early afternoon, there have at times been low volumes in the orderbook; this has been reflected in periods of poor liquidity, resulting in occasional unrepresentative prices and wide spreads, especially at the start of the trading day. The LSE is hoping that, as system familiarity increases, liquidity and volumes will pick up, and is consulting the market about how these practical problems—which also affect other orderbook systems—can be overcome.

On the derivatives exchanges, the increased viability of screen trading is becoming clear. The most prominent example is that of LIFFE and DTB, which list identical Bund futures contracts, floor and screen-traded respectively: LIFFE's market share of Bund futures turnover has fallen from 66% in January 1997 to 31% in March 1998, demonstrating both the extent to which the DTB has been able to access a wider market by allowing remote access and the clear market preference for (cheaper) electronic trading. LIFFE has itself now decided to develop a new system to allow electronic trading of LIFFE contracts alongside floor trading by the end of 1999. MATIF, the Paris futures exchange, moved to parallel screen and floor trading of all its financial futures in April 1998. Outside Europe, the Sydney Futures Exchange announced its intention to become the first exchange to move from being entirely floor-traded to entirely screen-traded in the autumn.

Bond markets too are developing screen-based trading systems: ISMA, the body representing the main eurobond trading houses, announced plans in January to introduce Coredeal, the first independent 24-hour electronic trading system for international fixed-income securities. This is expected to go live at the start of 1999, and will allow anonymous trading between counterparties; advertising and matching of orders; and execution and confirmation of trades, based on its existing TRAX system. Users will also have the option to use the system to negotiate prices and amend the advertised trade details.

. . . and is prompting exchange mergers and alliances

The growth of electronic trading systems and the competition that has flowed from it have been the catalyst for new forms of co-operation and competition between exchanges, allowing both remote trading and the trading of two (or more) exchanges' products simultaneously from each exchange.(1) A shared electronic trading platform involving Scandinavian derivative exchanges (Sweden's OM Stockholm/OMLX and Norway's Oslo Stock Exchange) started operating in February 1997. The German and Swiss derivative exchanges (DTB and SOFFEX) are also planning to establish a common market for their products on a single trading and clearing platform—EUREX—by October 1998; other exchanges are also expected to form links with EUREX once it is established. In the United States, CBOT and CME have signed a letter of intent to combine their clearing entities.

In Europe, there were a number of mergers between stock and derivative exchanges during 1997 and the early part of 1998 (in Amsterdam, Denmark, France, Finland and Sweden). These mergers—like similar mergers between the stock and derivative exchanges in Switzerland in 1993 and in Germany in 1994—reflect the increasingly competitive nature of financial markets in Europe.

EASDAQ, a pan-European stock market, traded its first stock at the end of November 1996; it now trades around 25 securities, mainly of high-growth companies. A European network of stock exchanges (Euro.NM) has also been developed. It too seeks listings from innovative companies with high growth potential, and is developing common listing and operating rules for its member exchanges to foster closer ties, in particular through joint marketing. Following the launch in 1996 of Nouveau Marche (Paris) and Euro.NM (Belgium), the network continued to expand in 1997, with the Nieuwe Market (Amsterdam) and the Neuer Markt (Frankfurt).

Settlement systems have been enhanced . . .

At the same time, there have been enhancements to settlement and clearing during the last 18 months or so, with developments in both systems and practices across equity and derivative markets.(2) These changes are taking place against a background of improvements to payment and settlement systems in other markets.

CREST—the electronic settlement system for UK equities—was introduced in July 1996, and the transition from

(1) See pages 406–12 of the November 1997 *Quarterly Bulletin* for a more detailed discussion.
(2) See 'Competition and co-operation: developments in cross-border securities settlement and derivatives clearing', pages 158–65.

Talisman (the earlier Stock Exchange system) was successfully completed on schedule in April 1997. There were concerns in the market during 1997 about CREST's ability to cope with the levels of trading activity resulting from demutualisation of building societies and from the introduction of order-driven trading to the London Stock Exchange last October (see above). In the event, CREST coped well with these challenges and has proved itself robust. It has regularly been settling more than 90% of trades on the intended settlement date, compared with around 70% achieved by Talisman.

Rapid growth of the OTC derivatives markets has led participants to explore ways to reduce the credit risk inherent in such business. Collateralisation—one possible solution—continued to grow throughout 1997 and looks set to do so again in 1998. The turmoil in the markets prompted by the Asian crisis led to many collateralisation arrangements being fully tested for the first time, as a spate of credit-rating changes and large price movements triggered large collateral calls. Although some problems were experienced (both operational and liquidity-driven), collateral arrangements appear generally to have worked satisfactorily.

A related solution is centralised management facilities such as Euroclear's collateral management service, launched last autumn in competition with Cedel's GCSS (though a similar scheme, the CME's DTC project, had been abandoned a few months earlier). LCH, which already clears the London derivatives exchanges, has started developing a service for clearing a range of vanilla OTC products along the same general principles as futures.

. . . and bond markets in Europe are being harmonised

The European Commission announced recommendations for the harmonisation of government bond markets during 1997 in preparation for the euro. Although redenomination of existing government debt was not deemed essential for the transition to the euro, it was argued that this would enhance liquidity and the credibility of the process, by demonstrating governments' commitment. The report also recommended that daycount conventions should be harmonised as actual/actual, and that business days should be defined as those on which the TARGET system is open. But the recommendations leave EMU countries some flexibility in their government debt issues; for example, it is open to governments to decide whether to have semi-annual or annual coupons.

Growth in UK manufacturing between 1970–92

By Gavin Cameron of Nuffield College, Oxford,[1] James Proudman of the Bank's Monetary Instruments and Markets Division, and Stephen Redding of New College, Oxford and CEPR.

This article[2] examines productivity growth and levels in UK manufacturing between 1970–92. During this period, UK manufacturing output fell, but by less than the number of hours worked in manufacturing, and so labour productivity increased. Within manufacturing, economic performance varied considerably, both across sectors and time, including a notable difference between the two peak-to-peak business cycles 1973–79 and 1979–89. To understand manufacturing economic performance more fully, the article considers disaggregated data for 19 manufacturing industries, using two measures of productivity: labour productivity and Total Factor Productivity.

Introduction

Between 1970–92, real output (as measured by constant price value added at factor cost) in UK manufacturing fell at an average annual rate of 0.2%.[3] Manufacturing hours worked fell even more, at an average annual rate of 3.4%, and so labour productivity in the manufacturing sector as a whole increased during the period. Within manufacturing, there were interesting variations in economic performance across sectors; but these were not always taken into account by the hypotheses put forward to explain the changes in the performance of the UK manufacturing sector during this period (such as changes in the exchange rate, macroeconomic policy and industrial relations law). Before formulating and testing these hypotheses, we need a detailed understanding of the nature of economic growth at a disaggregated level within manufacturing. This article examines the nature of the decline in manufacturing value added and the associated changes in productivity, using disaggregated data on 19 manufacturing industries for the period 1970–92.[4]

It is not just productivity growth that is of interest, but also levels of productivity across industries. The information on productivity growth rates is therefore combined with a measure of the level of productivity in a base year to analyse changes in productivity levels across industries over time, drawing on analytical techniques already employed in the cross-country growth literature. This analysis reveals that productivity in an increasing number of sectors is concentrating around or just below mean values, while that in a few high-productivity sectors is diverging from mean values.

The structure of the article is as follows. The second section examines the variation in rates of growth of value added and hours worked across industries and over time. Two alternative measures of productivity growth are then considered: labour productivity growth and Total Factor Productivity (TFP) growth. Growth accounting techniques are used first to decompose the rate of growth of value added into the contributions of physical capital accumulation, labour input, and a residual—TFP growth; and second, to evaluate the contributions of capital accumulation and TFP growth to labour productivity growth. The two measures of productivity growth may then be explicitly related to one another.

The third section considers how much labour productivity and TFP growth in total manufacturing may be attributed to shifts in resources between sectors, rather than productivity growth within sectors, and assesses the contribution of individual sectors to changes in aggregate productivity. The fourth section analyses the distribution of levels of labour productivity and TFP across manufacturing sectors at the beginning and end of the sample period. The fifth section models how productivity levels change across sectors and time. The final section summarises our conclusions.

Productivity growth

Value added and hours worked

As noted above, constant price value added and hours worked in UK manufacturing both fell between 1970–92. But Table A, which gives disaggregated data for 19 manufacturing industries, shows that rates of growth of

(1) Cameron's research was funded by ESRC grant number R000237500.
(2) Based on a paper 'Deconstructing growth in UK manufacturing', produced for the Bank's Openness and Growth Project, by Gavin Cameron, James Proudman and Stephen Redding (December 1997, Bank of England *Working Paper* No 73). The project was reviewed at an academic conference held at the Bank in mid September. The conference proceedings, including the research papers and the comments of participants, will shortly be published by the Bank. Space prevents us from thanking all those from whose comments and suggestions we have benefited, but we are particularly indebted to Nigel Jenkinson, John Muellbauer, Danny Quah, Jon Temple and Peter Westaway.
(3) The source for all figures used (except where otherwise specified) is a database derived from the Census of Production and described in further detail in the Annex to this article (see also Cameron (1996)).
(4) For further details on the data set, see the Annex.

Table A
Value added and labour productivity growth, 1970–92

All figures expressed as percentage rates of growth

Industry	SIC 1980	Value added	Hours worked	Labour productivity Y/L
Total manufacturing	2 to 4	-0.2	-3.4	3.2
Food and drink	41/42	-0.2	-2.4	2.1
Textiles and clothing	43/4/5	-1.5	-4.5	3.0
Timber and furniture	46	-0.7	-2.5	1.8
Paper and printing	47	0.9	-2.2	3.0
Minerals	23/24	-2.3	-3.7	1.4
Chemicals	25/6+48	1.4	-2.2	3.6
Chemicals nes (a)	25+26-257	0.3	-3.0	3.3
Pharmaceuticals	257	4.7	-1.6	6.3
Rubber and plastics	48	1.2	-1.6	2.8
Basic metal	22	-3.6	-6.7	3.1
Iron and steel	221/2/3	-4.2	-7.4	3.2
Non-ferrous metals	224	-1.9	-4.8	2.9
Fabricated metal	3	0.0	-3.7	3.6
Metal goods nes (a)	31	-1.0	-3.8	2.8
Machinery	32	-1.5	-4.0	2.5
Computing	33	7.6	-1.8	9.4
Electrical machinery	34	0.8	-3.5	4.3
Other electrical	34-344-345	-0.3	-3.7	3.4
Electronics	344/5	1.9	-3.3	5.2
Motor vehicles	35	-1.2	-3.7	2.5
Aerospace	364	2.6	-2.0	4.6
Instruments	37	2.2	-2.4	4.5
Other manufacturing	49	-1.4	-3.9	2.5

Source: see the Annex. Estimates corrected for double-counting of R&D.

(a) nes: not elsewhere specified.

value added and hours worked varied considerably across these industries. This suggests that the decline in the size of the UK manufacturing sector during the sample period was associated with considerable changes in the relative size of individual sectors (whether defined in terms of shares of value added or hours worked). Nine industries experienced positive rates of growth of value added. Computing and Pharmaceuticals had the highest annual rates of growth (7.6% and 4.7% respectively), and Iron and steel and Minerals had the lowest (-4.2% and -2.3% respectively). Hours worked fell in all sectors, but again there were substantial variations across sectors: the average annual rate of decrease for the bottom five sectors was more than twice that of the top five sectors.

In general, average rates of growth of value added were much lower in the first peak-to-peak business cycle (1973–79) than in the second (1979–89). For manufacturing as a whole, value added fell at an average annual rate of 1.1% between 1973–79, but rose at an average annual rate of 1.0% between 1979–89. Only four industries had higher rates of growth of value added in the first peak-to-peak business cycle (Machinery, Motor vehicles, Instruments and Metal goods not elsewhere specified). In contrast, hours worked typically fell more slowly in the first peak-to-peak business cycle period than in the second: for total manufacturing, the average annual rates of decline were -1.6% and -3.7% respectively.

(i) Labour productivity growth

From rates of growth of value added and rates of growth of hours worked, we obtain the first and simplest of our measures of productivity growth, the rate of growth of value added per hour worked—known as labour productivity growth (also shown in Table A). During the period 1970–92, hours worked grew less than the rate of growth of value added for all 19 manufacturing industries, and so labour productivity increased in all sectors. In manufacturing as a whole, annual labour productivity growth averaged 3.2%, though with substantial variations across both sectors and time. Average annual rates of labour productivity growth during 1970–92 were highest in Computing and Pharmaceuticals (9.4% and 6.3% respectively), and lowest in Minerals and Timber and furniture (1.4% and 1.8% respectively).

Average annual rates of growth of labour productivity for total manufacturing were substantially higher in the second peak-to-peak business cycle (4.7%) than in the first (0.5%). Average rates of growth of labour productivity were higher in the second peak-to-peak business cycle in all industries except one (Instruments).

(ii) Total Factor Productivity growth

Using the rate of growth of value added per hour worked as a measure of productivity growth has the advantage of imposing very few (if any) theoretical restrictions on the data. But it measures the productivity of only one factor of production. So one cannot, for example, determine whether labour productivity is high because of a high degree of technical efficiency, or because of a large stock of physical capital. A measure that includes the productivity of other factors of production is therefore needed. Under the assumptions of perfect competition and constant returns to scale, the rate of growth of value added in each sector can be decomposed into the contributions of increased hours worked, physical capital accumulation, and a residual. This residual provides a second, wider measure of productivity, TFP, which encompasses the effects of influences on how efficiently existing quantities of capital and labour are used. It includes, for example, the influence of technology, the extent of competition, capacity utilisation, training and unionisation. However, a wide range of empirical evidence suggests that the long-run rate of growth of the residual is largely determined by technological progress.

The disadvantage of using TFP as a measure of productivity is that it imposes greater theoretical restrictions on the data than labour productivity. In terms of the present analysis, the key assumptions are perfect competition and constant returns to scale; in principle, each of these assumptions may be relaxed.(1) Moreover, this decomposition, though informative, yields no conclusions about causality. For example, even if capital accumulation accounts for a substantial amount of output growth, this capital accumulation may be ultimately induced by increases in TFP.

In the rest of the article, we use two measures of rates of productivity growth and levels of productivity. We estimate

(1) Hall (1988) introduces imperfect competition into the analysis, while Caballero and Lyons (1989) and Oulton (1996) extend the analysis to admit variable returns to scale.

rates of growth of TFP under the assumptions of perfect competition and constant returns to scale—a common benchmark throughout the empirical literature. We also present information on the relatively atheoretic but somewhat less informative rates of growth of labour productivity. If our estimates of TFP growth yielded radically different information to the figures for labour productivity growth, we might be more concerned about the validity of these assumptions than otherwise. In fact, all the main conclusions of this article are robust to the use of either labour or total factor measures of productivity.

Decomposing the rate of growth of value added

Table B decomposes the rate of growth of value added in UK manufacturing into the contributions of increased hours worked, capital accumulation and TFP growth.(1) These estimates of productivity growth rates may be compared with the figures for labour productivity growth presented in Table A. The fall in average annual hours worked in manufacturing sectors noted earlier is reflected in the

Table B
Value added and labour productivity growth, 1970–92

All figures expressed as percentage rates of growth

Industry	Value added	Labour	Capital	TFP
Total manufacturing	-0.2	-2.2	0.6	1.4
Food and drink	-0.2	-1.2	1.2	-0.3
Textiles and clothing	-1.5	-3.1	-0.1	1.8
Timber and furniture	-0.7	-1.8	0.9	0.3
Paper and printing	0.9	-1.4	1.0	1.3
Minerals	-2.3	-2.1	0.8	-1.1
Chemicals	1.4	-1.1	1.0	1.5
Chemicals nes (a)	0.3	-1.6	0.8	1.1
Pharmaceuticals	4.7	-0.6	1.5	3.9
Rubber and plastics	1.2	-1.2	0.9	1.6
Basic metal	-3.6	-5.4	0.1	1.7
Iron and steel	-4.2	-6.5	0.0	2.2
Non-ferrous metals	-1.9	-3.4	0.3	1.2
Fabricated metal	0.0	-2.6	0.5	2.1
Metal goods nes (a)	-1.0	-2.7	0.3	1.4
Machinery	-1.5	-2.7	0.5	0.7
Computing	7.6	-1.2	3.1	5.7
Electrical machinery	0.8	-2.4	0.8	2.4
Other electrical	-0.3	-2.6	0.6	1.7
Electronics	1.9	-2.3	1.2	3.0
Motor vehicles	-1.2	-2.7	0.6	0.9
Aerospace	2.6	-1.5	-0.1	4.2
Instruments	2.2	-1.7	0.9	3.0
Other manufacturing	-1.4	-2.7	0.0	1.3

Source: see the Annex. Estimates corrected for double-counting of R&D.

(a) nes: not elsewhere specified.

negative contribution from hours worked in all 19 industries throughout the sample period (and in each of the two peak-to-peak business cycle periods, with the exceptions of Motor vehicles in the period 1973–79 and Computing in 1979–89). The average contribution of physical capital accumulation to output growth is positive in 17 industries during the entire sample period (the exceptions are Textiles and clothing and Aerospace), and the ratio of output to capital rose in all industries during the period.

Although value added in total manufacturing fell at an average annual rate of 0.2% between 1970–92, TFP rose at 1.4%. Again, rates of productivity growth vary considerably across manufacturing sectors during the sample period. Average annual rates of TFP growth range from 5.7% and 4.2% in Computing and Aerospace respectively to -1.1% and -0.3% in Minerals and Food and drink respectively.

Rates of TFP growth between the two peak-to-peak business cycle periods also varied markedly. Between 1973–79, TFP in total manufacturing actually fell at an average annual rate of 1.0% (with falls in 13 of the 19 industries); between 1979–89, it rose at an average annual rate of 3.1% (with no falls in any of the 19 industries). The performance of the Iron and steel industry changed particularly notably, with negative measured TFP growth in the first peak-to-peak business cycle and the most rapid rate of TFP growth in the second.

As noted earlier, TFP growth is essentially a residual, and includes the influence of a wide range of factors besides technological progress that affect the efficiency with which factors of production are employed. So negative measured TFP growth for certain time periods and industries is actually quite plausible. For example, it seems reasonable that many manufacturing industries experienced decreases in technical efficiency in the 1970s—a period characterised by temporary factor hoarding, the costly adjustment of production processes to oil price rises, and increased exercise of trade union power.(2) There are also several problems in measuring the capital stock (see, for example, Muellbauer (1991)), and these negative estimates for TFP growth may reflect measurement error. But even if there are particular problems associated with the measurement of TFP, it is important to note that the main qualitative features of the data and the variation in productivity growth rates across sectors were confirmed in the analysis of labour productivity growth in Table A.(3)

The decomposition may be also used to evaluate the relative size of the different contributions (ie those of capital accumulation and TFP growth) to output growth. The conclusions here should be viewed as somewhat more tentative, as they are likely to be more sensitive to the assumptions invoked in the calculation of TFP growth and to measurement error. In the sample period, TFP growth contributed more to value-added growth (or rather, reduced the fall in value added more) than physical capital accumulation for 16 of the 19 industries, as well as for manufacturing as a whole. Particularly noteworthy is the increase in the contribution to value-added growth originating from rises in TFP, relative to that from capital accumulation, between the first and second peak-to-peak business cycles. The size of this increase suggests that to overturn this result there would need to be substantial

(1) Again, details concerning data sources and definitions are contained in the Annex.
(2) In principle, it is straightforward to make allowances both for cyclical factors distorting TFP in the short run and for factors of long-run significance, such as the degree of trade union power (see, for example, Cameron, Proudman and Redding (1997)). In this article, however, we aim to examine the underlying data while imposing as few theoretical assumptions as possible.
(3) The Spearman rank correlation coefficient across sectors between time-averaged labour productivity growth and time-averaged total factor productivity growth (time-averaged for the entire sample period) is 0.93.

changes in the assumptions made, or significant measurement error.

Linking labour productivity and Total Factor Productivity growth

The rate of growth of labour productivity can be decomposed into the contributions of TFP growth and increases in the capital/labour ratio (K/L), so that the two measures of productivity growth may be explicitly related to one another, as shown in Table C. Here too, the conclusions are tentative. In total manufacturing in the sample period, capital accumulation and TFP growth contributed about 60% and 40% respectively to the observed increase in labour productivity. Again, there are important variations across industries and time. For example, TFP growth accounted for just less than one sixth of the 1.8% average annual rate of growth of labour productivity in Timber and furniture. In general, the contribution of capital accumulation relative to that of TFP growth is much higher in the first peak-to-peak business cycle than in the second. Between 1979–89, TFP growth accounted for about two thirds of the 4.7% average annual rate of growth of labour productivity in total manufacturing, whereas between 1973–79, TFP growth made a negative contribution to labour productivity growth.

Table C
Sources of labour productivity growth, 1970–92

All figures expressed as percentage rates of growth

Industry	Labour productivity Y/L	Capital/labour ratio K/L	TFP
Total manufacturing	3.2	1.8	1.4
Food and drink	2.1	2.4	-0.3
Textiles and clothing	3.0	1.2	1.8
Timber and furniture	1.8	1.5	0.3
Paper and printing	3.0	1.7	1.3
Minerals	1.4	2.5	-1.1
Chemicals	3.6	2.1	1.5
Chemicals nes (a)	3.3	2.2	1.1
Pharmaceuticals	6.3	2.5	3.9
Rubber and plastics	2.8	1.3	1.6
Basic metal	3.1	1.4	1.7
Iron and steel	3.2	1.0	2.2
Non-ferrous metals	2.9	1.7	1.2
Fabricated metal	3.6	1.6	2.1
Metal goods nes (a)	2.8	1.4	1.4
Machinery	2.5	1.8	0.7
Computing	9.4	3.7	5.7
Electrical machinery	4.3	1.2	2.4
Other electrical	3.4	1.7	1.7
Electronics	5.2	2.2	3.0
Motor vehicles	2.5	1.6	0.9
Aerospace	4.6	0.4	4.2
Instruments	4.5	1.6	3.0
Other manufacturing	2.5	1.3	1.3

Source: see the Annex. Estimates corrected for double-counting of R&D.

(a) nes: not elsewhere specified.

Changes in sectoral composition

This section seeks to relate the experience of individual industries to the behaviour of total manufacturing. Taking the UK manufacturing sector on its own,[1] there are two possible sources of aggregate productivity growth: reallocations of resources from low to high-productivity sectors ('between-sector reallocations') and productivity growth within individual industries ('within-sector growth'). The analysis earlier showed that the relative size of different manufacturing sectors (measured by either shares of value added or hours worked) has changed considerably. This section considers the implications of these changes for productivity in total manufacturing.

Labour productivity in aggregate manufacturing at any point in time may be expressed as a weighted sum of labour productivity in individual manufacturing industries, with weights equal to each sector's share in total hours worked (see Bernard and Jones (1996c)). Under the assumption of a common, time-invariant Cobb-Douglas production technology in each sector, a similar decomposition may be undertaken for TFP growth in aggregate manufacturing (see Bernard and Jones (1996a)).[2] The results of undertaking these decompositions for both labour productivity and TFP growth in UK manufacturing are presented in Table D. As the table shows, as much as 97% of the growth in labour productivity in total manufacturing in the sample period was found to be explained by within-sector productivity growth. The corresponding figure for TFP was somewhat smaller (91%), but again, within-sector productivity growth accounted for the vast majority of productivity growth in aggregate manufacturing.

Table D
'Within' and 'between' decompositions for labour productivity and Total Factor Productivity(a)

	Between	Within	Total
Aggregate Y/L growth	3.0	97.0	100
Aggregate TFP growth	9.2	90.8	100
Contributions of sectors to aggregate TFP growth			
Food and drink	12.1	2.1	14.2
Textiles and clothing	-8.5	9.8	1.4
Timber and furniture	2.6	-0.7	1.8
Paper and printing	11.2	9.0	20.2
Minerals	-0.6	-5.0	-5.7
Chemicals nes (b)	1.5	9.3	10.8
Pharmaceuticals	2.1	10.0	12.2
Rubber and plastics	4.7	4.5	9.2
Iron and steel	-9.7	-0.4	-10.1
Non-ferrous metals	-1.4	0.8	-0.6
Metal goods nes (b)	-2.7	4.7	2.0
Machinery	-5.5	2.7	-2.8
Computing	2.1	8.6	10.8
Other electrical	0.1	3.9	4.0
Electronics	2.3	9.6	11.9
Aerospace	-1.0	17.6	16.5
Motor vehicles	0.1	0.3	0.4
Instruments	1.1	2.6	3.8
Other manufacturing	-1.2	1.3	0.1

(a) Figures may not sum exactly across columns owing to rounding. The results in Table D are not strictly comparable with those in Tables B and C. In Table D, TFP is calculated using fixed (rather than Divisia) input weights.
(b) nes: not elsewhere specified.

So though the relative size of individual manufacturing sectors has changed significantly, the reallocation of resources between sectors has not been an important source of aggregate productivity growth in the sample period. This

(1) For a whole-economy analysis at a more aggregate level for the OECD, see Bernard and Jones (1996a).
(2) Note that this imposes a more restrictive form for the production function than the earlier analysis (where we only needed to assume constant returns to scale).

finding suggests that hypotheses about aggregate manufacturing performance should concentrate on explaining productivity growth within individual sectors, rather than switches in factor resources between sectors with differing levels of productivity.

Interestingly, 7 of the 19 industries account for more than 95% of the TFP growth in total manufacturing (the sum of the 'within' and 'between' effects): Food and drink, Paper and printing, Chemicals not elsewhere specified, Pharmaceuticals, Computing, Electronics and Aerospace. Averaged for the sample period, these account for less than 44% of total value added.(1)

Productivity levels

Table E presents information on how average values of labour productivity, Y/L′, for each of the 19 manufacturing industries relate to the mean level for the 19 industries and for total manufacturing, during both the entire sample period and the two peak-to-peak business cycles.

Table E
Labour productivity relative to manufacturing mean Y/L′

Value added per hour worked

Industry	1970–92	1973–79	1979–89
Food and drink	1.0	1.1	0.9
Textiles and clothing	0.5	0.5	0.5
Timber and furniture	0.7	0.8	0.6
Paper and printing	1.0	1.1	0.9
Minerals	1.1	1.2	1.0
Chemicals nes (a)	1.5	1.6	1.5
Pharmaceuticals	2.1	1.9	2.1
Rubber and plastics	0.8	0.9	0.7
Iron and steel	0.9	0.8	0.9
Non-ferrous metals	1.0	1.0	0.9
Metal goods nes (a)	0.7	0.8	0.7
Machinery	0.8	0.9	0.8
Computing	2.1	1.5	2.5
Other electrical	0.7	0.8	0.7
Electronics	0.9	0.8	1.0
Motor vehicles	0.8	0.9	0.8
Aerospace	1.2	1.2	1.1
Instruments	0.7	0.8	0.7
Other manufacturing	0.7	0.8	0.6
Mean (b)	**8.3**	**6.2**	**9.2**
Total manufacturing (b)	**7.0**	**5.6**	**7.6**

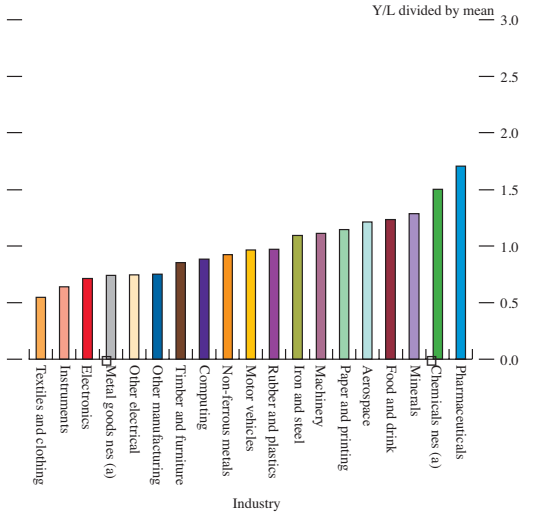
(a) nes: not elsewhere specified.
(b) £ per hour worked.

As the table shows, average productivity levels vary considerably across industries during the period, ranging from a low of 0.5 times the manufacturing mean (£8.3 per hour worked) in Textiles and clothing to a high of 2.1 times in Pharmaceuticals.(2) In addition, as a result of the extent of variation in rates of labour productivity growth documented in Tables A and C, the relative ranking of industries in terms of labour productivity levels changes during the sample period. For example, Computing overtook Pharmaceuticals to become the sector with the highest level of labour productivity between the two peak-to-peak business cycles.

We next consider the evolution of productivity levels across industries over time. The analysis will be concerned both with intra-distribution dynamics (how the productivity levels in industries move relative to one another, an issue touched on above) and changes in the external shape of the productivity distribution (whether, for example, it exhibits more or less dispersion around the mean, or is characterised by increasing or decreasing skewness).

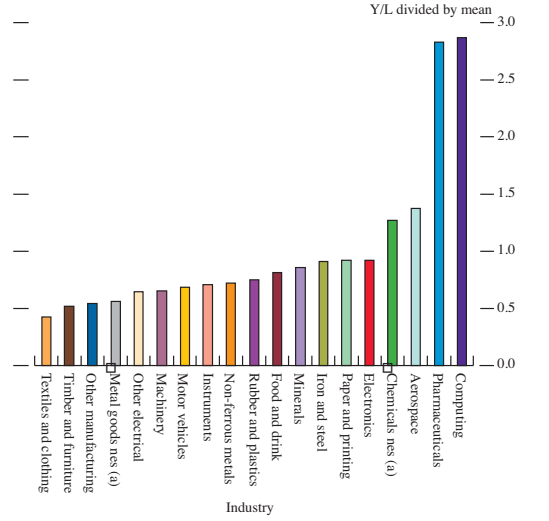
We begin by simply graphing the distribution of labour productivity levels across industries at the beginning and end of the sample period in Charts 1 and 2. The industries in the two charts are sorted in terms of increasing labour productivity in 1970 and 1992 respectively, so that the order

Chart 1
Labour productivity relative to mean, 1970



(a) nes: not elsewhere specified.

Chart 2
Labour productivity relative to mean, 1992



(a) nes: not elsewhere specified.

(1) The sources of aggregate labour productivity growth are less concentrated. The seven industries that contributed most to aggregate labour productivity growth were Food and drink, Textiles and clothing, Paper and printing, Chemicals not elsewhere specified, Machinery, Electronics and Aerospace. Together, these account for 61% of the growth in labour productivity and (on average for the entire sample period) constitute 60% of total value added.

(2) The values for mean value added per hour worked in the 19 industries (£8.3) and the figure for total manufacturing (£7.0) compare with whole-economy GDP per hour worked of approximately £8.3 (based upon constant price (1985) GDP at factor cost of £307,902 million, workforce in employment of 24,712 million and an average of 1,498 worker hours per year). Note that the labour input for manufacturing has been adjusted for employment in R&D, but the whole-economy figure has not.

of industries is not necessarily the same in both charts. In 1970, labour productivity was relatively uniformly distributed across industries, but by the end of the sample period, it had become increasingly positively skewed across industries. This is shown even more clearly in Charts 3 and 4, where the range of values of labour productivity is divided into ten discrete cells, and a histogram is drawn of the frequency distribution of industries across cells.

Chart 3
Frequency distribution of labour productivity relative to mean, 1970

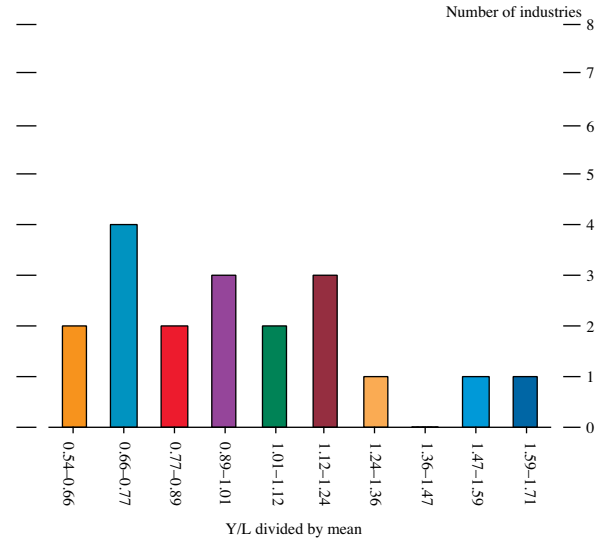
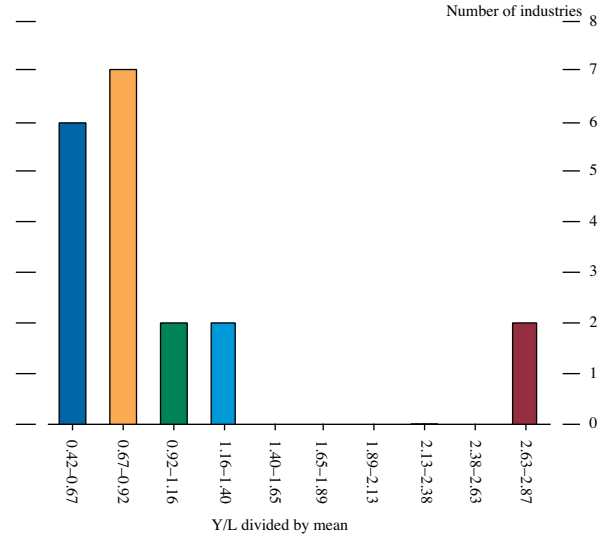


Chart 4
Frequency distribution of labour productivity relative to mean, 1992



In order to arrive at a measure of the level of TFP in each year of the sample period, the minimal further step that needs to be taken is to combine the measured rates of growth, discussed above, with an estimate of the level of TFP in a base year. Here we take 1985 as the base year, and estimate the level of productivity by assuming, following Bernard and Jones (1996b), that the production process is characterised by a Cobb-Douglas technology. Averaging the resultant levels of TFP over the sample period shows substantial variations across industries. Average TFP ranges from a low of 0.4 times the mean for total manufacturing in Textiles and clothing to a high of 4.2 times in Pharmaceuticals. In fact, the extent of dispersion in levels of productivity relative to the mean for total manufacturing, as measured by the sample standard deviation, is greater for TFP than for labour productivity (averaged for the whole sample period, the sample standard deviation takes the values of 0.9 and 0.5 respectively). As is to be expected, levels of TFP and labour productivity are highly (though not perfectly) positively correlated across industries (correlating time-averaged values of the two measures of productivity across industries, the Spearman rank correlation coefficient is 0.88).[(1)] So industries with high levels of TFP tend to be those with high levels of labour productivity. (There are obvious exceptions related to capital intensity, such as Iron and steel and Motor vehicles.)

As a result of the variation in rates of TFP growth shown in Tables B and C, the relative ranking of industries in terms of TFP changes during the sample period (though less often than labour productivity). Computing and Pharmaceuticals remained the industries with the highest and second-highest levels of TFP respectively in every year of the sample period. As with labour productivity, the distribution of TFP productivity across sectors became increasingly positively skewed during the sample period, with productivity levels in a few sectors (in particular Computing and Pharmaceuticals) rising increasingly away from mean values. We outline below in more depth why one might expect to observe TFP levels either converging or diverging over time within a cross-section distribution of sectors. The informal evidence here nevertheless suggests that, for at least a small sub-sector of industries, the development of technology may be quite specific to individual sectors and does not spill over rapidly into many other manufacturing sectors. This trend in the observed distribution is also consistent with the evidence shown in Table D that aggregate TFP growth is highly concentrated in a small number of sectors.

Productivity dynamics

The analysis in the previous section suggests that there have been significant changes in the distribution of both labour productivity and TFP across industries during the sample period. This section turns to the task of modelling these changes. A general model of productivity dynamics requires an explicit analysis of the evolution of the entire distribution of productivity across industries, an analysis that is undertaken in the final section below (using techniques employed by Quah (1993b), (1996a,b,c)). We begin with two somewhat simpler, less general, but nonetheless informative methods of analysing productivity dynamics.

(1) The high degree of correlation is unsurprising, since if the shares of labour and capital in value added are constant over time (as they will be, for example, in the special case of a Cobb-Douglas production technology), log *TFP* is simply a weighted average of log (*Y*/*L*) and log (*K*/*L*), log $TFP = \alpha \log(Y/L) + (1 - \alpha)\log(Y/K)$.

(i) Mean reversion

When analysing changes within the distribution, one question of interest is whether productivity levels across industries exhibit mean reversion (that is, whether they tend to converge towards the mean). This question is closely related to the issue of whether productivity levels converge or diverge across sectors in what has been described in the cross-country growth literature as 'absolute β-convergence'. Levels of income per capita are said to exhibit absolute β-convergence when the rate of growth of income per capita across countries is negatively correlated with the initial level of income per capita (see for example Barro and Sala-í-Martin (1991)).

Across countries, there are clear reasons for expecting levels of income per capita to converge. Absolute β-convergence between similar economies or regions within an economy is an implication of the neoclassical, Solow-Swan model of growth and of some models of technology transfer. (See, for example, Aghion and Howitt (1997), Chapter 2.) Across industries, it is less clear whether one should expect productivity levels to exhibit absolute β-convergence or absolute β-divergence, or indeed whether one should expect any relation at all between rates of productivity growth and initial levels. In an equilibrium with factor mobility, one would expect the marginal products of capital and labour to be equalised—which may or may not induce productivity convergence, depending on the nature of industries' production technologies. Undoubtedly, the production processes in some of these industries are very different, and this in itself might lead one to expect relatively constant productivity differentials over time.

'Learning by doing' that is specific to a sector may be a reason to expect productivity levels to diverge over time. Other things being equal, industries with high initial levels of productivity will attract more factors of production. If the rate of learning by doing increases with levels of employment or cumulative investment, then these sectors will experience faster rates of productivity growth from learning by doing. But if technological knowledge can be transferred across sectors, this may provide a force for a reduction in the degree of productivity dispersion. For instance, there are numerous anecdotal pieces of evidence of innovations made in one sector that turn out to have important applications in others. There is also econometric evidence of significant R&D spillovers across sectors.(1)

Table F shows the results of testing for whether productivity levels across industries are reverting to or diverging from a common mean. The estimated values of β are negative for labour productivity and positive for TFP. But in each case, the estimated value of β is not statistically significantly different from zero at the 10% level. So there is no

Table F
Testing for reversion to versus divergence from a common mean across industries

Variable	α	β
Y/L	-0.0051	-0.0027
	(0.005)	(0.016)
TFP	-0.0073	0.0060
	(0.004)	(0.007)

Note: Standard errors in parentheses.

evidence that productivity levels are converging to or diverging from a common mean. One interpretation of this finding would be that intra-distribution dynamics are not important in the sample period—for example, one might conclude that productivity differentials across industries simply persist over time (perhaps as a result of fundamental differences in the nature of the production process). But as will be shown below in the context of a more general analysis of productivity dynamics, this interpretation is not supported by the data.

(ii) Changes in the extent of dispersion

A second aspect to productivity dynamics concerns changes in the external shape of the distribution of productivity across industries. One issue of interest here is changes in the extent of dispersion in productivity levels across industries. This issue is related to the question of whether productivity levels converge or diverge across industries in what has been described in the cross-country growth literature as the 'σ-convergence' sense. In the cross-country growth literature (see, for example, Barro and Sala-í-Martin (1991)), levels of income per capita are said to exhibit σ-convergence across countries when the extent of dispersion in income per capita is declining over time, as measured, for example, by the sample standard deviation.

This second concept of convergence is entirely distinct from that of β-convergence: in particular, β-convergence does not necessarily imply σ-convergence.(2) In the cross-country context, there are clear reasons for expecting levels of income per capita between similar economies, and regions within economies, to exhibit σ-convergence.(3) Across industries, it is less clear whether productivity levels should converge or diverge in this second sense (for many of the same reasons listed above).

Table G presents information on the evolution of the sample standard deviation of productivity relative to the manufacturing mean, for both labour productivity and TFP measures. For both labour productivity and TFP, there is evidence of an increase in the extent of dispersion of productivity levels across manufacturing industries over time.(4) However, analysing changes in the extent of dispersion does not, in general, reveal all information about changes in the external shape of the distribution of

(1) See, for example, Griliches, Z (1992).
(2) Inferring from a negative correlation between rates of growth and initial levels of income per capita that the dispersion of income per capita is falling over time is an example of Galton's Fallacy (see for example Friedman (1992) and Quah (1993a)).
(3) In particular, this is also an implication of the deterministic Solow-Swan neoclassical model of growth. Suppose, for example, that all economies have the same steady-state level of income in the deterministic Solow-Swan model. Then from any initial distribution of income across economies (except the steady-state distribution, from which the extent of dispersion is unchanging), σ-convergence will be observed.
(4) This result is confirmed if one evaluates the extent of dispersion in shorter intervals of time than the two peak-to-peak business cycles (eg in successive five-year periods).

Table G
Changes in the extent of dispersion of productivity levels relative to the manufacturing mean in the sample period

	1970–92	1973–79	1979–89
TFP′ Standard deviation	0.9	0.8	1.0
Y/L′ Standard deviation	0.5	0.4	0.5

productivity levels. In particular, it is completely uninformative about the marked tendency seen earlier for the distribution of both labour productivity and TFP to become increasingly positively skewed during the sample period. We therefore turn to a more general analysis of productivity dynamics.

(iii) Modelling productivity dynamics

Following Quah (1993b), (1996a,b,c), the evolution of the distribution of relative productivity over time can be modelled in terms of a stochastic difference equation (ie the probability of observing a value for labour productivity in one period is a function of the same probability in previous periods). In the empirical analysis that follows, we assume for simplicity that this equation is annual, first-order and time-stationary. If the range of possible values of productivity relative to the manufacturing mean is divided into a number of discrete cells, the evolution of productivity levels over time may be modelled using a matrix of transition probabilities, each of which may be estimated by counting the number of transitions into and out of each cell.(1) By iterating this stochastic transition probability matrix forward an infinite number of times, one may obtain the implied steady-state distribution of relative productivity.(2)

By explicitly modelling the evolution of the entire distribution of relative productivity, one can assess the probability of an industry moving from one segment of the distribution to another, and thereby obtain a more complete picture of changes within the distribution. Information about changes in the external shape of the distribution of relative productivity may be obtained both by directly analysing the distribution of productivity across industries (as was done earlier in this article) and from the steady-state distribution implied by the transition probabilities.

Tables H and I present estimates of the probabilities of movement between the discrete cells of the distributions of relative labour productivity and TFP respectively. Each table can be interpreted as follows.(3) The numbers in parentheses in the first column are the total number of industry/year pairs beginning in a particular cell; the first row of numbers denotes the upper endpoint of the corresponding grid cell. Thereafter, each row denotes the probability of passing from one state into another. For example, the second row of numbers presents the probability of passing from the lowest productivity state to the lowest, lower/intermediate, higher/intermediate and highest-productivity states successively. The final row of the upper section of each table gives the implied steady-state distribution; in the lower section of each table, the single-transition matrix is iterated 21 times.

Table H
First-order, time-stationary transition probabilities for relative labour productivity

Y/L′	Upper endpoint			
Number	0.506	0.704	1.088	∞
(96)	0.88	0.13	0.00	0.00
(102)	0.18	0.71	0.12	0.00
(102)	0.01	0.15	0.75	0.10
(99)	0.00	0.00	0.13	0.87
Ergodic	0.389	0.265	0.198	0.148
	Single-period transitions iterated 21 times			
	0.44	0.28	0.17	0.10
	0.41	0.27	0.19	0.13
	0.34	0.25	0.22	0.19
	0.28	0.23	0.25	0.24

Table I
First-order, time-stationary transition probabilities for relative TFP

TFP′	Upper endpoint			
Number	0.506	0.704	1.088	∞
(99)	0.93	0.07	0.00	0.00
(98)	0.08	0.85	0.07	0.00
(102)	0.00	0.14	0.82	0.04
(100)	0.00	0.00	0.07	0.93
Ergodic	0.389	0.337	0.175	0.098
	Single-period transitions iterated 21 times			
	0.48	0.34	0.14	0.04
	0.39	0.35	0.18	0.08
	0.31	0.34	0.21	0.14
	0.16	0.26	0.25	0.32

Estimated values of transition probabilities close to one along the diagonal indicate persistence, while large off-diagonal terms imply greater mobility. Tables H and I suggest a degree of mobility in productivity levels across industries: there are important changes in relative levels of productivity across industries, particularly in the middle of the distributions. So the earlier finding of no statistically significant evidence of either reversion to or divergence from a common mean conceals considerable changes within the distribution. These changes are greater for relative labour productivity than for relative TFP.

These changes are of further interest for their implications for the evolution of the external shape of the two distributions of relative productivity. For both labour productivity and TFP, there appears to be more downward than upward mobility. (The sum of the off-diagonal terms is greater below the diagonal than above it.) Indeed, the steady-state distributions for both measures of productivity are significantly positively skewed, with a relatively large number of industries with productivity levels just below

(1) More generally, if one continues to treat productivity as being continuous, one may estimate the stochastic kernel associated with P^* (see, for example, Quah (1996c)). But in the present application, there are too few cross-sectional units (industries) for such estimation, and hence we proceed by dividing the space of possible values of productivity into discrete cells.
(2) That is, the ergodic or limit distribution towards which relative productivity is evolving.
(3) All estimation was carried out using Danny Quah's TSRF econometrics package. We would like to thank (without implicating) Danny Quah for making the latter available to us. Any results, opinions and errors are the responsibility of the authors alone.

the mean, and a few industries with above-average productivity. (A tendency for the United Kingdom's distribution of productivity across industries to become increasingly positively skewed during the sample period is also evident if one directly analyses the distribution of both relative labour productivity and TFP in each year of the sample period.)

In addition, the industries with above-average productivity tend to remain the same over time, particularly for TFP. For example, in all 23 years of the sample period, Computing and Pharmaceuticals are ranked first and second respectively in terms of TFP. There is more mobility in the case of labour productivity, but even here, Computing is ranked first in eleven years and second in eleven years, while Pharmaceuticals is first in twelve years and second in four years. There is no evidence that productivity levels in industries with below-average productivity are 'catching up' with these two lead sectors.

So there is evidence that an increasing number of UK industries are concentrating at productivity levels just below the manufacturing mean, with a few industries continuing to exhibit above-average productivity. Moreover, productivity levels in these industries not only persistently remain above average, but actually increasingly move away from mean values during the sample period. This is evident from a comparison of Charts 1 and 2 or Charts 3 and 4, and is revealed by an analysis of the cross-section distribution of average productivity growth rates in the sample period, which is significantly positively skewed. From Charts 2 and 4, the industries where productivity levels increasingly depart from mean values are Computing, Pharmaceuticals and Aerospace. All three of these industries are among the seven industries found earlier to account for 95% of aggregate manufacturing TFP growth. In fact, these three industries alone account for just under 40% of the TFP growth in aggregate manufacturing.

It is important to note that in stating these conclusions, we make no claims about what is driving these changes in relative levels of labour and TFP and draw no policy inferences. Only further research will tell us whether persistence of high levels of productivity in a few industries is simply the result of fundamental differences in the nature of the technologies in these industries (in which case it is still an interesting fact), or is instead the result of economic forces at work in these industries (such as unionisation, R&D spending, human capital, or openness to international trade).

Summary

This article has reported a detailed analysis of the nature of growth in 19 UK manufacturing industries between 1970–92. The main results were:

- The decline in both constant price value added and hours worked in aggregate manufacturing was found to conceal considerable differences across sectors, with substantial changes in the relative size of individual manufacturing sectors.

- In all 19 industries, the average rate of growth of value added exceeded that of hours worked, and so labour productivity growth increased in each sector. Rates of labour productivity and TFP growth varied considerably across sectors, with close correlation between the two measures.

- Rates of growth of value added, hours worked, labour productivity and TFP also displayed sizable variations over time. Growth rates of labour productivity and TFP were (with only one exception) higher in the second peak-to-peak business cycle (1979–89) than in the first (1973–79). In addition, increases in TFP, relative to those in capital accumulation, were estimated to account for a larger share of value added and labour productivity growth in the second peak-to-peak cycle than in the first.

- Despite substantial changes in the relative size of individual manufacturing sectors, the vast majority of productivity growth in aggregate manufacturing during the sample period (whether measured by labour productivity or TFP growth) was found to be due to within-sector productivity growth, rather than reallocations of resources between sectors. The sources of aggregate TFP growth were more concentrated than those of labour productivity growth: more than 95% of TFP growth in aggregate manufacturing between 1970–92 was accounted for by seven sectors, which together constituted (on average in the period) less than 44% of value added.

- Productivity levels (whether measured by labour productivity or TFP) also varied markedly across sectors. In the sample period, levels of both labour productivity and TFP displayed no statistically significant tendency to revert to or diverge from a common mean. So there was no evidence that productivity levels were converging or diverging across sectors in the sense of β-convergence or β-divergence.

- This summary technique for characterising movements within a distribution concealed considerable interesting intra-distribution dynamics. An analysis of the evolution of the entire distribution of productivity across industries revealed substantial mobility in levels of relative labour productivity and TFP, with more mobility in the middle of each distribution. The extent of mobility was greatest for labour productivity; and for both measures of productivity, there was more mobility downwards than upwards.

- The dispersion of levels of labour productivity and TFP around the mean both increased during the sample period, so that there was no evidence of

productivity convergence across sectors in the σ-convergence sense. But an analysis of the sample standard deviation alone was found to conceal interesting changes in the external shape of the productivity distribution. Direct inspection of the distribution of relative productivity across industries revealed that the latter became increasingly positively skewed during the sample period. Productivity in an increasing number of UK industries appears to be concentrating at levels just below the manufacturing mean. Productivity growth in a few sectors remained consistently above average during the sample period, and productivity levels in these sectors rose further away from mean levels.

This detailed, disaggregated analysis of growth within UK manufacturing has revealed a number of stylised facts about productivity growth (whether measured in terms of either labour productivity or TFP). These stylised facts are not only of interest in themselves, but are important in informing subsequent research into the explanations for the UK manufacturing sector's performance in the 1970s and 1980s (see, for example, Cameron, Proudman and Redding (1997)).

Annex

A Data definitions and sources

Value added: Value added is gross value added at factor cost from the Census of Production. This is equal to gross output minus purchases; minus increases in stocks of materials, stores and fuel; minus the cost of industrial and non-industrial services. Spending on R&D intermediate goods was added back in to remove the 'expensing bias' discussed by Schankerman (1981). Gross value added was deflated by the producer prices (output) index (market prices), to give a single-deflated value-added index.

Since value added is essentially gross output minus intermediates and the time series profiles for the price indices associated with these components may be different, it follows that theoretically one should deflate gross output and intermediates separately in each industry and then subtract the resulting constant price series from one another (double deflation). But we are concerned about the quality of intermediate input deflators at the disaggregated level within UK manufacturing, and therefore follow a number of other authors (see, for example, van Ark (1996)) in using single-deflated value added. Cameron (1996) calculates double-deflated value added for total manufacturing (at which level intermediate input deflators may be more accurately measured). Although there are clearly differences, the time series profile of the double-deflated measure is broadly similar to its single-deflated counterpart.

Producer prices: Producer price (input and output) indices supplied by the Office for National Statistics.

Labour input: Total employment is from the Census of Production. From this, the number of R&D workers was subtracted. Normal and overtime hours worked per week (full-time males) are taken from the *New Earnings Survey* and from information supplied by the Employment Department. Weeks worked are taken from *Employment Gazette* (data for total manufacturing are assumed to apply to all industries). Hours worked per year in manufacturing are the result of multiplying numbers of employees by hours per week by weeks worked.

Capital input: Data for manufacturing were supplied directly by the Office of National Statistics. Spending on capital equipment for R&D purposes was subtracted.

B Industry concordance

The concordance is based upon Kong (1988), O'Mahony and Oulton (1994) and Cameron (1996). The manufacturing data set is composed of 19 industries. It was not possible to obtain a perfect concordance between SIC 1968 and SIC 1980. Where discrepancies arise, these are detailed in Table 1 below, which gives information on the percentage error in the value-added data between the two classifications. Of the 23 industries in Table A, four (Chemicals, Basic metals, Fabricated metals and Electrical machinery) are aggregates of other industries presented in the table. In view of the large role played by public procurement policies and government intervention, shipbuilding is excluded from our sample of manufacturing industries.

Table 1
Industry concordance

Industry	SIC 1980	SIC 1968	Error (%)
Chemicals nes (a)	25+26-257	V+411-272-2796-(05*276)	1.2
Pharmaceuticals	257	272+2796	2.0
Products			
Office machinery and computing	33	338+366	-4.7
Other electrical engineering	34-344-345	IX-363/4/6/7	3.6
Electronics	344/5	363/4/7+0.5*(354)	-2.9
Motor vehicles	35	381	2.0
Aerospace	364	383	1.2
Instrument engineering	37	VIII-0.5*(354)	-4.6

(a) nes: not elsewhere specified.

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Competition and co-operation: developments in cross-border securities settlement and derivatives clearing

By Bob Hills and Chris Young of the Bank's Payment and Settlement Policy Division.

European securities settlement systems and derivatives clearing houses are preparing for EMU by offering members clearing and settlement services in foreign as well as domestic instruments. This article outlines recent developments and new initiatives in cross-border securities settlement and derivatives clearing. It suggests that competition for post-EMU business is already resulting in increased co-operation, in the form of links between systems. These developments have implications for the risks in cross-border clearing and settlement and for market structure, and raise issues for central banks and regulators.

Introduction

European securities settlement systems and derivatives clearing houses are reviewing their strategies in advance of the introduction of the euro, and in anticipation of the consolidation of European systems expected in the medium term. Recent developments include initiatives by settlement systems and clearing houses to create or enhance links with their counterparts in other countries. This will enable them to broaden the services they offer beyond clearing or settlement of domestic instruments (mainly national government bonds and equities, or contracts listed on the local derivatives exchange) to foreign instruments, such as other EU governments' bonds. Settlement systems and clearing houses are also allowing foreign firms to become direct members without the need for a local presence ('remote access'). Similar trends have already been seen in European equity and derivatives exchanges.(1)

These developments are likely to lead to further significant changes in cross-border clearing and settlement. Current arrangements rely heavily on intermediaries—banks acting as clearing agents or custodians in national clearing and settlement systems, on behalf of firms located abroad. As systems create further links between each other and offer remote membership, it is becoming increasingly possible for dealers and investors to clear and settle cross-border, without the need for intermediaries.

This article examines recent initiatives by both securities settlement systems and clearing houses for exchange-traded derivatives,(2) and considers the reasons behind the changes, and their implications. These include the ways in which such developments may affect the risks and efficiency of cross-border settlement mechanisms; the implications for market structure, in particular for the role of intermediaries; possible consolidation as a result of co-operation between systems; and issues for central banks and regulators.

Cross-border clearing and settlement

Most trades are cleared or settled domestically. For example, if two banks located in the United Kingdom trade a gilt, the transaction will typically be settled in the Central Gilts Office (CGO), the UK settlement system for government bonds (gilts).(3) Other transactions require cross-border clearing or settlement:(4)

- A trade between two counterparties in different countries would be cleared or settled cross-border, either in the country where one of the counterparties is located, or in a third country. For example, if a bank in France enters into a long gilt futures contract on LIFFE(5) with a UK futures dealer, the trade will be cleared at the London Clearing House (LCH).(6)

- A trade between two counterparties in the same country, but where the asset or derivative is located or listed abroad, would also be settled or cleared cross-border. For example, if two banks in the United Kingdom trade a eurobond, the transaction will be settled in Euroclear.(7)

(1) See Williamson, C (1997) 'Rationalisation of European equity and derivative exchanges', *Quarterly Bulletin*, November 1997, pages 406–12.
(2) This article looks at clearing of futures and exchange-traded options—contracts with standardised specifications determined by, and listed on, an exchange. It does not consider over-the-counter (OTC) derivatives, which are currently almost always settled bilaterally, with no central clearing house.
(3) The terms 'securities settlement system' and 'Central Securities Depository' (CSD) are used interchangeably in this article. The UK systems are the CGO, the Central Moneymarkets Office (CMO) and CREST (which settles mainly equities).
(4) A cross-border settlement is one that 'takes place in a country other than the country in which one trade counterparty or both are located': *Cross-border Securities Settlements*, Bank for International Settlements (1995), page 1.
(5) The London International Financial Futures and Options Exchange (LIFFE), the largest financial derivatives exchange in the United Kingdom.
(6) LCH provides clearing services for LIFFE, the London Metal Exchange (LME), the International Petroleum Exchange (IPE) and Tradepoint, an electronic stock exchange.
(7) Euroclear (and Cedel Bank) are International Central Securities Depositories (ICSDs), located in Belgium and Luxembourg respectively. They were originally set up to provide settlement and custody services for eurobonds. In recent years, both have developed links to national settlement systems, as well as between each other.

In derivatives markets, there is a distinction between clearing derivatives transactions cross-border and clearing derivatives based on foreign instruments. For example, LCH clears LIFFE futures and options contracts on German, Italian and Japanese government bonds, in addition to contracts based on UK instruments. However, the settlement of some margin payments and deliveries of the underlying instrument under such contracts are generally made cross-border, using the relevant payment or settlement system (such as Deutsche Börse Clearing, Cedel Bank or Euroclear for German government bonds).

The proportion of clearing and settlement that is cross-border is difficult to quantify. It is clear that as capital markets have become increasingly globalised, many firms want to trade instruments for which clearing and settlement is not available in the system of which they are a member, for example in order to gain exposure to foreign governments and corporate issuers, and to hedge their risks. The growth in collateral transactions (including repos[1] and securities lending), many of which involve counterparties located in different countries, has also fuelled growth in cross-border settlements. But calculations of clearing and settlement undertaken cross-border rely on surveys and national balance-of-payment statistics, which typically include figures only for gross purchases and sales of securities between residents and non-residents. Clearing houses and CSDs themselves may not always be able to identify whether clearing or settlement is cross-border; many of their members act both on their own account and as clearing agents or custodians for foreign investors. One indication of the growth of cross-border securities settlements is that the trades settled in Euroclear, which are largely cross-border, increased more than five-fold between 1991–97.[2]

Mechanisms for effecting cross-border clearing and settlement

A firm may clear or settle a transaction cross-border in one of three ways: by remote membership of the foreign system, via an intermediary who is a member of the foreign system, or in the system of which they are a member via a link with a foreign clearing or settlement system. Links between securities settlement systems usually take the form of one system becoming a member of the other and, in effect, acting as agent for its members in the foreign system.

Remote membership of the foreign system

Either party to a transaction may become a remote member of the system in which the transaction is cleared or settled. In practice, remote membership of clearing and settlement systems is rare. There are sometimes legal restrictions: system operators have to be satisfied that legal obligations of membership will be enforceable against remote members under the relevant foreign law. There may also be technical impediments to remote access—for instance if the technology that links a system to its members cannot be extended outside the country of the system. In many cases, remote access to the payment system for securities transactions settled against payment has been restricted, usually to domestic banks. In any event, many dealers and investors wish to avoid being members of a number of systems, each with different technical requirements. In practice, the only systems with a wide range of remote members are the two International Central Securities Depositories (ICSDs), Euroclear and Cedel Bank. This reflects their origin as systems specialising in the settlement of international securities, for which the majority of the trading takes place in London.

In exchange-traded derivatives markets, some clearing houses now have remote clearing members. These must also be members of the associated exchange for which the clearing house clears. Membership of the exchange may in any case be open only to firms with a local presence, for example a physical presence on the trading floor, if trading is by open outcry. Even where non-resident exchange members can trade on an exchange remotely (as they can, for example, on the Deutsche Terminbörse (DTB) via an electronic terminal located outside Germany), they may still need to clear through a local agent.

Use of an intermediary

The most common method by which a counterparty clears or settles cross-border is to use the services of a direct participant in the foreign system, often a local custodian bank or specialist clearing agent. Many investors appoint a global custodian or global clearing agent with a presence in all the major foreign centres to act on their behalf in different markets. A global custodian may itself appoint a local bank as sub-custodian or use an ICSD to effect some settlements.

In securities markets, global custodians offer not only settlement services but a full range of banking and custodial services. In derivatives markets, the local clearing agent might also act as the broker for the foreign counterparty, providing both trade execution and clearing services. This is typically the case where trading on the exchange requires a physical presence.

Links between systems

Links between clearing houses or settlement systems enable counterparties in different countries to clear or settle a transaction through the clearing house or settlement system of which they are a member. Links therefore avoid the need for foreign counterparties to a trade to be remote members of, or to appoint agents in, the system in which the transaction is cleared or settled.

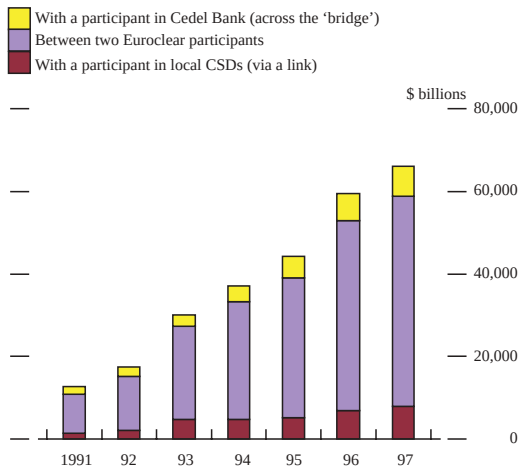
The technical sophistication of such links varies. Simple telephone communications may be sufficient in some cases,

(1) A sale and repurchase agreement, typically of government bonds.
(2) Source: Euroclear.

where volumes are low. Perhaps the most advanced and high-volume link between securities settlement systems is that between Euroclear and Cedel Bank—the 'bridge'. The bridge enables members of one system to settle transactions on a 'delivery versus payment' (DvP) basis with members of the other system.

Euroclear and Cedel Bank also have the most extensive links to other securities settlement systems. At the end of 1996, Euroclear had 29 links to national CSDs and Cedel Bank had 35.(1) As Chart 1 shows, around 25% of all settlements in Euroclear are between a Euroclear participant and a participant in a foreign system, either Cedel Bank or a national CSD; the majority of other settlements in Euroclear are in securities previously transferred into the system via a link to a national CSD. Links between national CSDs are less developed at present. They include Deutsche Börse Clearing's links to eight CSDs and to both ICSDs, and Sicovam's links to 22 CSDs. The volume of settlements across these links has been low.

Chart 1
Settlements in Euroclear



Source: Euroclear.

There are currently fewer links between derivatives clearing houses than between CSDs. This is because clearing houses have been able, and to date have preferred, to clear contracts based on foreign underlying instruments (such as the LIFFE German government bond contract) that are listed on the derivatives exchange for which they provide clearing services, rather than clearing such contracts by linking to the clearing house of a foreign derivatives exchange. This reflects the primary role of derivatives clearing houses in clearing for a local exchange, which is often also the owner or part-owner of the clearing house.

Many links between derivatives clearing houses are designed to facilitate out-of-hours trading of liquid, popular contracts. They allow members of a clearing house to trade such contracts on a derivatives exchange in a different time zone, but have them cleared at their own clearing house. For example, a member of the Tokyo International Financial Futures Exchange (TIFFE)(2) can open a euroyen futures position on LIFFE but clear it at TIFFE; and a member of the Chicago Mercantile Exchange (CME) can open a eurodollar futures position on SIMEX(3) and have it cleared at the clearing-house division of the CME. The links between OM Stockholm and OMLX,(4) and their links with two other Scandinavian markets, NOS(5) and SOM,(6) are the only current examples of links between clearing houses in the same continent. Members of any of these clearing houses can trade with a member of any of the participating exchanges via their joint electronic orderbook and clear the trade locally. These arrangements are described in more detail in the box on page 161.

The different mechanisms for cross-border clearing and settlement are in practice used in combination. For example, a global custodian appointed by an investor in one country might itself settle some cross-border transactions using an ICSD; the ICSD could settle these via a link to a CSD in another country. In addition, most of the ICSDs' links to national CSDs make use of a custodian bank acting as local agent for the ICSD. It is therefore common for an investor holding a security issued in a national depository in a foreign country to hold it via more than one intermediary. Such chains of intermediaries also occur in domestic business—many investors choose to hold their securities via a custodian, rather than by direct membership of a CSD—but they are more common in cross-border settlements.

Risks involved in cross-border clearing and settlement

All these mechanisms for cross-border settlement expose parties to risks. Most of these risks also arise in domestic clearing and settlement, but they may be more difficult to manage if more than one jurisdiction is involved; others are unique to cross-border clearing and settlement. These risks are generally borne directly by the participants in clearing and settlement systems, but they may fall to the systems themselves.

- ***Legal risks***

The legal framework for securities settlement and derivatives clearing may not be the same in all countries relevant to a trade that is cleared or settled cross-border.(7) Where there is a conflict of law, participants may be vulnerable to claims of third parties if there is an insolvency. Any transaction where securities are held via a chain of intermediaries raises questions about what the relevant law is. Rights of property are generally determined by the law

(1) Sources: Euroclear and Cedel Bank.
(2) Some clearing houses are divisions of an exchange and often share the same name. For example, TIFFE refers both to the exchange and to the entity that provides clearing services for the exchange. Others do not share the name of an exchange—for example LCH and LIFFE, LME, IPE and Tradepoint.
(3) The Singapore International Monetary Exchange.
(4) OMLX, the London Securities and Derivatives Exchange; the same entity also provides clearing services for the exchange.
(5) The Norwegian Futures and Options Clearing House, the clearing house for the Oslo Stock Exchange.
(6) The Finnish Options Market, the clearing house for the Finnish Securities and Derivatives Exchange.
(7) The relevant jurisdictions include the countries where each counterparty is located, where any custodian is located, where the settlement system or clearing house is located, and where the issuer of the security or the exchange listing the derivative is located.

Links between exchange-traded derivatives clearing houses

Links between clearing houses take a number of forms, depending on the services that they offer to their members and the nature of the trading arrangements they support.

Cross-clearing links to support cross-listing arrangements

Links between clearing houses are often established to facilitate a cross-listing arrangement between two exchanges. Trading of a contract introduced by one exchange (the 'home' exchange, usually the primary exchange for trading of the contract subject to the link) can also take place on an exchange in another country (the 'away' exchange), usually when the home exchange is closed. The home and away exchanges are typically located in different time zones; in effect, the link extends the trading hours of the cross-listed contract.

In the simplest type of arrangement, the clearing houses link to facilitate the transfer of positions in the contract executed on the away exchange back to the home exchange, whose clearing house clears all positions in the cross-listed contract. Positions are held temporarily at the clearing house for the away exchange, pending transfer at the end of the trading day; members of the clearing house for the away exchange then need to use members of the clearing house for the home exchange as local agents. Examples include the LCH-TIFFE link for euroyen futures.

In more complex arrangements, both clearing houses clear the cross-listed contract. A firm can open a position on the away exchange and have it cleared at the away clearing house; alternatively, it may choose to have its positions in the contract transferred back to the clearing house for the home exchange, clearing through a local agent. Where the two counterparties to a transaction have their trades cleared at different clearing houses, the clearing houses involved become counterparties to each other. Examples of such arrangements include the link between the clearing-house divisions of the CME and SIMEX for eurodollar futures and euroyen futures, and the link between LCH and SIMEX for Brent crude oil futures. Both these links are known as 'mutual offset' arrangements.

Cross-clearing links to support joint electronic orderbooks

The exchanges in the Swedish OM group have established common trading platforms with each other and the Norwegian and Finnish derivatives markets in the form of joint electronic orderbooks: these are supported by cross-clearing links. Members of participating exchanges are able to trade derivatives contracts introduced by the other exchanges. As with a mutual offset arrangement, this type of link allows members of one clearing house to trade and clear a foreign contract locally: members can execute a trade in any contract listed on the electronic orderbook, but clear only at the clearing house of which they are a member, irrespective of whether the contract is local or foreign and of where the counterparty is located.

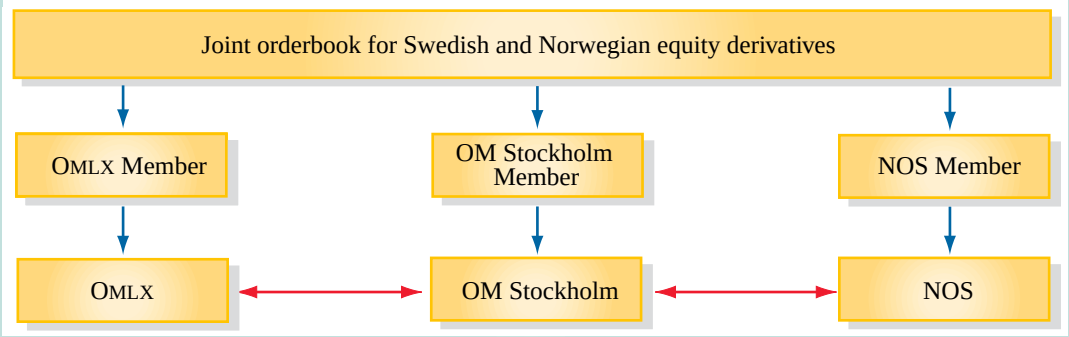
The current joint orderbook arrangements are between: OM Stockholm and OMLX, for almost all products traded on each exchange; OM Stockholm, OMLX and NOS, for Norwegian and Swedish equity futures and options; and OM Stockholm, OMLX and SOM, for Finnish bond and interest rate derivatives.

The link between OM Stockholm, OMLX and NOS is shown in the diagram below. The blue arrows relate to trade execution: a firm enters into a contract listed on the joint orderbook; it is cleared at the clearing house of which the firm is a member. Where the counterparties to a trade are members of different clearing houses, there are inter clearing house transfers of payments and settlements relating to margin and contract deliveries (these are shown as red arrows).

Cross-clearing links: joint clearing of a contract traded on a single exchange

Clearing houses can also link to facilitate joint clearing: members can open a position in a contract on a single exchange, but choose the clearing house at which they will have it cleared. Until August 1997, LCH and MATIF, the French financial derivatives exchange and clearing house, had a joint clearing arrangement for BCC[1] white sugar futures. Members of the commodity exchange could open a position in the contract and decide whether to have it cleared by LCH or MATIF. To effect inter clearing house transfers of payments and settlements relating to margin and contract deliveries, LCH became a member of MATIF. The principle behind this arrangement was similar to the CSD-to-CSD links described in the box on page 163.

Cross-clearing link between OM Stockholm, OMLX and NOS



(1) Banque Centrale de Compensation (BCC) is a commodity futures clearing house and a wholly-owned subsidiary of MATIF.

of the jurisdiction where the property in question is located, the '*lex situs*', which is itself usually determined by the physical location of a paper instrument or the location of the registrar of the security. But where securities are held in dematerialised form via multiple intermediaries in different countries, the *situs* and so the applicable law may be less clear. In Europe, prospective changes in relevant laws, notably the Settlement Finality Directive,(1) will help to clarify the position.

- ***Custody risks***

The use of intermediaries to settle a security or clear a derivatives transaction potentially exposes the participant to loss in the case of the insolvency, negligence or fraud of an intermediary. Regulators generally require an intermediary to segregate the assets and derivatives positions of its customers, at least from the intermediary's own assets and sometimes also from the assets of other customers. Even if segregation is effective, the customer may have difficulty in transferring its instruments promptly in the event of an insolvency.

- ***Settlement risks***

If delivery and payment do not take place simultaneously, an institution may be at risk of losing the full value of securities or funds that they have transferred to a defaulting counterparty. In securities markets, achieving DvP may be more difficult for a cross-border than a domestic settlement, since more than one system is involved. Even where DvP is available, to protect dealers and investors, it needs to be clear when transfer of securities and payment of funds are irrevocable and unconditional. If there is a settlement between a system settling with intra-day finality and one with only end-of-day finality, deliveries in the first system will be available for re-use by the receiving member only at the end of the day.

- ***Operational risks***

Effecting clearing and settlement across links between systems raises particular issues about the robustness of these links and their technical arrangements. A failure in one system may delay clearing or settlement in the other, exposing members to liquidity risks—that obligations owing to them may not be settled when due.

Links may also create exposures between systems. In a link between securities settlement systems that involves providing credit or lending securities to bridge a gap between final delivery in one system and final receipt in the other, there may be a credit exposure between the two systems. In a link between clearing houses where each counterparty to a derivatives trade clears its side of the transaction at different clearing houses, the systems are exposed to each other in respect of transfers of payments and settlements relating to margin and contract deliveries.

Recent developments

Securities settlement

Many European CSDs are currently upgrading their services, in particular by introducing real-time gross settlement facilities to enable participants to settle trades throughout the day on a DvP basis. These improvements are also taking place in cross-border settlement: some links between systems are being upgraded to provide for real-time gross settlement cross-border. Euroclear, for example, plans eventually to upgrade its links to national markets and the bridge to Cedel Bank on this basis.

One of the most significant recent initiatives is the proposal of the European Central Securities Depositories Association (ECSDA), the grouping of national private sector CSDs, to develop links between each other. Details of the proposed model are given in the box on page 163. The principle is that an investor may hold securities issued into any participating CSD, using any CSD as a point of access. The initiative was conceived as a means of reducing risk and increasing efficiency in central bank credit operations involving cross-border use of collateral in Stage 3 of EMU, but it will be available to all members of participating systems. Already, the French and German systems plan to introduce an upgraded version of their existing link later this year. In January 1998, the Danish CSD (VP) and its Swedish counterpart (VPC) announced plans to establish a facility enabling the book-entry transfer of securities between them. This is the first step towards a planned joint settlement facility.

In the United Kingdom, CRESTCo plans to create links to a number of EU systems, possibly later this year.(2) As part of a consultative exercise on the development of securities settlement in the United Kingdom, the Bank of England has been seeking views on the demand for such links from users of UK settlement systems.(3) Euroclear and Cedel Bank's links to CGO (both are members of the system) are currently the only direct links involving UK systems.

Some systems have amended their rules to permit remote access. Deutsche Börse Clearing now admits members located abroad. DTC, the US settlement system, has set up an office in London to facilitate remote settlement of US instruments. Euroclear and Cedel Bank, though not members of the ECSDA, are likely to increase their links to EU national CSDs. Most of their links are currently one-way, enabling the ICSDs to settle securities issued in national CSDs; CSDs do not, however, always have the facility to settle in the ICSDs.

Derivatives clearing

Until relatively recently, links between derivatives clearing houses have often involved cross-clearing arrangements to support cross-listing of contracts on derivatives exchanges.

(1) Proposal for a Directive of the European Parliament and of the Council on settlement finality in payment and securities settlement systems—5943/98.
(2) *Cross-border settlement*, CRESTCo (1997).
(3) *Securities Settlement Priorities Review*, Bank of England (1998). Copies can be obtained from Public Enquiries, Bank of England, Threadneedle Street, London, EC2R 8AH. Telephone: 0171-601 4012.

ECSDA proposed model for CSD-to-CSD links

The European Central Securities Depositories Association (ECSDA), the grouping of European national private sector CSDs, published proposals in July 1997 for a standard model for links between its members.(1)

The key principle of the ECSDA model is that the CSD of an investor's country (the investor CSD) provides a single point of entry that allows the investor to hold securities issued into any other participating CSD (the issuer CSD). The model envisages each CSD in effect acting as the custodian of its members' holdings of securities issued into other CSDs. Each CSD will open an omnibus account at the others for this purpose; the issuer CSD may not need to keep records of individual participants who hold securities through investor CSDs. Transfers can take place between participants in the investor CSD without being reflected at the issuer CSD (unless, for example, this is needed to record a pledge, or the investor CSD operates sub-accounts for each of its participants). The investor CSD will be expected to provide custody services to its members in foreign securities, such as receiving dividend payments and acting on corporate events, supported by the issuer CSD.

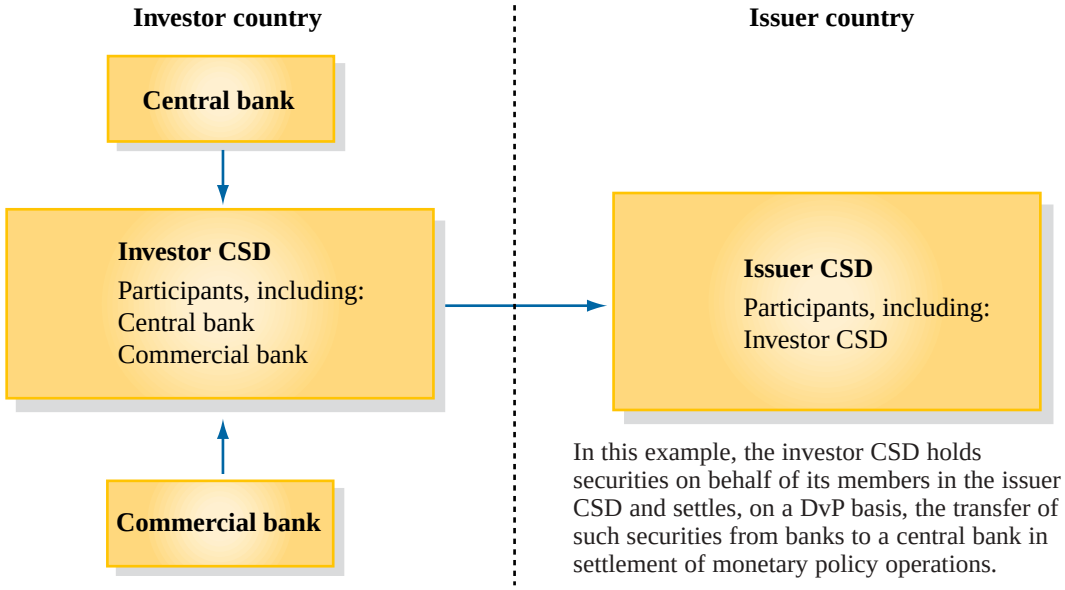
ECSDA has sought to address some of the common risk-management issues associated with cross-border settlement. Its approach is to set minimum standards for the CSDs in line with the EMI's standards for ESCB credit operations.(2) These include standards for operating times, intra-day finality for settlement, settlement in central bank money, and avoidance of credit risk by CSDs. A common approach to communications between CSDs is being developed. These will all be electronic and will use standard message formats, enabling all CSDs to participate in the links without having to conform to different technical standards for each link.

Initially, ECSDA proposes that the model will be used for cross-border settlements only on a free-of-payment basis, but it will be developed to provide DvP settlement in due course.

In many EU countries, there is more than one CSD, usually where the central bank runs the settlement system for government bonds or where, as in the case of Belgium, there is an ICSD (Euroclear) as well as national CSDs. ECSDA favours choosing a single system as a gateway to such countries.

ECSDA has also established working groups to consider the legal aspects of links, the development of DvP functionality, and the message structures and communication networks required to support these links.

The ECSDA proposed model for CSD-to-CSD links (as applied to central bank transactions)



In this example, the investor CSD holds securities on behalf of its members in the issuer CSD and settles, on a DvP basis, the transfer of such securities from banks to a central bank in settlement of monetary policy operations.

(1) *Report on the Infrastructure for Securities Settlement: Collateral Management for the Purposes of the ESCB Credit and Monetary Policy Operations*, European Central Securities Depositories Association (1998).
(2) *Standards for the Use of EU Securities Settlement systems in ESCB Credit Operations*, European Monetary Institute (1998).

But with the exception of the CME-SIMEX link, these links have not generated significant turnover for the participating exchanges or, consequently, their clearing houses. They have also been expensive to negotiate and implement. By contrast, business has increased as a result of OM Stockholm and OMLX's links with NOS and SOM to support joint electronic orderbooks. Since the incorporation of the Oslo Stock Exchange in the joint electronic orderbook and NOS in the cross-clearing link on 14 February 1997, the volume of Norwegian equity products has increased by almost 25%, mainly from trading in London and Stockholm.(1)

The most significant recent initiatives in derivatives trading and clearing involve EUREX, the single entity that will be created from the merger of the German and Swiss derivatives exchanges and clearing houses (planned for summer 1998). EUREX and MATIF announced in September 1997 that they would create a trading and clearing link (the 'Euro Alliance'). By October 1998, all EUREX and MATIF bond and short-term interest rate derivatives will be listed and traded on a single orderbook. But there will be no clearing link: members of EUREX and MATIF will have to use agents to clear contracts at the other clearing house, as they do at present. In the second stage, provisionally from the middle of next year, a clearing link will be added. As a final step, the Euro Alliance aims to establish in January 2002 a single clearing house for all derivatives products traded on the joint orderbook.

In March this year, it was announced that EUREX will also form an alliance with the Chicago Board of Trade (CBOT); the aim is to establish a global electronic derivatives market, eventually including an exchange from the Asia-Pacific region. There are as yet no details on how any clearing arrangement to support the link would work.

Reasons for the changes

In Europe, increased cross-border trading of derivatives and securities occurring in anticipation of the euro(2) has been the main impetus behind the higher volumes of transactions requiring cross-border clearing and settlement. Post-EMU, the removal of currency risk for participating countries is expected to lead to increased trading in foreign instruments. But EMU will also reduce the range of available currency and interest rate derivatives, and is expected to lead to decreased volatility in government bond yields for participating countries. Most EU securities settlement systems and many derivatives clearing houses now see it as a key part of their strategy to offer their members clearing and settlement services in a wide range of foreign as well as domestic products.

At the same time, Single Market legislation has removed some barriers to certain forms of cross-border clearing and settlement, encouraging systems to provide direct access to members located abroad. The Investment Services Directive has also facilitated remote trading, allowing exchanges recognised in one EU Member State access to other Member States. In derivatives markets, this may create an impetus for remote clearing. At present, firms can trade remotely, but may have to clear through a local agent.

The changes in cross-border payment arrangements with the introduction of the euro may also facilitate cross-border clearing and settlement. TARGET, the pan-European interbank funds transfer system, will link domestic payment systems; and the Euro Bankers' Association (EBA), formerly the Ecu Bankers' Association, has developed a multilateral clearing and settlement system in euros. These developments may make it easier for the cross-border payments associated with cross-border transactions in securities to be completed at the same time as the real-time settlement of the cross-border securities delivery, thereby facilitating cross-border DvP.

Implications and outlook

Although the shape of EU securities settlement and derivatives clearing in the next few years is difficult to forecast, significant change is likely. There are a number of issues:

(i) Market structure

Investors now have an increasing number of options for effecting cross-border clearing and settlement. Increased direct access to the settlement of foreign securities and clearing derivatives listed on a foreign exchange, via remote membership of foreign systems or through domestic systems' links abroad, may reduce investors' dependence on intermediaries for cross-border business.

Intermediaries are, however, likely to remain a key feature of cross-border clearing and settlement. Custodians and clearing agents will compete with the new methods of clearing and settling transactions cross-border on the basis of the quality and range of services that they offer. In the securities markets, it may be difficult for national systems currently orientated towards domestic business to match the services provided by the large custodians. They may be able to compete, however, on the basis of efficient, low-cost execution services in foreign securities. Euroclear and Cedel Bank, the established systems specialising in cross-border settlements, are mounting strong challenges to prevent their business being eroded.

In the derivatives markets, much may depend on whether open-outcry floor trading survives the threat posed by electronic trading—where trading requires a local presence, local agents are likely to continue to be used for cross-border trade execution and clearing. Further growth in remote screen-based trading may, however, fuel demand for remote access also to clearing systems.

(1) By contrast, the volume of Swedish equity products traded in Norway is low.
(2) For example, 'convergence plays' based on differentials between government bond yields and interest rates of prospective participants in EMU.

Of course, developments in clearing and settlement may also have a significant effect on the volumes of securities and derivatives traded. For example, investors who do not currently participate in a foreign market may be attracted to trading derivatives listed on a foreign exchange or holding foreign assets if they are able for the first time to clear or settle them in a familiar local clearing house or settlement system.

(ii) Competition or consolidation?

Increased competition is widely expected to be a precursor to consolidation of systems in the medium term. In derivatives markets, there is already a clear trend towards rationalisation, as evidenced by EUREX and its proposed alliances. This reflects the expectation that competition between exchanges and clearing houses for the contracts remaining after the introduction of the euro will not be sustainable. This trend has yet to emerge in securities settlement, with the exception of the planned consolidation between the Danish and Swedish CSDs. Most European CSDs see co-operation as the way forward in the short to medium term, as evidenced by the creation of links. But in the longer run, securities settlement in Europe is also expected to consolidate into a small number of systems.

(iii) Implications for the authorities

The implications of increased cross-border clearing and settlement, and the developments in cross-border clearing and settlement mechanisms, are attracting increased attention from central banks and regulators. There is now a recognition that the legal and risk management issues that it raised need to be reflected in the approach to regulation of the service providers, particularly custodians and CSDs; and that regulators need to co-ordinate their supervisory activities to ensure that any problems in cross-border clearing and settlement can be understood and managed.

The G10 central banks have recognised the importance of cross-border issues and have analysed in recent reports the risks arising in cross-border securities settlement and derivatives clearing.(1) The G10 central banks and regulators have also produced a disclosure framework for securities settlement systems, in which systems are required to describe their operations and the risks involved for participants, including the risks involved in links to other systems.(2) In Europe, the European Monetary Institute has established standards to be met by securities settlement systems that will be used in the settlement of central bank operations in the euro.(3) European central banks are now assessing CSDs against these standards, one of which is the security and robustness of their links with other settlement systems. In derivatives markets, the collapse of Barings in February 1995 illustrated the need for national regulators to co-operate; one outcome was the Windsor Declaration,(4) which promoted information-sharing between regulators, both routinely and in emergencies.

In the final analysis, the extent to which EMU will change the nature of the risks of clearing and settling cross-border, and market structures, is hard to predict with certainty. The full effect of the euro on cross-border business will be seen only once investors make their decisions on which clearing and settlement mechanisms to use in the changed framework that the single currency will bring.

(1) *Cross-border Securities Settlements*, Bank for International Settlements (1995); *Clearing Arrangements for Exchange-Traded Derivatives*, Bank for International Settlements (1997).
(2) *Disclosure Framework for Securities Settlement Systems*, G10 central banks' Committee on Payment and Settlement Systems (CPSS) and the International Organisation of Securities Commissions (IOSCO) (1997). Systems' responses to the disclosure framework are publicly available; many have been posted on the BIS website, http://www.bis.org. For further information, see Allen, H (1998), 'Disclosure Framework for Securities Settlement Systems', *Financial Stability Review*, Issue 4, May.
(3) *Standards for the Use of EU Securities Settlement Systems in ESCB Credit Operations*, European Monetary Institute (1998).
(4) Issued by 16 regulatory bodies responsible for supervising the major exchange-traded derivative markets and clearing houses, 18 May 1995.

The financing and information needs of smaller exporters

By Stuart Cooper and Inke Nyborg of the Bank's Business Finance Division.

This article outlines the key structural issues facing smaller firms seeking to enter or remain in export markets. It finds that effective access to focused advice and information is the most important enduring issue facing smaller exporters, especially those new to exporting. Access to finance does not appear currently to be a major difficulty for firms with some experience of exporting, though they may not be fully aware of all the alternative sources of finance. There is also some evidence that smaller exporters are less active than larger exporters in taking steps to manage their foreign exposure, possibly making them more vulnerable to the risks arising from fluctuations in foreign exchange rates and the failure of foreign buyers. The final section of the article notes the likely impact of the single currency on smaller exporters.

During the past five years, the Bank has devoted considerable attention to issues relating to the financing of small firms with turnover of up to £1 million. This work, under the direct leadership of the Governor, has aimed to consider ways of improving the financing of the small business sector in the United Kingdom. In addition to an annual review,(1) the Bank has recently targeted more specific areas of interest and concern. One of these has been the issues facing smaller exporters with total turnover of up to £10 million, on which the Bank published a report in February 1998.(2) The report drew on a range of sources: recent discussions with the providers and users of finance, relevant government departments, and others with a particular knowledge of the subject; and data and surveys carried out by other bodies. This article summarises the main findings of the report on the financing and information needs of smaller exporters.

Numbers of small exporting firms

The most recent data published by the Department of Trade and Industry (DTI) suggest that there are 3.72 million active businesses in the United Kingdom, of which 3.69 million (more than 99%) are classified as small businesses.(3) There are no official statistics on how many small businesses are exporters, but on the basis of VAT registrations and other HM Customs and Excise data, the DTI estimated that the total number of exporters was between 110,000 and 115,000 in 1995. It is likely that this figure underestimates the actual number of exporters in the United Kingdom, because Customs and Excise data include shipping agents, which are likely to represent a number of exporting customers that are too small to be registered for VAT purposes.

In the absence of official data, surveys can be used to gain an insight into the population of small exporting companies, but analysis is often hindered by the different ways in which they measure and group small firms. Some survey estimates are based on the number of employees, whereas others are based on total turnover. Survey conclusions about smaller firms' propensity to export also vary, as one would expect, according to the period under review, how exporting is defined, or any bias of the sample towards a particular region or sector.

Despite methodological difficulties, some general themes emerge. A number of surveys show that smaller firms, regardless of which definition is used, are less likely to be experienced exporters and more likely to export only occasionally. Smaller firms are also less likely to export a large proportion of total turnover. One survey found that only 21% of smaller exporters exported more than half of their total turnover,(4) whereas in another survey about 50% of all exporters claimed to export more than half of their turnover.(5)

It appears that the export record of UK small and medium enterprises (SMEs) is not as strong as that of other European countries. According to a survey by Grant Thornton,(6) the United Kingdom is thirteenth in the European Union in terms of the proportion of SMEs that exports. The DTI has suggested that the small proportion of exporting SMEs in the United Kingdom might partly reflect the United Kingdom's geographical position.(7)

(1) Since 1994, the Bank has published an annual report entitled *Finance for Small Firms*. The fifth report was published in January 1998. Copies can be obtained from the Bank's Public Enquiries Group (tel 0171–601 4878; fax 0171–601 5460).
(2) Copies of the report, entitled *Smaller Exporters—A Special Report*, can be obtained from the Bank's Public Enquiries Group.
(3) The DTI classifies small businesses as those employing between 0 and 49 employees. In 1996, sole traders or partners without employees accounted for more than 2.5 million businesses. Source: DTI (July 1997), *Small and Medium Enterprise (SME) Statistics for the United Kingdom, 1996*.
(4) Barclays Bank (1996), *Realising your Export Potential*, based on a survey of 400 businesses with sales turnover of up to £10 million, undertaken in April 1995.
(5) NatWest (1996), *The NatWest Triannual Survey of Exporters*, (Vol 4, No 1).
(6) Grant Thornton (Spring 1997), *European Business Survey*.
(7) DTI (1997), *Competitiveness UK: Our Partnership with Business. A Benchmark for Business*.

Sources of information and advice

There are many similarities between how firms sell goods to overseas buyers and how they operate in the domestic market. Both processes involve identifying potential markets, setting prices, manufacturing and transporting the goods, and receiving payment. Where the processes differ, apart from the potential exposure to exchange rate fluctuations, is that some aspects of selling overseas may be more complex, especially for firms exporting to a market for the first time.[1] Indeed, a survey undertaken by the British Chambers of Commerce (BCC)[2] identified poor research and lack of preparation as a reason for failure among 30% of businesses that had experienced unsuccessful export ventures. New exporters may not be experienced enough to be able to identify all of the complexities when they start exporting. This awareness of potential pitfalls, or fear of the unknown, may lead some firms to decide against exporting potentially profitable products or services. So access to relevant information and advice is critically important to potential, new and experienced exporters, and inexperienced exporters are also likely to require some degree of 'hand-holding' during their initial forays into export markets.

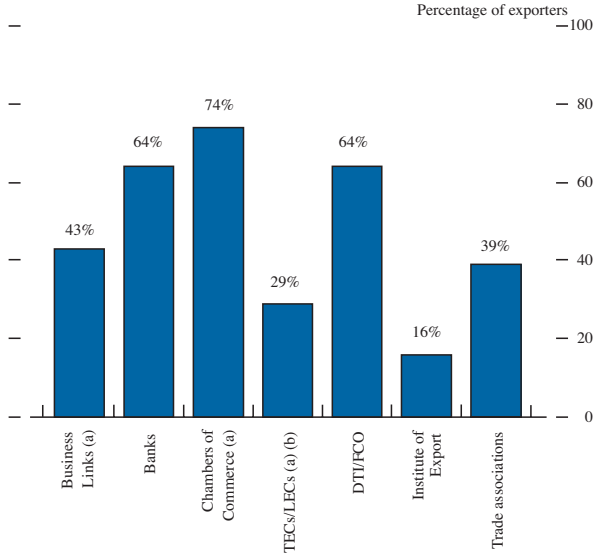
There is no shortage of potential providers of information and advice. A recent study of export support, undertaken at Durham University Business School,[3] identified four main providers of exporting services and advice in the United Kingdom:

- public and semi-public agencies, such as Business Links (see below), the DTI/FCO Overseas Trade Services, local authorities, and Training and Enterprise Councils (TECs);
- Chambers of Commerce, trade associations, and other professional institutions such as the Institute of Export;
- private institutions, including banks, consultants, lawyers and freight forwarders; and
- other businesses, including export clubs, overseas customers and suppliers that are willing to share information and experience.

But the existence of such a large number of potential providers of support, and unfamiliarity with the services that they offer, can result in a bewildering choice, particularly for firms with no previous exporting experience. Even when identified, sources may not always tailor information and advice to suit the needs of the individual exporter. Indeed, the Bank's work suggests that the non-availability of focused information and advice is currently the most important structural issue facing smaller exporters, especially those new to exporting.

As Charts 1 and 2 show, the use made of the main providers of assistance with export procedures currently varies considerably among smaller exporters. Data from the same survey, on how users rate the services provided, suggest that many exporters are missing out on potentially useful services because of their low levels of awareness of some providers and products. Also, even when exporters know about a provider, they may not be aware of the full range of products on offer.

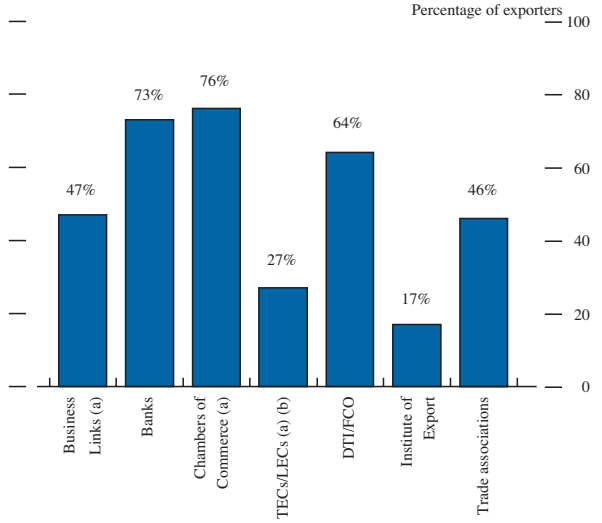
Chart 1
Usage of service providers: £0–1 million turnover band



Source: Major Issue Limited (1997), *The Fifth Survey of International Services Provided to Exporters*.

(a) Though listed separately, Chambers of Commerce and Training and Enterprise Councils are partners in individual Business Links.
(b) LECs are Local Enterprise Companies.

Chart 2
Usage of service providers: £1–10 million turnover band



Source: Major Issue Limited (1997), *The Fifth Survey of International Services Provided to Exporters*.

(a) Though listed separately, Chambers of Commerce and Training and Enterprise Councils are partners in individual Business Links.
(b) LECs are Local Enterprise Companies.

(1) There may also be some sizable upfront costs, eg obtaining local regulatory approval.
(2) British Chambers of Commerce (May 1997), 'Exporting', *Small Firms Survey*.
(3) Atherton, A and Sear, L (1997), *Support for the Exporting SME: Current Configurations of Provision in the North-East of England*, Durham University Business School.

The diversity of sources of assistance and specific products available to smaller firms more generally, combined with low awareness of these among firms, was a key factor in the decision in 1992 to initiate the Business Link network. Each Business Link is intended to act as a 'one-stop shop', able to provide firms with, or signpost them to, the service most appropriate for their particular needs. The presence of Chambers of Commerce and TECs as partners in individual Business Links has helped to focus expertise within a single umbrella organisation. The special needs of exporters were further recognised by the appointment of Export Development Counsellors (EDCs) within Business Links.

Based on the Bank's discussions with market participants, there appears to be a broad consensus that, through EDCs, Business Links are probably the best current means of providing initial advice, as well as the 'hand-holding' role desired by some new or less experienced exporters. Nevertheless, many of those involved in exporting or the provision of finance to exporters continue to voice concerns about the inconsistency of service provision across the Business Link network. But it should be noted that 1998 is the first year of full operation of the completed EDC network, so it is too early to judge the true potential of EDCs and Business Links.

Though Business Links are intended to be the first port of call for exporters and SMEs more generally, many smaller exporters still rely on their bank for initial advice and assistance. But it is unrealistic to expect branch managers to provide detailed advice to firms about aspects of exporting that are not directly related to financing or payment (though where a bank's policy is to focus its expertise in regional or central locations, wider information may be available to customers). So it is important that bank staff have sufficient knowledge to enable them to direct exporters effectively to a suitable source of information or advice on the wider or more technical issues of exporting, as and when appropriate. This also applies to other parties, such as accountants, that are often targeted by smaller firms with initial queries.

The Export Forum

The report of the Export Forum, which arose from a commitment in the Government's pre-election business manifesto to improve the effectiveness of government support for exporters by bringing together the relevant Whitehall departments and business representatives, concluded that a number of improvements needed to be made to government support for exporters.[1] Many of those involved in exporting have endorsed the findings of the Export Forum—in particular, the highlighting of weaknesses in the branding and marketing of government services, which are not widely known and used.

The Internet

The Internet is potentially a very important development for exporters. A number of websites have been set up by support providers to allow 24-hour access to information and advice on a wide range of business issues. They are also being used to promote UK businesses abroad—for example, the *Trade UK* website's exporter database. There are encouraging signs that exporters are beginning to use the Internet. One survey[2] indicates, for example, that 40% of exporters with turnover up to £1 million are using the Internet, and 46% of those with turnover between £1–10 million. Smaller exporters appear to use the Internet largely for marketing, whereas other exporters use it more widely (for example, for company information and to explore new business opportunities). This may reflect differences in resources, but it is important for small exporters to be aware of the possible benefits of the Internet, particularly time and cost savings.

Sources of external finance and protection

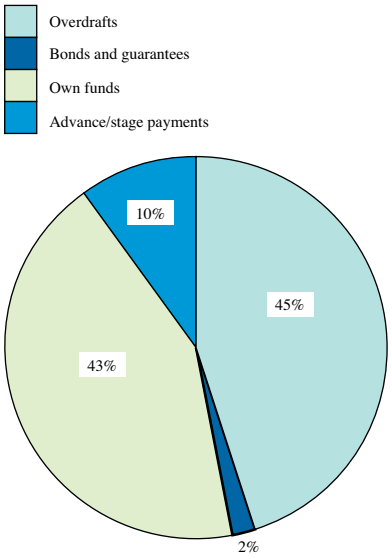
Firms involved in exporting require working capital in the same way as firms producing solely for the domestic market. They require finance to fund the manufacturing process, transportation and the period between shipment and payment, and will often need to seek some proportion of this from an external source such as a bank. Finance providers, however, often regard the risks associated with lending to exporters as greater than those involved in lending to firms selling only in the domestic market. For example, lenders may take a more cautious view of the value of receivables in an exporter's balance sheet, since some will relate to foreign buyers about whom they are unwilling or unable to form credit judgments, or they may be uncertain about an exporter's ability to produce goods that conform to potentially different specifications and standards.

Charts 3 and 4 suggest that own funds and bank overdrafts are the predominant means of funding receivables for exporters in both the £0–1 million and £1–10 million turnover categories. The original survey shows that this is broadly in line with the funding of exporters in general, irrespective of size. Research by Barclays Bank[3] also found that the commonest form of external finance was an overdraft facility, but that internal funding was much more important. Both surveys indicate that smaller exporters make little use of other sources of finance.

In some respects, it is not surprising that bank overdraft facilities appear to be the commonest form of external finance used by smaller firms to finance export receivables. Overdrafts are commonly used as the primary source of working capital for domestic businesses, and so are a form of finance that businesses find familiar and can understand. Moreover, neither survey data nor the Bank's work has suggested that there is currently a major gap in the overall

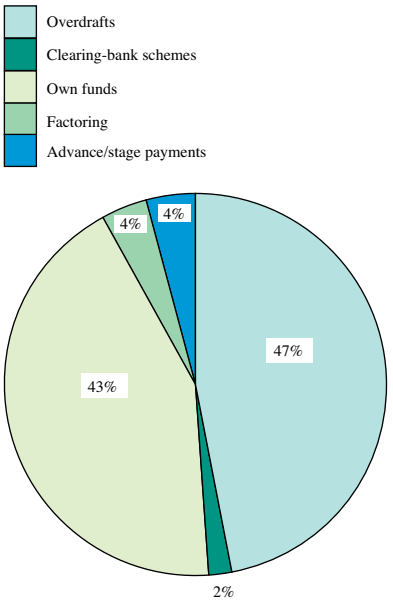
(1) A full list of the recommendations can be found in *Towards an Export Initiative—a Report by the Export Forum,* DTI (November 1997).
(2) Major Issue Limited (1997), *op cit*.
(3) Barclays Bank (1996), *op cit*.

Chart 3
Usual method of financing export receivables: £0–1 million turnover band



Source: Major Issue Limited (1997), *The Fifth Survey of International Services Provided to Exporters*.

Chart 4
Usual method of financing export receivables: £1–10 million turnover band



Source: Major Issue Limited (1997), *The Fifth Survey of International Services Provided to Exporters*.

availability of bank finance to smaller exporters, though discussions with market participants suggest that the availability of finance to firms seeking to export for the first time may be less certain. But many exporters may be unaware of, or have limited information about, alternative financing arrangements that may be more appropriate in practice. For example, this might account for the perceived under-utilisation of factoring by smaller exporters (see below). It is also possible that providers of finance may be less willing to offer alternative forms of finance, since they may feel that exporting—particularly in the case of new exporters—involves additional risks in the event of default or non-performance, to which they do not wish to be exposed. Examples of these products may be clearing-bank trade-finance schemes and pre-shipment finance (see below). Nonetheless, it is important that firms have enough information to be able to make rational and informed choices about the forms of finance that match their individual requirements most closely. This highlights the importance of access to sound and comprehensive advice on finance, and of finance providers making sure that information about their products is widely available.

Factoring

The cautious approach that many lenders take towards the value of overseas receivables in the balance sheet of firms seeking to develop their exporting business may mean that fast-growing exporters have insufficient working capital as orders increase.(1) This shortage may be a particularly acute problem if there are no additional fixed assets that the firm can pledge as security against new borrowing facilities, or if the firm is unable (or unwilling) to strengthen its balance sheet via an external equity injection. A potential solution, and also a source of working capital for exporters more generally, is export factoring or invoice discounting (though invoice discounting, both domestic and export, is unlikely to be available to firms with turnover of less than £1 million). These products also offer additional services, such as non-recourse finance, advice on trading terms, protection against exchange risk, and expert knowledge of overseas buyers' creditworthiness, which can help to resolve some of the uncertainties that are said to dissuade smaller firms from becoming active exporters.

The minimum turnover for access to export factoring and invoice discounting has fallen substantially in recent years because of improvements in technology, the information available to factoring companies and strong competition for business within the industry. But the limited evidence available indicates that few smaller exporters are currently using these services.(2) This may reflect a lack of awareness, both among exporters and their advisers, of the full benefits that these products can offer. In addition, factoring is perceived by many as being unduly expensive, though costs should be at least partly offset by lower overheads as a result of the factor taking over management of the sales ledger.

Clearing-bank trade-finance schemes

Smaller exporters make little use of clearing-bank trade-finance schemes at present, as Charts 3 and 4 show. Banks providing these products to exporters need to take into account two particular risks: first, whether the exporter will successfully deliver the goods to the contractual specifications: and second, whether the overseas buyer will pay for the goods supplied. In the case of new and smaller exporters, there is generally no track record of performance,

(1) This can, of course, also be an issue for rapidly growing smaller firms operating solely in the domestic market.
(2) For example, Charts 3 and 4 above and *Barclays Bank* (1996), *op cit*.

and little or no evidence of success in negotiating disputes with overseas buyers.[1] Though banks can try to overcome these informational deficiencies to some extent, this invariably requires the use of additional resources, and so schemes can become disproportionately expensive for banks to provide to smaller exporters and for firms to use. For the smallest exporters, such schemes have so far simply not proved practical for banks for these reasons.

Pre-shipment finance

There are particular occasions when exporters in certain lines of business or in particular situations may require pre-shipment finance. The most common examples of this include:

- a step increase in orders;
- a particularly large order, or one with a large production run for which it is not possible to negotiate advance or stage payments; and
- an order with a long lead time (for example, bespoke capital goods) or consisting of several components, where payment is not forthcoming until receipt of the final component.

However, banks and others providing pre-shipment finance believe that they are assuming greater risk than for normal trade-finance services, because of the additional risks arising in the pre-shipment period (for example, buyer or manufacturer going out of business, or the manufacturer failing to provide goods of the contracted quality or specification). They are therefore unlikely to be willing to provide such finance if they cannot satisfy themselves that the risks are acceptable, or in the absence of credit insurance or an irrevocable letter of credit. So pre-shipment risk is another area where lenders are hindered by a lack of information about smaller exporters without a track record. In such circumstances, smaller exporters will probably need to use an alternative source of finance.

Credit insurance

A recent survey by the BCC[2] found that 29% of firms that had experienced an unsuccessful export venture cited inability to obtain payment as a cause of failure. These figures highlight the difficulties that many exporters face in securing cross-border payment, and perhaps suggest scope for new and existing exporters to investigate the use of credit insurance as part of a comprehensive export strategy. In addition, a commonly cited reason for firms choosing not to export is a fear of the unknown. Credit insurance can help to overcome this by adding greater certainty to this very important aspect of exporting. Many smaller exporters do not use, or are unaware of, the existence of credit insurance. For example, a recent Lloyds Bank Commercial Service survey[3] of companies with turnover of up to £100 million found that only 14% of exporters used credit insurance.

Credit insurance can have additional benefits for policyholders, such as access to substantial databases of information on overseas buyers. Exporters may also find that credit insurance improves their access to export finance, since banks are likely to derive greater comfort from the value of insured receivables in an exporter's balance sheet. But as mentioned above, smaller exporters are often less able to devote resources to credit management. So before banks provide additional finance facilities, they will need to be fully satisfied that a firm is able to manage its credit insurance policy.

The development of schemes specifically tailored for smaller exporters has tended not to be particularly remunerative for credit insurers, for three main reasons:

- the start of any policy involves an upfront cost in addition to continuing operating costs for the insurer. Most of these costs do not reduce proportionately in line with insurable turnover;
- smaller exporters often have insufficient resources or expertise to enable them to manage their debtors as effectively as larger exporters. As a result, the claims ratio for smaller exporters tends to be higher than the average for all exporters; and
- the combination of the above has meant that the appropriate premium for smaller exporters has needed to be set at a level that exposed the insurer to the risk of adverse selection—the exporters willing to pay high premiums have tended to be those that were expecting to claim on a more frequent basis, with those less likely to claim tending not to take out insurance.

Recently, however, some insurers have managed to reduce the costs of providing services to smaller exporters with simpler policies and lower administration costs, and a number of new products from the major credit insurers are aimed specifically at smaller exporters. A challenge for credit insurers is to raise awareness of their products and of these improvements, in order to overcome ingrained perceptions of credit insurance as an expensive and scarce service for smaller exporters. Some responsibility for increasing awareness of the benefits of credit insurance must also lie with those involved in advising smaller exporters.

Risks arising from foreign exchange movements

The exchange rate risks facing exporters are significant, as even major currencies can move sharply against one another during the 60–90 days' credit period that exporters commonly allow. Exporters have faced a considerable strengthening of sterling since the second half of 1996. Setting prices and receiving payment in the buyer's currency

(1) Smaller firms also tend to have less influence over buyers than their larger compatriots do.
(2) British Chambers of Commerce (1997), *op cit*.
(3) The survey was undertaken in June 1997 by Lloyds Bank as part of its *Business in Britain* economic review.

has the advantage to the exporter that the product should appeal more to the buyer. The disadvantage is that the exporter rather than the buyer bears the exchange risk. For example, a UK exporter signing a sales contract on 23 April 1997 worth DM 56,000 would have been able to convert this to £20,000 had he received payment on the day. But if the exporter had granted a credit period and received payment three months later, the same Deutsche Mark receipts would have yielded only £18,000. If the exporter had been working to a 10% profit margin, his profit would have been eliminated.

There is evidence that larger firms are more active in taking measures to protect themselves against currency risks. For example, a NatWest business survey carried out in mid 1997[1] found that larger firms taking part in the survey made greater use than smaller firms of each of the suggested measures. A survey by Barclays Bank[2] has suggested that fewer than half of smaller exporters protect themselves against currency exposure. It is unclear whether this reflects a deliberate choice by smaller exporters or lack of awareness of products.

Exporters can use a number of products to reduce the uncertainties arising from foreign exchange rate movements, including forward foreign exchange contracts, foreign exchange options and opening a currency account with a bank. Some of the more sophisticated products that banks provide may be targeted mainly at larger customers, because of their complexity or high upfront costs. But some hedging products are potentially of great benefit to smaller exporters. Forward exchange rates are a good example, because they are not especially complicated and banks are often able to offer attractive rates even on smaller transaction amounts (for example, £10,000 and above) by batching smaller transactions. So there may be some scope for advisers and providers to ensure that smaller exporters are made fully aware of products, and of the advantages and disadvantages of each.

To some extent these findings are unsurprising, because larger firms are likely to have more resources to identify, understand and manage their currency risks. Larger firms are also more likely, by virtue of their size and complexity, to have the scope to offset parts of their cross-currency cashflows against one another. Smaller exporters may have few—if any—natural offsets, and are less likely to be able to take advantage of intra-group hedging, which is an important (and often cost-efficient) way of managing foreign exchange risk.

Single currency

The European Union is the key market for British firms currently exporting.[3] However, a firm's size appears to have an impact on where it prefers to trade. Traditionally, smaller firms have been more likely to export to Europe than to other parts of the world, attracted by the proximity and fewer barriers to trade. Of small businesses with turnover of less than £1 million, 88% regard the European market as important for their export activities. This preference is less pronounced for larger companies, which are more attracted to the North American market and the Middle East.[4]

The level of preparation for the single currency among smaller businesses generally appears to have been limited—external consultancy and IT resources are already under pressure from issues stemming from the Year 2000 problem. Businesses may also be unsure about what exactly is required from them. One survey suggests that 65% of smaller businesses have made no plans to deal with EMU.[5] It is unclear, however, from survey evidence whether businesses that export are further ahead in their preparations for the single currency. According to another source, 61% of exporting businesses with turnover of up to £1 million, and 59% of those with turnover of £1–10 million, have made no plans to deal with EMU.[6]

There is no room for complacency for UK firms involved in the financial markets of, or exporting directly to, countries that will adopt the euro from the start. Their competitors in those countries are actively preparing their businesses for the new environment; some companies have already announced that they will prefer to deal in euros from 1999 onwards. Many smaller UK firms are likely to be either suppliers or subcontractors to such firms; a survey of 3i companies[7] suggested that 30% of firms employing fewer than 19 staff, and 43% of firms employing between 20–49 staff, produce goods that are sold to other UK companies for subsequent export. The importance of the euro as a major international currency may mean that some smaller firms may experience more pressure to invoice and accept payment in euros than they now do to handle existing foreign currencies. This would mean bearing increased foreign exchange risk or, in some cases, bearing exchange risk for the first time. Such firms will need to prepare themselves to manage this extra risk.

Response to the report

This article has summarised the findings of the Bank's research into the issues faced by smaller exporters. The initial findings were presented at the Governor's annual seminar on finance for small firms in January 1998, alongside the Bank's fifth annual report on finance for small firms, and were discussed by a large group of senior representatives from the major finance providers, small firms representative organisations, academics and

(1) NatWest (1997), *NatWest Triannual Survey of Exporters* (Vol 5, No 2).
(2) Barclays Bank (1996), *op cit*.
(3) This section draws partly on *Practical Issues Arising from the Introduction of the Euro*, a guide prepared by the Bank. Copies may be obtained from Public Enquiries Group, Bank of England, London EC2R 8AH (tel 0171–601 4878; fax 0171–601 5460).
(4) Barclays Bank (1996), *op cit*.
(5) Barclays Bank (October 1997), *Barclays Business Banking Survey*.
(6) Major Issue Limited (1997), *op cit*.
(7) Bannock Consulting (November 1997), *3i Enterprise Barometer*.

Government officials. Seminar participants welcomed and endorsed the Bank's conclusions, emphasising the mutual responsibility of finance providers and smaller exporters in maximising export market opportunities. During 1998, the Bank will continue to monitor these developments through its continuing work on small firms.

The New Lady of Threadneedle Street

*The **Governor**[1] reviews the new framework for the governance, finances and functions of the Bank set out in the Bank of England Bill and the Memorandum of Understanding agreed between the Bank, the Financial Services Authority and the Treasury.[2] He concludes that this new framework sets out the functions of the Bank more clearly than ever before, defining its responsibilities, the powers to exercise those responsibilities, and the lines of accountability to the Government, to Parliament and to the public at large. The Bank remains a bank, as it always has been, at the heart of the financial system, but it now has a more precise framework for its operations, which is more appropriate to modern times.*

At some point in the next few months the Bank of England will receive a new Charter. The occasion will lack the ceremonial that accompanied the grant of our first Charter in 1694, when the Governors and Directors gathered in a solicitor's office in Lincoln's Inn Fields and swore oaths of allegiance to the King and of fidelity to the Company of the Bank of England. The Charter itself will be a typescript bound with red ribbon—quite unlike the massive illuminated manuscript of the original Charter displayed in our Museum. As a milestone in the Bank's long history, this new Charter is almost as significant as its first; and taken together with the new Bank of England Bill currently before Parliament, it foreshadows a rebirth of the Bank—the New Lady of Threadneedle Street.

Just four days after taking office last May, the Government announced its intention of giving the Bank immediate operational independence in relation to the conduct of monetary policy. A fortnight later, the Government announced a radical reform of the entire structure of financial services regulation in this country. This leaves the Bank with its traditional responsibility for maintaining the stability of the financial system as a whole, but transfers our present specific responsibility for banking supervision to a new, single regulator for the whole of the financial services industry. The Bill now before Parliament legislates for these changes insofar as they affect the Bank, and it also changes the arrangements for the Bank's internal governance and puts our finances on a statutory footing.

The new legislation does not fundamentally alter the Bank's *raison d'être*—our core purposes. The heart of it remains the maintenance of monetary and financial stability, as well as the promotion of the effectiveness and efficiency of the financial system. But it brings new clarity to our responsibilities, and it ensures greater transparency and public accountability in relation to all our activities. It is in fact a radical restyling of the Old Lady. And I should like to introduce you to the New Lady, and explain just what it is that the new-style Bank of England is seeking to do and how we are organised to manage our affairs.

Governance of the Bank

Let me begin at the top, with the changes to our governing body, the Bank's Court—or Board—of Directors. We already have a heavily non executive based board, consisting of myself and the Deputy Governor, four full-time Executive Directors, and twelve Non-Executive Directors. The new Court will be entirely non-executive apart from myself and two Deputy Governors. Court as a whole will set the Bank's strategy, determine its budget and—in the hallowed language of the 1946 Bank of England Act—'manage the affairs of the Bank'. In this sense we remain a unitary board. But under the present Bill, the sixteen non-executive members, as a group, will be given the specific duty of reviewing the performance of the Bank, including the conduct of its financial affairs and the procedures of the Monetary Policy Committee (MPC), satisfying itself, *inter alia*, that the MPC takes proper account of economic conditions in the various regions of the country. The prospective non-executive appointments to Court announced last week include increased representation from the regions, with members from Scotland, Wales and Northern Ireland. The non-executives will have their own chairman, appointed by the Chancellor. The first chairman will be Dame Sheila Masters of KPMG, currently Vice-President of the Institute of Chartered Accountants of England and Wales. The non-executives will be required to report on the Bank's performance to Parliament in a separate section of the Bank's *Annual Report*. The Bank's Remuneration and Audit Committees will, as now, be made up entirely of non-executive members of Court. All of this is in the spirit of the most modern principles of corporate governance.

The Bank's finances

A second important change relates to our finances. In some senses the Bank is like a conventional trading company: we have our own capital and balance sheet, we trade, we make profits, and we pay both tax and a dividend to our shareholder, the Government. But there are also parts of our public policy functions—relating to monetary and

(1) In the Vital Topic Lecture given at the Manchester Business School on Tuesday, 24 February 1998.
(2) See the article on pages 93–99.

financial stability—that, by their nature, cannot be directly charged out to individual beneficiaries of our activities and which we need to finance in other ways. Like other central banks, we therefore take unremunerated deposits from the banking system for this purpose, on which we earn income. Central banks generally levy this charge on the banking—or deposit-taking—sector specifically, because one of the essential services we undertake through our money-market operations is the provision of sufficient cash day by day to the banking system to allow it to balance its books. Without that, the banks collectively would need to hold more cash with the central bank in place of interest-bearing liquid assets than they do at present. These 'cash ratio deposits' in this country have hitherto been voluntary. The new Bill puts them on a statutory footing, with the rate of deposit to be determined by the Government.

The charge on the banks in this form has always been lower than in other major centres. This reflects the fact that the Bank of England is among the lowest-cost central banks in the world—with a fraction of the staff of the Bundesbank, the Banque de France or the Federal Reserve System, even when adjustment is made for differences in function. The charge will certainly now be significantly lower, to reflect *inter alia* the transfer of banking supervision to the FSA. But I recognise that whatever our costs, we need to be accountable for the resources that we use and the burden that we place on the banking system. We shall now be more accountable—to Court, to the Government that will set the charge, to the banks themselves and to the wider public through our *Annual Report*.

The Bank's functions

Below Court, the new Bank will be organised administratively into three main subdivisions, reflecting our responsibilities for monetary stability and financial stability, each under a Deputy Governor, and the third, specifically responsible for all forms of financial market operations, under a senior Executive Director. The central services of the Bank, including personnel and finance, will report to the Deputy Governor, Financial Stability, who will remain responsible for the day-to-day management of the Bank.

The main changes in the Bill affect our monetary stability and financial stability functions, which I shall discuss in turn.

Monetary stability

Let me start with monetary stability—although the new arrangements may be familiar to you, not least because they are in place already! The Chancellor decided last May that he would no longer exercise his powers to set short-term interest rates. Anticipating the Bank of England Bill, he set an inflation target and delegated the technical implementation of monetary policy to achieve that target to the MPC, newly-established within the Bank. The MPC has been operating independently in setting interest rates ever since.

This position is formalised under the Bill. With respect to monetary policy, the Bill defines the Bank's objective as the maintenance of price stability and, subject to that, as supporting the Government's economic policy, including its objectives for growth and employment.

The Chancellor will tell the Bank each year what precisely we are to understand by 'price stability'—he will, in other words, set a specific inflation target. He has in fact initially set a target of 2½% for underlying inflation, and although the Bill provides for him to set the target each year, the expectation is that the target is for the medium to longer term. That is the political decision. The task of achieving that target—the technical implementation of monetary policy—is then delegated to the Bank of England. The Government will no longer have the power to issue directions to the Bank in the field of monetary policy (except, in the terms of the Bill, in 'extreme economic circumstances'). Instead, the Bill will formally establish the MPC. This is to be made up of myself, the two Deputy Governors, two Executive Directors of the Bank—responsible respectively for the Bank's economic analysis and the Bank's financial market operations—and four outside members nominated by the Chancellor and having professional knowledge and experience relevant to the Committee's functions. It also includes a Treasury observer, who may participate in our discussions, and acts as a link between the fiscal and monetary authorities, but who may not vote in our monetary policy decisions.

The overriding purpose of these new arrangements is to improve the credibility of monetary policy, and to demonstrate to the world at large the Government's commitment to achieving and maintaining effective price stability. But it is important to understand that this objective is not simply an end in itself. The ultimate objective, of course, is growth of output and employment and rising living standards—there is no question about that. The argument is about means, not about ends. And effective price stability as the immediate objective of monetary policy is a necessary condition for growth to be sustained into the medium and longer term. The aim of achieving permanently low inflation is a deliberate attempt to break away from the boom-bust cycles of the post-war years, which led, as we can all remember, to a persistent ratcheting up of inflationary expectations and a steady erosion of long-term thinking and planning, saving and productive investment on the part of consumers and businesses. By pursuing price stability—by keeping aggregate demand consistently broadly in line with the underlying, structural, supply-side capacity of the economy to meet that demand—we hope to be able to moderate, rather than aggravate, the cyclical swings in output and prices, and to ensure that growth is sustained in the medium term, and is then greater in the long term than it would otherwise be.

The operation of the MPC

That then is what the MPC is trying to do. Let me say a word about our procedures.

On the Friday before our regular monthly decision-taking meeting, the MPC members are given an intensive, all-day briefing by the Bank of England's professional staff on all the latest relevant data and on the staff's analysis. This includes real economic and financial, statistical, anecdotal and survey information and analysis, comparison with the work of outside analysts and commentators, and, importantly, input from our twelve regional Agents, who are in regular contact with all sectors of economic activity across the country.

The (currently eight) MPC members, alone with only a small Secretariat, then reconvene on the following Wednesday afternoon to identify and discuss the key issues and any tactical considerations, before meeting to take and announce their decision the following morning.

This process of regular and systematic assessment, based on the economic and financial data, is unimaginably different from the erratic reaction to financial market disturbances that characterised the conduct of monetary policy too often in the more distant past. And the reflective, interactive debate within the MPC is very different too from the sometimes exaggerated advocacy of a particular viewpoint that inevitably crept into the 'Ken and Eddie show', when the Bank usually had at most an hour in which to persuade a sometimes reluctant Chancellor! The present arrangements allow us to explore, without initially taking hard positions, alternative possible interpretations of the data and their implications; and those discussions capture far better than before the uncertainties inherent in the conduct of monetary policy. It is, I think, how monetary policy really should be made.

Transparency and accountability

With operational independence comes—quite rightly in my view—even greater transparency and public accountability.

The minutes of the two-day meeting at which that decision is taken, together with a summary of the information presented by the staff, are published in the week after the following meeting. Those minutes also record the individual votes of each member of the Committee.

Beyond this, we publish a regular assessment of monetary policy—including a forecast of inflation for the two-year period that we believe is relevant, given the lags between policy actions and inflation outturns—in the Bank's quarterly *Inflation Report*. And the Treasury Select Committee of the House of Commons regularly summons me and other members of the MPC to give evidence on the basis of these *Reports*.

Finally, the Government has made it a requirement that if we miss the target of 2½% by 1% or more in either direction, the Committee must write an open letter to the Chancellor, explaining why, how long we expect to stay adrift from the target, and what we intend to do about it. These arrangements, taken together, provide a framework of transparency and accountability that, as far as I am aware, goes far beyond any that applies elsewhere in the world.

Public understanding of what we are trying to do and why—even understanding that the conduct of monetary policy is not a precise science, but rather a matter of balancing risks—is crucial to our success. And transparency and public understanding should, by influencing public expectations, reduce the costs of maintaining low inflation.

But of course, we need broad shoulders. As you know, the minutes of our January meeting, published a fortnight ago, revealed that the MPC was for the first time divided in its policy decision. That inevitably led to an excited and over-simple categorisation of individual members of the Committee as either hawks or doves. In reality, the division between us was very narrow, reflecting the fact—now acknowledged by most outside commentators—that the decision as to whether or not we shall need to raise interest rates moderately further, sooner or later, is very finely balanced. I hope this is a situation that we shall get used to. I would expect the professional experts on the MPC to agree quite easily when monetary policy is clearly off track, but I would equally expect them to disagree as often as not at the margin, when we are there or thereabouts. As it is, I was actually encouraged by the reaction of many of the more thoughtful commentators, who, in the circumstances, recognised that it was a reflection of a grown-up process that we could publish a division within the Committee and the reasons for it without generating significant market disturbance. In this sense too, I think it likely that once the new arrangements are properly bedded down, they will be seen to be a very considerable advance on what has gone before.

Financial stability

Let me turn now to the Bank's second core purpose, the maintenance of financial stability.

On the same day that the Bank of England Bill was introduced into Parliament, the Chancellor launched the new Financial Services Authority, the FSA, which will become responsible for the authorisation and regulation or supervision of in effect all forms of financial services activity in the United Kingdom.

This is an extraordinarily bold and radical step, not attempted on anything like this scale in any other developed financial centre, and the experiment is being watched with great interest by other central banks and regulators from around the world.

But there are very strong reasons for moving away from the traditional model of a separate regulator for each different type of activity—banking, securities, insurance and so on.

Financial innovation and globalisation, driven by an interactive process of new information technology, competition and deregulation, are, unquestionably,

progressively blurring the traditional boundaries between different forms of financial intermediation. So regulation based on particular categories of institution has increasingly become overlaid by functional regulation. That has made the whole regulatory structure increasingly complex, both for the regulated firms and for the public at large.

It has made it increasingly complex for the regulators too! There are no fewer than nine separate regulators joining the FSA. The new organisation may look big and complicated, but I have to tell you that the task of co-ordinating the interests and responsibilities of all those separate regulators, across the business of an increasing number of multi-functional groups, was threatening to become bigger still. Firms with complex financial services activities here in the United Kingdom welcome the idea of a 'one-stop regulatory shop', where at present they have to deal with a bewildering array of different regulators for different purposes. A single, over-arching regulator will mean a clear line of responsibility and accountability, and it should also help to bring about greater consistency of regulatory approach.

In relation to banking supervision in particular, there seem to me to be real advantages in separating out the central bank's responsibility for the stability of the financial system as a whole from the supervision of individual banking institutions. In the latter case, we have seen during the twenty or so years that the Bank has had statutory responsibility for banking supervision how the public policy interest in our activities has increasingly focused on consumer protection. That is not at all a natural habitat for a central bank. It may indeed produce a conflict of interest if it causes the central bank to become over-protective of individual institutions, giving rise to moral hazard in the system as a whole.

We were conscious of these tensions in the 'old' Bank, although we found effective, informal ways of reconciling them.

There are therefore powerful reasons for including banking supervision among the responsibilities that are to be transferred to the FSA. The trick will be to ensure that the Bank's capacity to identify and address emerging 'systemic' financial problems—that is, those that may have a significantly disruptive effect on the financial system as a whole, rather than only on individual financial institutions—is not damaged in the process. And the key to that is that the Bank and the FSA should both have a clear understanding of their respective responsibilities, and that they should continuously work very closely together to ensure that they keep sufficiently out of each other's hair—without letting things disappear between the cracks!

Our relationship was formalised during the summer in a Memorandum of Understanding (MoU) agreed between the Bank, the FSA and the Treasury. This defines our respective responsibilities very carefully, and provides for both the Bank and the FSA to exchange information freely and to consult where our interests interact or overlap. It helpfully establishes a high-level Treasury-Bank-FSA Standing Committee, which will provide a forum where a common position can be developed in relation to emerging problems. And as a further means of ensuring that we are aware of each other's concerns, the Chairman of the FSA will become a member of Court, while the Deputy Governor responsible for financial stability will serve on the FSA Board. In the end, the success of these arrangements will depend upon the working relationships between our respective staff at all levels, and it is helpful in this context that our own supervisory staff are moving to the FSA, which will help to ensure that we establish the right working relationships from the beginning. But we shall need to work at these relationships continuously to ensure that they are embedded into the future.

Systemic risk

Relieved of our responsibility for supervising individual banks—and it is a considerable relief I can tell you—the 'new' Bank can concentrate its energies on detecting and limiting systemic financial risk. That is a responsibility of central banks everywhere, and because it involves close monitoring of economic and financial market developments—nationally and internationally—it fits more naturally and comfortably alongside our responsibilities for monetary stability. This responsibility will be overseen by a new, internal, Financial Stability Committee, which in effect parallels the role and procedures of the MPC.

What we specifically mean by 'systemic risk' is the danger that a failure of one financial business may infect other, otherwise healthy, businesses. This could happen in either of two ways: first, through the direct financial exposures that tie firms together like mountaineers, so that if one falls off the rock face, others are pulled off too; and second, by contagious panic that sweeps everyone off the mountainside like an avalanche. The dangers still relate particularly to commercial banking businesses, because banks are still at the centre of payment and settlement systems, and they are still relatively heavily engaged in the maturity transformation of liquid liabilities into less liquid assets as an important part of their core activity. But it is of course clear, in today's world of global finance, that disturbances with the capacity to inflict systemic financial damage and associated economic disruption can originate outside the commercial banking system.

There are certainly things that we can do to reduce the risks—to try to prevent the first climber from falling off the rock face, or to avoid kicking the rock that starts the avalanche.

A key condition, obviously, is maintaining macroeconomic monetary stability. That goes without saying. It gives everyone on the mountainside much the best chance of coming down unscathed!

We can also turn the new information technology to our advantage, using it to make the linkages between the

climbers safer, by reducing the risks in payment and settlement systems. A good deal of our attention on the financial stability side of the Bank is focused in this direction.

And we can satisfy ourselves—through micro-prudential supervision and regulation of individual financial businesses—that the climbers are properly trained and equipped, and fully conscious of the risks. This now, of course, becomes the responsibility of the FSA.

Intervention

But however much we try to prevent accidents, we need to be prepared for them to happen. The Bank's concern then becomes to ensure that they do not spread to other parts of the financial system.

This may involve providing liquidity on penal terms, outside the central bank's normal money-market operations, against high quality assets, to a particular institution that does not want to appear in the market because it is under a cloud. Or it may mean standing between an intermediary and the market-place, to facilitate payments or settlements that might not otherwise be completed, which could then cause gridlock. Such involvement would not normally involve the central bank in significant financial risk.

But in more difficult—and mercifully rare—situations, where the failure of one institution could bring down other, otherwise viable institutions, the central bank may need to consider acting in the role of 'lender of last resort' to the failing institution, against poorer quality, less liquid assets, which might expose the central bank to financial loss.

The key phrase here, of course, is where its failure 'could bring down other, otherwise viable institutions'. The central bank safety net is not there to protect individual institutions from failure. It is there to protect the stability of the financial system as a whole. In the absence of a serious systemic threat, the right course would normally be to allow the institution to fail. If any institution felt that it could rely on being bailed out if it ran into real difficulty, that too would introduce 'moral hazard', encouraging excessive risk-taking and financial fragility in the system as a whole. There can be nothing automatic about 'lender of last resort' assistance, and when it is provided, it should always be on the most onerous terms that the borrower can bear; it is not provided to protect the shareholders, who should be looked to first. Nor is it there to protect the management. 'Lender of last resort' assistance, even when it is extended by the central bank, involves the commitment of public money—ultimately taxpayers' money—and it needs to be justified in terms of the damage that would otherwise result to the financial system and to the wider economy. For this reason, the MoU, to which I referred earlier, provides that the Bank should always seek the Chancellor of the Exchequer's explicit prior approval wherever circumstances allow, or at least his tacit prior approval in emergencies, and where the risks are manageable in relation to the size of our capital. These arrangements ensure that we have the capacity to act to limit systemic damage where that becomes necessary; but they rightly make such intervention subject to appropriate authorisation and accountability, by and to both the Chancellor and Court.

Conclusion

Mr Chairman, we have come a long way in the Bank, even since I first joined it some 35 years ago. We tended at that time to explain our role as being the 'banker to the Government and banker to the commercial and other central banks'. And the truth is that our responsibilities, and the extent of our authority, were never very clear.

Today we remain a bank, as we always have been, at the heart of the financial system, as indeed we must in order to carry out our wider functions. But the Bill, taken together with the MoU that I have described, sets out those wider functions much more clearly than ever before, defining our responsibilities, our powers to exercise those responsibilities, and our lines of accountability to the Government, to Parliament and to the public at large. This is a much more precise framework for the Bank's operations, but one that I am convinced is more appropriate to our modern times.

I was delighted to learn last week that I am to be allowed to continue to walk out with this attractive New Lady of Threadneedle Street for the next five years, and I look forward to the challenge of carrying through the very positive changes now being made to the role and structure of the Bank.

Exchange rates: an intractable aspect of monetary policy

*The **Governor** recalls[1] international approaches to exchange rate management in recent decades: he notes that international dialogue has produced a high degree of consensus on broad approaches to economic management. The **Governor** then outlines the monetary policy dilemma posed by the current strength of sterling against the other European currencies.*

Throughout his heyday, Roy Bridge operated within the context of the fixed, but ultimately adjustable, exchange rate arrangements that were at the heart of the Bretton Woods system for more than 25 years after the Second World War. Those arrangements were, in an important sense, a response to what were seen as competitive, 'beggar my neighbour', exchange rate practices, aimed at exporting unemployment during the inter-war depression, just as the GATT (now the WTO) was a response to predatory trade practices. The IMF encouraged member countries—particularly countries with external deficits needing to borrow from the Fund—to pursue consistent, responsible, domestic macroeconomic policies designed to maintain agreed exchange parities, with provision for parity adjustments only as a last resort in cases of 'fundamental disequilibrium'—usually where macroeconomic discipline had failed.

Books have been written on the causes of the breakdown of these arrangements, and I do not propose to rehearse all that this evening. One important factor was the progressive dismantling of direct controls—including a relaxation of controls on international capital flows—which, though it certainly added to the potential macroeconomic benefits from international economic activity, undoubtedly made a fixed exchange rate system inherently more difficult to sustain. That development, of course, has gone very much further since then. But in addition, countries came to attach different priorities to inflation and unemployment as the immediate objective of policy, and there was disagreement about how the burden of domestic policy adjustment should be shared between countries with surpluses and deficits, including the United States, the country of the anchor currency. The fixed exchange rate structure eventually collapsed under the weight of outflows from the US dollar, which, under the parity system, had to be taken into other countries' official reserves, on such a scale that the dollar's official convertibility into gold had eventually to be formally suspended. This occurred in 1971, quite soon after Roy Bridge had retired from the Bank of England, though I do not suggest any direct cause and effect!

Efforts to rescue the fixed but adjustable exchange rate system in the early 1970s were unsuccessful. This was partly because of the global economic uncertainties caused by successive hikes in the world oil price. But more fundamentally, those efforts failed because the industrial countries could not in the end agree upon structured arrangements for allocating the burden of domestic policy adjustment between them, in a way that would sustain exchange rate stability without creating either an inflationary or deflationary bias in the world economy as a whole. And we have lived ever since with an untidy patchwork of exchange rate arrangements, ranged along a spectrum from free floating at one end to total fixity at the other, which vary both from country to country and from time to time.

The major currencies—the dollar, the yen and the major European currencies together—and a number of others have floated against each other. For much of the time, the float has been relatively 'clean', with the exchange rate essentially a residual outcome of the respective domestic policies. Periodic attempts have been made—unilaterally, or through concerted intervention or co-ordinated policy action—to manage the float, with, it must be said, varying degrees of success.

Many smaller economies have chosen to peg their currencies, unilaterally, to a major currency or to some sort of currency basket—sometimes adjusting the peg quite regularly in line with relative inflation, or sometimes only as a late resort.

Within Europe, there has been the ERM, which is a lineal descendant on a regional basis of the fixed but adjustable exchange rate system of Bretton Woods, although with the important difference that it has been seen increasingly as the precursor to monetary union and a single European currency. The decision on that is now, of course, just a few weeks away.

And a few, mostly relatively small, economies have chosen to lock their currencies to a major currency through a currency board arrangement.

In most of these cases, these various different arrangements have worked perfectly well for a time, often for quite long periods of time. But equally, they have, I think, all suffered

(1) In the annual Roy Bridge Memorial Lecture delivered on Wednesday, 1 April 1998.

from periods of tension or crisis. It would take a brave man—or a foolish one—to suggest that there is a universal 'best buy'!

In principle, floating allows countries to pursue independent macroeconomic policies suited to their domestic needs—in terms of the fiscal-monetary policy mix, for example, or to accommodate divergent cyclical positions or the differential impact of external shocks. But floating can certainly result in periodic disorderly markets, and in wide fluctuations in both real and nominal exchange rates. That can in any particular instance be very disruptive to private international business activity. It can also generate a more lasting environment of exchange rate uncertainty, reducing the potential macroeconomic benefits of international trade and investment.

Conversely, at the other end of the spectrum, exchange rate fixity can certainly produce real benefits in terms of nominal exchange rate certainty—though real exchange rates of course can still vary. But these benefits have a cost, the cost of giving up substantial national discretion over domestic policy. Whether the single monetary policy will prove over time to be broadly appropriate for the domestic policy needs of all the participating currencies is, of course, the $64,000 or ¥8½ million question in relation to the euro. Broadly speaking, this trade-off—between relative exchange rate stability and domestic policy independence—applies at intermediate points along the spectrum, though the problem of finding a workable exit strategy, and a natural reluctance to accept the domestic policy implications of a particular exchange rate objective, can on occasion lead to the worst of both worlds.

Where countries choose to be along the spectrum is influenced by a number of factors—economic size, for example, and the extent to which their economies are integrated with the outside world, either generally or in relation to particular trading or investment partners. It may be influenced, too, by historical experience, or by political factors, including how far an external anchor is seen as a necessary support to domestic macroeconomic discipline, which some countries would see as putting the cart before the horse. It is, as I say, difficult to identify a universal best buy. But wherever you choose to be on the spectrum, you cannot simply divorce your domestic economic policy from the external context. You cannot, in fact, opt out of the global economy. Even with this patchwork of different exchange rate arrangements, and without any very clear or generally applicable adjustment rules, we all continue to have an important interest in each other's behaviour, and a collective interest in the resulting pattern of exchange rates. Within the present international monetary system, those interests are pursued at the international level through the process of surveillance, dialogue and persuasion within the G7 or G10, the BIS, WP3 at OECD, and through the various mechanisms of the IMF. At the regional European level, exchange rates remain a matter of common concern whether countries are in or out of monetary union.

The good news is that through that process of dialogue, we have in recent years achieved a remarkable degree of consensus—around the world, but also within Europe—on broad approaches to economic management. Varying degrees of emphasis on short-term demand management—to exploit the short-term trade-offs between growth and stability, and between unemployment and inflation—have largely now given way to general recognition that there really is no trade-off in anything other than the short term. The emphasis now virtually everywhere is on 'macroeconomic stability as a necessary condition for sustainable growth'—the mantra not only of central bankers but also of Finance Ministers. Within macroeconomic policy, there is also widespread agreement on the respective roles of fiscal and monetary policies. Fiscal policy is increasingly directed at the longer-term sustainability of the public sector financial position; while monetary policy is directed at maintaining price stability, not simply as an end in itself, but as a measure of the balance between demand and the underlying capacity of the economy to meet that demand—a measure of economic stability in that broader sense.

I do not pretend to you that we have suddenly come across the Holy Grail! The consensus I describe has taken a long time to develop, it is still less than complete, and it is not easy, technically, to apply in any particular situation. We have also learned that, vitally necessary though it is, macroeconomic stability on its own is not sufficient. It was not sufficient to avoid the financial bubble and its continuing, depressing aftermath in Japan, for example. It has not been sufficient to ensure acceptable levels of employment within Europe in the absence of structural, supply-side flexibility, especially in labour markets, and without greater progress on this front, some people in financial markets question whether macroeconomic discipline will in fact be sustained. And it has not been sufficient to ensure financial stability in some countries in Asia, in the absence of more transparent and effective financial structures for allocating capital productively, with dramatic impact on exchange rates, as we have seen.

But if it is not the Holy Grail, the international policy consensus in favour of macroeconomic stability is at least a start. The consistent pursuit of domestic stability, rather than exchange rate stability, has necessarily become the focus of IMF advice to many of its member countries, and it is the benchmark for much of the wider international debate. It has in fact produced unusually low inflation—both actual and prospective—throughout the industrial world and beyond, substantially reducing inflation differentials, which have typically been a principal source of exchange market pressures in the past. Persistently pursued, it holds out the prospect of greater exchange rate stability in the medium and longer term. But given the other potential sources of exchange rate volatility it would nevertheless seem premature to contemplate a return to more structured exchange rate arrangements for the international monetary system as a whole.

Against that background, let me now turn to consider the exchange rate in our own UK policy context.

Apart from a brief flirtation with the European 'snake' in the spring of 1972, we have made two relatively short-lived attempts at managing the exchange rate since the breakdown of the Bretton Woods framework of fixed parities. Neither experience was particularly encouraging.

The first was in 1987/88, when for a period monetary policy was in effect directed primarily at 'shadowing the Deutsche Mark'. The idea essentially was that, just as other major European currencies were successfully aiming to hold inflation down by anchoring their currencies to the Deutsche Mark within the ERM, we too could lock in to Germany's enviable record of sustained low inflation even without actually joining the mechanism. This approach was never formally adopted or announced, but it became clear in practice that the exchange rate for sterling against the Deutsche Mark, which had fallen very sharply from DM 4 in July 1985 to DM 2.74 in early 1987—before the May Election—was not subsequently to be allowed to recover to above DM 3, even though this meant a big increase in our foreign exchange reserves, and cutting interest rates—from 11% to 8½%—during 1987, in order to prevent it. I do not suggest that this was the only influence on policy during this period, which covered the 1987 stock market crash. But it was certainly an important influence. It had the effect of accommodating the inflationary consequences of the earlier depreciation—indeed of aggravating that effect by stimulating domestic demand.

By the time the exchange rate cap was lifted in the spring of 1988, the boom was already entrenched. Interest rates had to be pushed back up—to 15% by the autumn of 1989—to bring the situation back under control, producing the inevitable and very painful bust of the early 1990s.

Our second attempt at managing the exchange rate followed in October 1990, when we formally entered the ERM. An important non-monetary consideration at the time was that the United Kingdom would have little influence on the outcome of the imminent European Inter-Governmental Conference if we were not in the ERM. The monetary question was essentially whether joining the ERM in the circumstances at the time, and necessarily in practice at close to the prevailing market exchange rate, was a reasonable risk.

In fact, at the time of our entry into the ERM, our policy needs appeared to coincide with those of our partners. The economy was responding to the high, though falling, level of interest rates and the rate of inflation was also falling. In principle, it seemed possible that with the enhanced policy credibility that ERM membership was expected to bring, we could hope to complete the domestic economic stabilisation with lower interest rates than otherwise, and so at less cost in terms of loss of output.

That is not how things turned out. In the event, reunification meant that Germany needed to maintain a tight monetary policy, when the domestic situation in a number of other ERM countries, including ourselves, required an easing of monetary policy. The results of this exceptional and unforeseen divergence in the domestic policy needs of countries whose currencies were pegged together through the ERM are certainly familiar to you.

It can be argued that the problems within the ERM—including our own problem—could have been avoided by timely adjustment of the relevant parities. And so in principle they could. But in practice, it is never as easy as that makes it sound. By the time the developing tension became apparent, the Deutsche Mark anchor was already established as the absolutely key element of the monetary policy framework in other member countries—on which their anti-inflationary credibility crucially depended. To give that up, without a real fight, would have imposed substantial economic costs in the form of loss of anti-inflationary credibility. These costs might have been less if it had been possible to agree upon a unilateral Deutsche Mark revaluation or upward float—making it clear that the root of the problem lay in the exceptional circumstances of German reunification. But that approach could not be agreed.

We were then confronted with a situation in which raising interest rates made no economic sense in terms of our domestic conditions, and so we sought to maintain the parity through intervention, in the hope that the pressures in Germany would ease. In the event, they did not ease soon enough, and after very heavy intervention and a last ditch rise in interest rates, we had no choice but to withdraw from the ERM—on 16 September 1992, Black or White or even Grey Wednesday, depending on your point of view.

These episodes apart, the pound has floated more or less continuously since 1971. But floating has not been without its problems either—in fact it has been a roller-coaster ride—with obvious overshooting on either side.

Against the dollar, sterling fell by nearly 40% from 1972–76; it rose by nearly 50% during the next four years or so; and then fell back again by nearly 60% in the mid 1980s, to close to parity with the dollar. It then trended upwards again—by more than 80%—as the dollar weakened against other currencies generally, before we fell out of the ERM in 1992.

We have not been much more stable against the Deutsche Mark—down 50%, up 25%, down more than 40% in four or five year waves to 1987, although then a good deal steadier through the ERM period until 1992.

After the initial fall of around 20% on leaving the ERM, sterling was in fact remarkably stable against both the dollar and the Deutsche Mark until the autumn of 1996. Since then, it has risen relatively modestly, by around 10% against the generally stronger US dollar, but by about 35% against the Deutsche Mark.

Sterling's strength against the Deutsche Mark and the other core European currencies, in particular, creates a real dilemma for monetary policy.

The UK economy, after six years of relatively steady growth and low inflation, is now operating close to either side of full capacity—nobody knows precisely. Domestic—particularly consumer—demand has, at least until recently, been growing at a rate that cannot plausibly be sustained for long, if inflation is to be kept to our 2½% target rate. The dilemma in this situation is that tightening monetary policy to moderate the growth of domestic demand is liable to put further upward pressure on the exchange rate, when the internationally exposed sectors of the economy are already taking a real battering from the strength of the exchange rate, and now also from the economic effects of Asia's financial crisis.

The situation is all the more difficult because we do not pretend to understand exactly why sterling has appreciated so far against the European currencies. Some part of it is certainly a reflection of our relative interest rates, reflecting our relative cyclical positions. But we cannot explain very much of the appreciation in this way—either its timing or its extent.

Now you all can no doubt explain the rest of it—and I would be happy to receive your answers, on a postcard please, addressed to me at the Bank.

Some of my market contacts tell me that it has to do with perceptions about the euro. The immense efforts that have had to be made nearly everywhere on the Continent to meet the Maastricht budget deficit convergence criterion, have—they say—distorted the fiscal-monetary policy mix. And more fundamentally, there is a nervousness that a broad euro will be a weak euro, because the European Central Bank will somehow be more likely to be subject to political pressures.

If these factors are indeed important, then they seem likely to fade. Activity is now picking up on the Continent. And people will come to appreciate both the strength of the protection of the ECB's independence written into its statutes, and the determination of the ECB's Governing Council to establish the euro from the beginning as a sound and credible currency. This could start to happen quite quickly once the appointments to the ECB Executive Board have been made and the ECB is established.

In the meantime we are left with our dilemma.

In seeking to address it, we take full account of the disinflationary impact of the strengthening exchange rate itself. This includes both its direct effect in reducing the level of retail prices—which has not yet fully come through—and the reduction in aggregate demand resulting from the now rapidly deteriorating external trade balance.

These effects are less than ideal in terms of the balance within the economy. They are nevertheless helpful, in that they give somewhat more time for domestic demand growth to moderate, as we expect that it will—in response to both the fiscal and monetary tightening already in the pipeline, and as the windfall effect from building society demutualisations abates. But it nevertheless remains, at the margin, a fine judgment whether domestic demand will in fact slow soon enough and fast enough to avoid inflation eventually picking up. That is the judgment that the Monetary Policy Committee will examine again next week.

Mr Chairman, the exchange rate is, to my mind, one of the most intractable aspects of monetary policy—as I have tried to explain this evening. There are times when we are damned if we try to manage it and equally damned if we do not. Whether it floats or whether it is fixed, it can at times come into conflict with domestic policy objectives—and now is such a time.

At the end of the day, it cannot make sense to sacrifice our objective of long-term domestic stability. That would expose the whole of the economy to the destructive effects of inflation—including the exposed sectors we were seeking to protect. We have to manage our way as best we can through this uncomfortable period while it lasts, until more sustainable exchange rate relationships are re-established.

Bank of England publications

Working Papers

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Monetary and Financial Statistics

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Financial Statistics Users Group seminar

In March 1997, the Bank of England and the ONS hosted a Financial Statistics User Group (FSUG) conference which was introduced by Mervyn King, Executive Director of the Bank of England. A full report of this seminar was published in July 1997; if you wish to receive a copy or would like to be on the mailing list of FSUG, please contact the Group secretary, Daxa Khilosia, Monetary and Financial Statistics Division HO-5, telephone 0171–601 5353.

Targeting Inflation book

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