CENTRAL BANK OF IRELAND

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Notes

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2. Unless otherwise stated, statistics refer to the State, i.e., Ireland exclusive of Northern Ireland.

3. Unless otherwise stated, amounts expressed in pounds (C) refer to Irish Pounds.

4. In some cases, owing to the rounding of figures, components do not add to the totals shown.

5. The method of seasonal adjustment used in the Bank is that of the US Bureau of the Census X-11 variant.

6. Annual rates of change are annual extrapolations of specific period-to-period percentage changes.

7. The following symbols are used:

e	estimated	n.a.	not available
p	provisional	. .	no figure to be expected
r	revised	—	nil or negligible
Q	quarter	f	forecast

8. As far as possible, data available at end-December 1998 are included in the Statistical Appendix (Section 3).

9. Updates of selected Tables from the Statistical Appendix concerning monetary and financial-market developments are provided in *Monthly Statistics* which is published on the first Thursday of every month. Data on euro and Irish-pound exchange rates, Irish Government bond yields and on the Irish equity index are provided daily on recorded telephone message (Telephone: 353 1 6716299).

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Editorial Note

This Quarterly Bulletin is the first to be published by the Bank since Ireland joined EMU on 1 January last. Consequently, several changes have been made to content and presentation, of which the most important are:

- An analysis of Irish economic, financial and policy developments which takes euro-area monetary policy and the single currency explicitly into account.
- A greater focus on Irish costs and competitiveness, especially in a European context.
- A major emphasis on the European economy — real and financial — in a global setting.
- Presentation of European monetary policy — in the formulation of which Ireland has an equal voice.
- Replacement of the Irish pound by the euro in text and tables — at the official exchange rate of euro 1 = IR£0.787564.
- The addition of euro-wide data in the Statistical Appendix. Other changes to the latter are described in the explanatory notes.

These changes will apply to future quarterly bulletins which may also, from time to time, carry other material emanating from the European Central Bank. In general, communication policy will be compatible with the Maastricht Treaty, the ESCB/ECB Statute and the Bank's own legislation.

In the past the Bank has published its Annual Report in the same volume as the Summer Bulletin. It has now been decided that in future the Annual Report will be published separately.

As far as the Monthly Statistics are concerned no substantial changes are envisaged at the present time.

Queries regarding the above can be directed to the Bank's website, www.centralbank.ie.

Comment

The Irish economy continues to perform remarkably well and the immediate outlook is good. Despite the various crises of the recent past and the threat of a slowdown in much of the world, economic growth remains strong. Inflation is below earlier expectations, with underlying inflation running at about 2 per cent., and employment continues to rise. However, Ireland's rapid growth, associated with low interest rates and very strong credit growth, carries a distinct threat of overheating. These and other issues are discussed more fully later. If the recent good performance in relation to growth and stability is to continue, it will be essential to maintain competitiveness over the foreseeable future.

Following the start of economic and monetary union (EMU) at the beginning of 1999, the eleven countries of the euro area are now in a highly-integrated economic environment. This is most evident in the area of monetary policy. The introduction of a single currency means that a similar level of money market interest rates prevails across the euro area. In the last weeks of 1998, wholesale rates here were reduced by more than 3 percentage points in order to converge to the norm for the euro area. Retail interest rates and bond yields are unlikely to converge fully, at least for some time, as these reflect local conditions in banking and differential credit risks.

The single currency gives an added dimension to the single market process in the euro area. The potential for intra-euro-area trade is greatly increased by the elimination of currency conversion costs and exchange rate risk and through more transparency of prices across the euro area. The European Union (EU) and the world generally have benefited from the great expansion of international trade, based largely on comparative advantage as well as much intra-industry trade, particularly in the EU. The adoption of the single currency holds out the prospect of further integration of the single market with consequential benefits for euro-area living standards.

Being one of the smaller euro-area countries and also one of the most open, as measured by the significance of exports and imports, Ireland should reap significant benefits in the new environment. The further lowering of obstacles to trade enables firms located in smaller countries to exploit economies of scale that would be denied them if confined largely to their own domestic markets. In order to avail of these opportunities, our economy must continue to be efficient and competitive. This embraces both price and non-price dimensions.

To ensure competitiveness the following conditions must be satisfied:

- the business climate must be right. At a macroeconomic level, a generally stable, low inflation environment is necessary in order to limit the uncertainty and arbitrary gains and losses that inflation imposes on investors;

- there must be an adequate reward for risk-takers; the expected profit from investment must be sufficient;
- there must be an appropriate, modern infrastructure – including transport and telecommunications – provided at prices that do not impair the ability of users to compete on foreign and domestic markets;
- the education and skills of the labour force and good social conditions are crucial to the attainment of high and improving living standards; and
- at the level of the individual firm, competitiveness pre-supposes a whole range of requirements – product development, research and development, technical efficiency, marketing expertise, after-sales services, etc. – to be successful.

The performance and competitiveness of the economy is also substantially affected by the evolution of costs, particularly wages. Over the past decade or so, wage developments here have generally been satisfactory. During this period, the nominal value of pay per employee has increased by 5 per cent. a year on average. This has implied real increases of about 2½ per cent. on average per employee. The restrained rate of wage growth, which was traded for reductions in high levels of taxation on labour income, facilitated average employment growth of about 2½ per cent. per annum. The strong growth in employment since 1993 in particular has been associated with a much increased domestic demand component in economic growth; before that, growth was mainly export-driven and was much less labour-intensive.

In general terms, the rewards of economic growth over the past decade have been spread across the economy. Employees have had improvements in living standards; employment itself has increased at a similar rate. The share of indigenous business profits in GNP was rather weak from the late 1970s until the mid-1980s; since then, this profit share has returned to the level of the 1970s, that is, to about 12 to 13 per cent. of GNP. Consumers have also benefited during this period of low inflation as there have been relative, and sometimes absolute, falls in the prices of high technology products in particular. This reflects high productivity, and growing demand for these products.

Real increases in pay should continue to take cognisance of the continuing low inflation environment both in the euro area and worldwide. They should also recognise the need to maintain a climate for increased employment. Although unemployment is currently below 7 per cent., the lowest level for many years, it can be reduced to lower levels. There is also the natural increase in the labour force of about 2 per cent. and there may also be net immigration as experienced in the last few years. Accordingly, employment must continue to increase significantly in order to absorb the flow of people into the labour force.

Recent developments in wages do present concerns. There has been a marked acceleration in some pay rates, especially in the construction sector. House prices are recording excessive increases, and there is abundant evidence that a growing number of income earners find it increasingly difficult to enter the housing market. If this situation is not

improved quickly, it will adversely affect pay developments, whether indirectly by deterring labour supply and mobility, or through a wage-push effect. In addition, there continues to be substantial upward pay pressure within the public sector. It is desirable that wage relativities develop in a harmonious way in different sectors of the economy. More generally, it is important — whether in relation to pay, public expenditure or taxation — that expectations remain within the bounds of what can be realistically attained.

This balanced approach would ensure that living standards and the employment rate in the economy will continue to improve, and that Ireland retains its attraction as a location for foreign direct investment. Monetary and exchange-rate policy in the euro area must be geared towards conditions in the area as a whole, and cannot cater for specific local circumstances, which may require a constructive response from the social partners.

Monetary Policy in Economic and Monetary Union

European economic and monetary union (EMU) came into effect on 1 January 1999 with eleven participating member states, including Ireland, sharing a common currency, the euro. Responsibility for monetary policy in the euro area resides with the Eurosystem[1], which comprises the European Central Bank (ECB) and the national central bank (NCB) of each of the participating countries. Monetary policy decisions are taken by the Governing Council of the ECB at their twice-monthly meetings. The Council has seventeen members including the President and Vice-President of the ECB, the other Executive Board members and the governors of the participating NCBs. Each member has an equal say in monetary policy decision making. The Governing Council of the ECB has made clear that monetary policy decisions will be based on developments in the entire euro area, rather than on specific regional or national developments.

The Treaty on European Union assigns to monetary policy in EMU the primary objective of maintaining price stability. The Governing Council of the ECB has defined price stability as a year-on-year increase in the Harmonised Index of Consumer Prices (HICP) of below 2 per cent. The Council has also decided on a monetary policy strategy which has two key elements. First, it has been decided to adopt a reference value for broad money supply growth. In December 1998, the Council adopted a first reference value for M3 growth of 4.5 per cent. The ECB will monitor developments in M3 against this reference value on the basis of three-month moving averages of twelve-month growth rates. Recent data suggest that euro area M3 growth has been close to the reference value. The second element is a broadly based assessment of the outlook for price developments and the risks to price stability in the euro area, using a range of economic and financial variables as indicators for future price developments. Taking these two elements into account, the Governing Council of the ECB decided to keep its key money-market intervention rate unchanged in the early months of 1999.

Framework for the Implementation of Monetary Policy

In order to achieve its objectives in relation to price stability and monetary growth, the Eurosystem has at its disposal an operational framework comprising monetary policy instruments and procedures. By use of its instruments, the Eurosystem can influence liquidity and interest rates in the euro area, which in turn impact on money and credit growth, economic activity and, ultimately, inflation. The implementation of monetary policy is conducted in a decentralised manner; accordingly all monetary policy operations with counterparties in Ireland are carried out by the Central Bank. A detailed description of the Eurosystem instruments and procedures is contained in the

[1]The Treaty on European Union does not contain this term, referring instead to the European System of Central Banks (ESCB). The Governing Council of the ECB has adopted the term 'Eurosystem' to denote the composition in which the ESCB performs its basic tasks. If and when all 15 EU member states participate in the euro area, the term Eurosystem will become a synonym for the ESCB.

publication *General Documentation on ESCB Instruments and Procedures* published by the ECB, September 1998.

The Eurosystem conducts open-market operations, offers standing facilities and requires credit institutions to hold minimum reserves. Open-market operations play an important role for the purposes of steering interest rates, managing the liquidity situation in the market and signalling the stance of monetary policy. The Eurosystem has five types of instruments for the conduct of open-market operations, the most important being 'reverse transactions' (applicable on the basis of repurchase agreements or collateralised loans). It may also use outright transactions, the issuance of debt certificates, foreign exchange swaps and the collection of fixed deposits. While open-market operations are initiated by the ECB – which also decides on the terms and conditions for their use – NCBs, including the Bank, are the intermediaries between the counterparties and the ECB. Standard tenders will normally be used for supplying liquidity through open-market operations, but provision is also made for quick tenders or bilateral procedures. The main refinancing operations are regular liquidity-providing reverse transactions with a weekly frequency and maturity of two weeks. The bulk of the refinancing of the financial sector will normally be provided by this means. In the first two months, liquidity was provided to counterparties via a fixed-rate allotment procedure. The allotment ratio (i.e., liquidity provided as a proportion of the amount bid for) remained below 10 per cent. for most of this period. On 22 December 1998, the Governing Council of the ECB announced the initial level of its **main refinancing rate** of 3 per cent., which was deemed to be a level consistent with the maintenance of price stability in the euro area over the medium term. This rate was unchanged in the first two and a half months of 1999.

The longer-term refinancing operations are liquidity-providing reverse transactions with a monthly frequency and a maturity of three months. In these operations, the Eurosystem does not intend to send signals to the market and therefore normally acts as an interest-rate taker. Fine-tuning operations are carried out on an *ad hoc* basis.

Experience to date shows that counterparties in Ireland have used both the main refinancing operation and the longer-term refinancing operations to obtain Eurosystem liquidity.

The Eurosystem operates two standing facilities for its monetary policy operations which aim to provide and absorb overnight liquidity, signal the general stance of monetary policy and provide a ceiling and a floor for overnight market interest rates. These standing facilities are available to counterparties on their own initiative subject to certain operational criteria. Counterparties can use the **marginal lending facility** to obtain overnight liquidity against eligible assets. The interest rate on this facility normally provides a ceiling for the overnight market interest rate. Counterparties can use the **deposit facility** to make overnight deposits. The interest rate on the deposit facility normally provides a floor for the overnight interest rate. At the start of monetary union, the marginal lending facility rate was set at 4.5 per cent. and the deposit rate at 2 per cent. As a transitional measure, these rates were changed to 3.25 per cent. and 2.75 per cent., respectively, from

4 January to 21 January, but the original levels were subsequently restored. Recourse by Irish counterparties to the standing facilities fell somewhat after the early weeks of the year, as uncertainties with respect to payment systems were resolved.

The Eurosystem's minimum reserve requirements apply to credit institutions in the euro area with the main aim of stabilising money-market interest rates and creating (or enlarging) a structural liquidity shortage. The reserve requirement of each institution is determined in relation to elements of its balance sheet. These elements relate to overnight deposits, deposits with agreed maturity up to 2 years, deposits redeemable at notice up to 2 years, debt securities with agreed maturity of up to 2 years and money-market paper. Liabilities *vis-à-vis* other credit institutions and liabilities *vis-à-vis* the ECB and national central banks are excluded. The reserve requirement of each individual credit institution is calculated by applying to the amount of eligible liabilities the current reserve coefficient of 2 per cent. In order to pursue the aim of stabilising interest rates, the minimum reserve system enables institutions to make use of averaging provisions. Compliance with reserve requirements is determined on the basis of an institution's average daily reserve holdings with the Bank over a maintenance period. The maintenance period lasts for a month, starting on the 24th day of each month and ending on the 23rd day of the next. As a transitional measure, the first maintenance period began on 1 January 1999 and ended on 23 February 1999. Minimum reserve balances are remunerated at the average level of the main refinancing rate over the maintenance period.

In order to assess the liquidity situation in the euro area, thereby providing a basis for decisions on the day-to-day implementation of monetary policy, the ECB produces a daily liquidity analysis. The Bank closely monitors local market conditions and relays this information to the ECB. This includes a daily forecast of local market liquidity conditions which is incorporated into the euro area liquidity analysis.

All Eurosystem liquidity-providing operations are based on underlying assets. The Eurosystem accepts a wide range of eligible assets for its operations. A distinction is made between two categories of assets, viz., tier one and tier two. Tier one consists of marketable debt instruments fulfilling uniform euro area-wide eligibility criteria specified by the ECB. Tier two consists of additional assets, marketable and non-marketable, which are of particular importance for national financial markets and banking systems and for which eligibility criteria are established by the national central banks, subject to ECB approval. No distinction is made between the two tiers with regard to their eligibility for the various types of monetary policy operations. Counterparties may use eligible assets on a cross-border basis.

In common with all other members of the euro area, large value payments between banks are made through a real-time gross settlement (RTGS) system. The Irish RTGS system is, in turn, linked to that of the other ten monetary union members to form the TARGET payment system. This means that large value payments in euro can move between all centres with the same certainty and timing, thus

contributing to the implementation of a single monetary policy throughout the euro area.

Many of the elements of this framework for implementing monetary policy in the euro area were present in the Irish system in the past. Consequently, the Irish financial sector has been able to adjust relatively smoothly to the new regime.

An Timpeallacht Gheilleagrach

Leanann geilleagar na hÉireann ag borradh leis go suntasach agus tá an dealramh ann go mbeidh an todhchaí gearrthéarmach go maith. Ainneoin na géarchéimeanna éagsúla le déanaí agus bagairt mhoillithe san domhain ar an mórchóir, fanann an fás geilleagrach láidir. Tá an boilsciú ábhairín níos ísle ná mar a bhíothas ag súil leis, le boilsciú bunúsach ag timpeall 2 faoin gcéad agus tá fostaíocht ag leanacht ar aghaidh ag fás. Mar sin féin, le fás tapaidh sa gheilleagar atá ag borradh ar aghaidh toisc rátaí ísle úis, tá bagairt shoiléir róthéite uaidh seo uile. Is gá go gcoimeádfaí an ghníomhaíocht mhaith is déanaí i leith fáis agus cobhsaíochta.

Tar éis tosaithe Aontas Eacnamaíoch agus Airgeadaíochta (AEA) ag tús 1999, tá aon tír déag limistéir an euro i dtimpeallacht ard imeasctha geilleagrach. Tá sé sin soiléir go mórmhór i réimse an bheartais airgeadaíochta. Ciallaíonn tabhairt isteach an airgid aonair go bhfuil an leibhéal céanna rátaí úis i réim i limistéar an euro. Sna seachtainí deiridh de 1998, íslíodh rátaí mórdíola úis sa tír seo le níos mó ná trí phointe faoin gcéad, le go gcomhchlaonfadh siad go dtí an meán i limistéar an euro. Ní dócha go gcomhchlaonfadh rátaí úis agus torthaí bannaí go hiomlán sa limistéar, ar feadh scaithimhín ar aon nós, toisc go léiríonn siad sin tosca áitiúla i rioscaí baincéarachta agus i rioscaí difreálacha creidmheasa.

Toisc í a bheith ar cheann de na tíortha is lú i limistéar an euro, agus ceann de na tíortha is oscailte ó thaobh an gheilleagair de, ba chóir go dtuillfeadh Éire buntáistí móra sa timpeallacht nua.

Braitheann feidhmiú agus cumas iomaíochta an gheilleagair go mór ar éabhlóid chostaisí, go háirithe pá. Le deich mbliana nó mar sin, tá imeachtaí pá sásúil go ginearálta sa tír seo. Le linn na tréimhse seo, bhí méadú ar an méan de 5 faoin gcéad in aghaidh na bliana i bpá ainmniúil gach fostaí. Is ionann é seo agus méaduithe de timpeall 2.5 faoin gcéad ar an meán in aghaidh gach fostaí. D'éascaigh an ráta fáis srianta i bpá, ar babhtálaíodh iad ar íslithe i rátaí arda cánach ar ioncam lucht saothair, fás sa bhfostaíocht ar an meán de timpeall 2.5 faoin gcéad in aghaidh na bliana.

Ba chóir go dtabharfadh méadaithe fírinneacha i bpá aird ar thimpeallacht leanúnach an bhoilscithe ísil i limistéar an euro agus ar fud an domhain. Ba chóir go n-aithneodh siad an riachtanas atá ann le go leanfaí le timpeallacht a bheadh fabharach do mhéadú sa bhfostaíocht. Cé go bhfuil an dífhostaíocht níos lú ná 7 faoin gcéad anois, an leibhéal is ísle le mórán de bhlianta, is féidir é a ísliú níos faide. Chomh maith leis sin, tá méadú nádúrtha sa líon saothair de timpeall 2 faoin gcéad agus b'fhéidir go mbeidh, freisin, roinnt inimirce glan faoi mar ar tharla le blianta beaga anuas. Dá bhrí sin, caithfidh an fhostaíocht leanúint ar aghaidh ag méadú go mór i dtreo is go n-ionsúfaí gluaiseacht daoine isteach sa líon saothair.

Is gá go bhforbródh gaolmhaireachtaí pá ar bhealach sítheach in earnálacha difríula an gheilleagair. Go ginearálta, tá sé tábhachtach — cé acu i leith pá, caiteachas poiblí nó cáin — go bhfanfadh coinní i mbun na measarthachta.

Ba chóir go gcinnteodh an bealach meáite seo go dtiocfadh feabhas i gcaighdeáin mhaireachtála agus sa ráta fostaíochta, agus go gcoimeádfadh Éire a bua mar shuíomh d'infheistíocht choigríche. Beidh beartais airgeadaíochta agus an ráta malairte i limistéar an euro oiriúnaithe, ar ndóigh, do thosca ins an limistéar i gcoitinne, agus ní féidir leo freastal ar toscaí áitiúla. Beidh ar na pairtnéirí soisialta anseo é sin a thabhairt san áireamh ar bhonn dearfach.

The International Economy

Overview

Uncertainty about the spillover effects from crises in emerging market economies continued to dominate the global economic situation over the period from early December 1998 to early March 1999. Although December 1998 was a period of relative calm, this was ended at the turn of the year when the Brazilian real came under sustained attack. Despite considerable intervention by the Brazilian authorities, the crawling peg exchange rate regime for the Brazilian real was abandoned and the value of the real declined considerably. Although this precipitated a short period of some turbulence in global markets, Brazil remains an issue of international concern.

In Europe, the key event in the period under review was the introduction of the euro in the eleven EU member states that progressed to Stage Three of Economic and Monetary Union. The changeover to the new currency and monetary policy framework, over the start of the New Year, went smoothly. After an initial appreciation, the euro has depreciated since its inception. In large part, this reflects the differing economic fundamentals in Europe and the US, along with market expectations about the stance of policy in each area.

Although economic growth in the major economies has moderated, the decline has generally been less severe than anticipated, especially in the US where GDP growth in the last quarter of 1998 was particularly strong. In the US and Europe, the effects of the weakening external environment have been dampened by relatively strong domestic demand, although the outlook for both areas is now diverging with the US expected to perform better in 1999. The Japanese economy remained depressed despite earlier fiscal stimuli, a situation that prompted the Bank of Japan to ease monetary policy further. (The situation in Japan is the subject of special attention in Box 2.) With declining commodity prices and moderate wage growth, there is little evidence of inflationary pressures in the major economies. Although there is still the risk of negative spillovers from some of the emerging market economies, the risks appear to have abated to some extent. Nevertheless, growth is still expected to slow in 1999.

In the aftermath of the recent financial crises, the international financial community has been working on finding ways to forestall and effectively manage international financial crises. In October 1998, the G7 Finance Ministers and Central Bank Governors gave Dr Hans Tietmeyer, President of the Bundesbank a mandate to consult with the appropriate bodies with a view to improving the processes needed for monitoring and promoting stability in the international monetary system. On the basis of Dr. Tietmeyer's report, the G7 announced on 20 February 1999 the creation of a Financial Stability Forum as a means

of effective international co-ordination in this area. (The Financial Stability Forum is the subject of special attention in Box 1 below.)

BOX 1 — A FINANCIAL STABILITY FORUM

Investigations of the recent crises in Mexico, Asia and Russia by the international community concluded that a lack of transparency, inadequate surveillance and poor co-ordination among the competent bodies were some of the key factors in the crises. In October 1998, the G7 Finance Ministers and Central Bank Governors charged Dr Hans Tietmeyer, President of the Bundesbank, with consulting the relevant bodies on establishing a process for strengthened financial sector surveillance and on improving co-ordination among the key international institutions and national authorities involved in financial sector stability.

The report, entitled ''International Co-operation and Co-ordination in the Area of Financial Market Supervision and Surveillance'', highlighted the fragmented structure of the current arrangements, where at least nine international entities share responsibility for the supervision and surveillance of the international financial system. These bodies range from the International Monetary Fund, which has responsibility for the surveillance of all member countries and monitoring the global economy and markets, to the Basle Committee on Banking Supervision, which is a rule-setting body in the field of banking supervision. Although the current arrangements have come some way in raising the soundness and risk awareness of financial systems, much remains to be done. The principal problems are the separate treatment of micro-prudential and macro-prudential issues, bringing together the relevant bodies, and integrating emerging markets more closely in the process. Three specific areas for improvement were identified:

- Further efforts are required to identify incipient vulnerabilities in national and international financial systems. In particular, concerted efforts are needed to better understand the sources of systemic risk and then to formulate appropriate financial, regulatory and supervisory responses.
- Better procedures are required to develop and implement international rules and standards of best practice, while ongoing efforts need to be made to identify and fill gaps in such standards.
- Finally, improved arrangements to ensure consistency of rules across relevant financial institutions are required. Procedures need to be put in place to ensure a continuous flow of information among authorities having responsibility for financial stability.

The report concluded that sweeping changes to existing arrangements are not required to improve the system, but that improved co-operation and co-ordination among the existing entities can promote the stability of the financial system and improve the functioning of markets in order to reduce systemic risk. On that basis, he proposed that a Financial Stability Forum, reporting to the G7 Finance Ministers and Central Bank Governors, be convened by the G7. This proposal was accepted and the G7 Finance Ministers and Central Bank Governors announced in their February 20 Communiqué that a first meeting could be held in Spring 1999.

The Forum will replace the series of ad hoc groups, concerned with strengthening the international monetary system, convened in recent years by the G7. In order to encourage dialogue and effective action, membership will initially be limited to the G7 countries, international financial institutions and key international regulatory groupings. It is envisaged, however, that membership will be extended over time to other national authorities. The Forum will be chaired, for an initial three year period, by Mr Andrew Crockett, General Manager of the Bank for International Settlements and will be supported by a small secretariat located at the BIS in Basle. Members may be asked to form working groups to address specific issues and facilitate the work of the Forum. Meetings are expected to take place regularly to assess issues and vulnerabilities affecting the global financial system and to identify and oversee the actions needed to address them.

World Economic Developments

Although domestic demand has been relatively buoyant, economic activity in the **euro-area** slowed towards the end of 1998. Preliminary GDP data for the fourth quarter of 1998 indicate a slowdown in activity, which is confirmed by monthly data which also suggest that output

growth slowed towards the end of the year. In particular, industrial production growth declined markedly in the second half of the year reflecting weak external demand. Retail sales volumes, on the other hand, have recorded a more buoyant performance, with new car registrations increasing strongly in the second half of the year. This is substantiated by confidence survey data which show a sustained improvement in consumer confidence but a continued decline in industrial confidence. In 1997 the unemployment rate stood at 11.7 per cent., declining over the course of 1998 to stand at 10.6 per cent. in January 1999. The rate of decline in the unemployment rate slowed in recent months, however, giving further evidence of slowing growth late in the year. Annual changes in the Harmonised Index and Consumer Prices (HICP) index show an ongoing decline in inflation with a rate of 1.1 per cent. recorded for 1998 compared to 1.6 per cent. in 1997. This reflected declining energy prices and slowly increasing processed food prices, and was underpinned by falling unit labour costs due to moderate wage increases and ongoing productivity growth.

Growth forecasts for the euro-area have become somewhat more pessimistic since mid-1998 and the outlook for the euro-area is for a slowdown in 1999, due principally to weak external markets. Consumer spending is projected to be underpinned by rising real disposable income. The OECD is projecting real GDP growth in the euro-area of 2.9 per cent. for 1998 and 2.5 per cent. for 1999. However, more recent Consensus forecasts are less optimistic. Inflation is projected to remain subdued due to the expected slowdown in activity, although excessive wage growth or expansionary fiscal policy could constitute upside risks to the inflationary outlook.

In contrast, the **US** displayed stronger than expected GDP growth in the fourth quarter of 1998, to bring growth for the year to 3.9 per cent. Although a large part of the increase is attributable to inventory investment, it was also underpinned by consumer spending growth, which remained buoyant despite slowing over the year. Consumer spending reflected higher disposable income due to employment growth and higher wages. Although exports strengthened late in 1998, having been weakened earlier by the Asian crisis, this was insufficient to offset import growth. As a result, external demand remained a drain on activity with a record trade deficit being recorded in 1998. The adverse trade and inventory situation was reflected in US industrial production growth, which slowed from 6.0 per cent. in 1997 to 3.7 per cent. in 1998. As a result corporate profits declined over the course of the year, as did manufacturing employment. Nevertheless, 2.75 million additional jobs were created in 1998, bringing the unemployment rate to 4.5 per cent. for the year. Despite the buoyant economic conditions and tight labour markets, inflation remained subdued throughout the year. This reflected, in part, once-off falls in oil, commodity and import prices, while productivity improvements allowed significant increases in real compensation without creating inflationary pressures.

Turning to the outlook for the US economy, Federal Reserve Board Chairman Greenspan noted that the ''economy appears stretched in a number of dimensions''. This includes tight labour markets, increasing household, business sector and external indebtedness, and possibly

Changes in Key Economic Variables in Various Countries **Table 1**

	Real GDP Growth		Unemployment Rate		Inflation[a]		Current Balance of Payments as a % of GDP	
	1998	1999	1998	1999	1998	1999	1998	1999
	%	%	%	%	%	%	%	%
Belgium	2·9	2·3	11·8	11·5	1·0	1·2	5·7[b]	5·6[b]
Germany	2·7	2·2	11·2	10·8	1·0	1·2	0·4	0·7
Spain	3·8	3·4	19·1	17·8	2·0	2·0	0·3	–0·2
France	3·1	2·4	11·8	11·2	0·5	0·9	2·6	2·4
Ireland	10·0[c]	8·2[c]	7·7	6·5[c]	2·4	1·5[c]	2·6[c]	1·5[c]
Italy	1·5	2·1	12·2	12·1	2·3	1·8	3·2	3·3
Netherlands	3·8	2·7	4·1	4·2	2·1	2·1	5·8	5·7
Austria	3·1	2·4	6·1	6·0	1·0	1·0	–2·3	–2·1
Portugal	4·0	3·3	5·1	5·3	2·7	2·3	–1·7	–1·6
Finland	5·0	3·2	10·9	9·7	1·1	1·3	5·7	5·8
Total Euro-Area	2·9	2·5	11·7	11·3	1·3	1·4	1·9	2·0
Denmark	2·4	2·0	6·5	6·0	1·9	2·5	–1·0	–1·0
Greece	3·0	3·2	10·0	9·8	4·8	3·0	–4·0	–4·1
Sweden	2·8	2·2	6·5	6·3	0·8	1·0	2·1	2·0
UK	2·7	0·8	6·5	7·4	2·0	2·8	–0·6	–1·2
Total EU	2·8	2·2	10·6	10·3	1·5	1·7	1·4	1·3
US	3·5	1·5	4·6	5·0	0·8	1·2	–2·7	–3·1
Canada	3·0	2·4	8·4	8·1	1·0	1·7	–2·1	–2·0
Japan	–2·6	0·2	4·2	4·6	0·6	–0·7	3·2	3·3

a Private consumption deflators except Ireland – consumer prices.
b Belgium – Luxembourg.
c Ireland – Central Bank estimates.
Sources: OECD Economic Outlook, December 1998, estimates and projections.

overvalued equity markets. Ongoing buoyant activity was reflected in non-farm payrolls which increased by 275,000 in February, with an unemployment rate of 4.4 per cent. This is reflected in wage growth which remains above inflation. Despite these pressures, leading indicators suggest that the momentum of the US economy may carry into the first half of 1999. Consumer confidence remained robust in early 1999, while the NAPM composite index suggested improved manufacturing activity due, in part, to an increase in new export orders. Although the latest OECD forecast is for GDP growth of 1.5 per cent. for 1999, more recent Consensus estimates suggest growth of about twice this rate.

The situation in **Japan** remains grave, with the economy falling further into recession in the third quarter of 1998. GDP fell for the fourth successive quarter, by 0.7 per cent. year-on-year. Final demand remained weak: consumption was dampened by falling disposable income and unemployment of 4.1 per cent. on average in 1998, while investment continued to decline due to falling confidence and weak domestic demand. Furthermore, the cautious lending stance adopted by financial institutions is limiting the amount of credit available to companies and institutions. Net exports improved over the course of 1998 with the trade surplus rising to a record high for the year as a whole. This, however, was driven by a slight fall in exports and a 12 per cent. decline in imports, the latter being due to subdued domestic demand and the effect on the import bill of a stronger yen. The effects

Three-Month Interest Rates **Table 2**

	Euribor	US Dollar	Japanese Yen	Sterling
	%	%	%	%
30 November 1998	n/a	5·20	0·72	6·77
31 December 1998	3·24	5·00	0·25	6·11
29 January 1999	3·07	4·92	0·36	5·70
26 February 1999	3·10	4·95	0·17	5·33

of the earlier fiscal stimulus are now emerging in the form of higher contracted public works, although the effects of the November 1998 stimulus package are unlikely to be felt until later in 1999. As a result of the weakness in activity and the lack of external inflation pressures, Japanese consumer price indices declined month-on-month in December 1998 and January 1999. Wholesale and import prices declined further towards the end of 1998 due, in part, to the strengthening of the yen.

Looking forward, the Bank of Japan's Tankan surveys suggest that business expectations have deteriorated further, with firms seeing a continued decline in economic conditions. In contrast, the leading indicators index suggest that the downturn may be levelling out, although the situation remains serious. While OECD estimates project that GDP will rise by only 0.2 per cent. in 1999, despite the November 1998 fiscal stimulus, more recent forecasts project a more pessimistic outlook for GDP growth in 1999.

BOX 2 — JAPAN

Economic activity in Japan fell sharply in the second quarter of 1997 and, since then, has stagnated, despite an easing in monetary policy and the introduction of a number of fiscal stimulus packages. Ironically, fiscal tightening measures, such as the consumption tax increase in April 1997 and plans to reduce public spending, had helped to precipitate the slowdown, which was exacerbated by mounting uncertainty regarding the stability of the Japanese financial system. The depressed economic environment was reflected in low inflation and during 1998 bond yields fell to the lowest level ever recorded.

Macroeconomic Policy

At this stage, there is a consensus that the limits of macroeconomic policy have been reached in Japan. With prices essentially flat, the Bank of Japan has had difficulty relaxing monetary conditions sufficiently to achieve negative **real** interest rates in order to boost growth. The discount rate and the target for the overnight call money rate were reduced to 0.25 per cent. in September 1998. With the latter being further cut to around 0.15 per cent. on 12 February 1999, there is little more that monetary policy can do in terms of lower interest rates.

In November 1998, the Japanese Government announced the eighth supplementary budget since 1992. The November fiscal stimulus package amounted to Y23.9 trillion. About one-third was directed towards stimulating public works and other infrastructure investment; the other two-thirds reflected increases in current public spending and tax reductions. Coming on top of previous fiscal packages, this latest expansion of fiscal policy is expected to bring the general government deficit close to 8 per cent. of GDP in 1999, by far the highest among leading industrial countries.

Microeconomic and Structural Policies

The constraints on macroeconomic policy mean that microeconomic measures are assuming greater importance in improving Japan's economic performance. The resolution of problems in the banking sector, which is essential in order to improve consumer confidence and encourage spending, is a priority in this regard.

In order to stabilise the financial system, a comprehensive support programme for banks, amounting to Y60 trillion (EUR 452 billion), was announced by the Japanese parliament in October 1998. This programme made a distinction between **weak but viable** banks and **insolvent** institutions, with obligatory action required only in the case of the latter. Some Y25 trillion was allocated to early strengthening measures for the weak but viable banks, Y18 trillion was provided for the establishment of ''bridge banks'' or temporary nationalisations of insolvent institutions, and Y17 trillion was made available for protecting depositors of failed banks. Major decisions regarding the measures to be taken are to be made by the Financial Revitalisation Commission (FRC), established within the Prime Minister's Office. The FRC will combine its financial rescue operations with the imposition of restructuring measures. In early March, the FRC released details of Japan's largest banks' restructuring plans, which involved staff cuts of 21,000 (15 per cent. of their current employees).

The Bank of Japan also took direct action to increase the availability of credit. First, it extended the scope of eligible commercial paper for direct repurchase operations with businesses, as well as lengthening its maturity. Second, it established a new temporary refinancing facility for banks which increase their exposure to domestic customers. Third, it proposed a scheme whereby banks' corporate debts may be used as eligible collateral for money market operations. Finally, the rate on emergency lending to banks was halved to 0.25 per cent. from 22 February 1999 and it was decided that the money supply would be expanded through more injections of funds to the money market.

Assessment

It is too early to judge how effective the banking sector reforms will be. Their success will depend on events in a number of areas. First, are adequate funds available to cover the potential volume of bad loans in the Japanese banking system? Second, by participating in the FRC support programme will Japanese banks be able to restructure their way to profitability? Third, uncertainties persist about the valuation of banks' capital and the relationship between capital adequacy ratios and the real financial health of institutions.

In addition, the current stance of fiscal policy is having an undesirable impact on Japanese financial markets. Net government borrowing is projected to double in the 1999 fiscal year. The announcement that the Trust Fund Bureau, which invests the deposits of the Postal Savings Bank, would reduce its government bond purchases in favour of buying more corporate bonds added to the supply problem in the Japanese bond market and led to a rise in yields of about 100 basis points between October 1998 and January 1999 and to a downgrading of Japan's sovereign credit rating. With government bonds making up a sizeable portion of Japanese banks' portfolios, the sharp rise in yields inflicted heavy loses on banks. The fears of further downgradings of Japanese banks which resulted kept the ''Japan premium'' for banks' borrowing in international financial markets in the 60-90 basis points range and curtailed bank lending. A decision by the Trust Fund Bureau to resume government bond purchases helped the market to recover but many commentators feel that it may be necessary for the Bank of Japan to monetise the fiscal deficit – by purchasing more government bonds and thereby creating additional liquidity – in order to minimise the negative side effects on the banking system and to stimulate consumption and investment expenditure. Monetisation, however, could sow the seeds of future inflation and the Bank of Japan is cautious about going down this road.

Economic Developments in Europe

Within the euro-area, **Germany** experienced GDP growth in 1998 of 2.6 per cent., up from 2.3 per cent. in 1997. Exports, with an annual increase of 4.9 per cent., were the main source of growth in 1998, along with machinery and equipment investment, which grew by 8.4 per cent. Consumer spending growth was also stronger in 1998, despite a weak first half due to the increase in VAT rates, while import growth slowed. In late 1998, however, the economy started to slow, with GDP growth declining in the fourth quarter. This decline was driven by a marked weakening in exports and a slight decline in investment. Industrial output also slowed in the final quarter, while

capacity utilisation in manufacturing declined to 85.3 per cent., its lowest level since early 1997. The labour market has been characterised by gradually falling unemployment with the rate falling to 10.8 per cent. in 1998 from 11.7 per cent. in 1997. Inflation is very subdued, with latest consumer price data showing an annual increase of 0.2 per cent. in January 1999.

For 1999, weak net exports are expected to slow the German economy, despite relatively buoyant domestic demand. The outlook for German competitiveness and growth has been threatened, however, by recent wage settlements and the development monthly wage rate growth from mid-year. The latest OECD forecast is for GDP growth of 2.2 per cent. in 1999, rising to 2.5 per cent. in 2000. However, recently published indicators suggest that growth will be somewhat lower in 1999.

France experienced a slight upturn in growth in the fourth quarter of 1998, bringing growth for the year to 3.2 per cent. against 2.3 per cent. in 1997. Domestic demand, due to buoyant consumer spending and investment, offset weakened exports caused by the Asian crisis. Slowing industrial production over recent months also reflected weak external demand, while surveys of industrial intentions show that, overall, firms expect to reduce activity and slow investment in 1999. Nevertheless, the relatively strong economic performance in 1998 caused unemployment to decline. The unemployment rate fell from a record average of 12.5 per cent. in 1997 to 11.8 per cent. in 1998, partly reflecting government job creation measures. Inflation remains very subdued with year-on-year HICP inflation running at 0.7 per cent. in 1998 compared to 1.3 per cent. in 1997.

The outlook for the French economy is for growth to moderate in 1999 due to slowing external demand and industrial activity. Nevertheless, domestic demand, buoyed up by a slowly improving labour market situation, should maintain the overall growth rate in the region of 2.4 per cent. in 1999 according to the latest OECD forecast.

Outside the euro-area, the slowdown in the **UK** economy became more marked over the course of 1998. GDP growth for the year declined to 2.3 per cent. compared to 3.5 per cent. in 1997. Although the latest data indicates weakness across a range of sectors, the services sector appears to have performed better than manufacturing, which displayed a marked fall in output. Inventories grew sharply over the year and consumer spending was weak, as reflected in retail sales, which recorded a year-on-year decline in the fourth quarter. The slowdown, which was initially brought about by sterling's appreciation from mid-1996 and a policy tightening over recent years, has been worsened by the deterioration of the external outlook, financial turbulence and sterling's continued strength. In particular, the external sector exerted a negative influence on activity with the trade deficit widening in November before closing slightly in December. Although the labour market remained tight in 1998, the decline in the unemployment rate slowed in the latter part of the year with the rate remaining steady from August onwards. While the publication of average earnings data was suspended, other data suggest a mixed

picture with a slowdown in manufacturing wage growth but continued strength in services wage growth.

The outlook for the UK economy is for growth to slow further, with activity being damped by depressed investment, slowing consumer spending and weak net exports. Output growth is projected to bottom out in mid to late 1999 before returning towards trend growth during 2000. The OECD projection is for GDP growth of 0.8 per cent. in 1999, picking up to 1.5 per cent. in 2000, while more recent Consensus estimates suggest a more pronounced trough in activity.

Given the outlook for the global economy, growth in Ireland's main trading partners seems likely to decline to 1.5 per cent. on a weighted basis compared to 2.6 per cent. in 1998.

International Price Developments

International inflationary pressures eased significantly during the course of 1998 against a background of faltering world growth and excess productive capacity. Commodity price indices for both oil and non-oil products fell sharply. In most industrial countries, producer price inflation turned negative and consumer price inflation declined.

Reflecting the slowdown in the world economy, commodity prices weakened significantly during 1998. The International Monetary Fund (IMF) dollar index of non-fuel commodity prices declined by 14.7 per cent., on average, in 1998 and was down by 13.2 per cent., year-on-year, in the fourth quarter. Similarly, oil prices fell sharply, with the IMF dollar index of petroleum products declining by 32.1 per cent. on average and by 37.1 per cent in the final quarter of 1998. Commodity prices have remained weak in the early months of 1999. In February, the average value of the Economist dollar index for all commodities was 3.8 per cent lower than its average level in December. Over the same period, Brent crude oil prices increased by about 1.5 per cent. in dollar terms.

The latest OECD projections for commodity prices in 1999 are for a $4\frac{1}{2}$ per cent. increase in the average dollar price of oil to about $13.80 per barrel and for a further decline of about 3 per cent., on average, in the dollar price of non-oil commodities.

Internationally, consumer price inflation was generally weaker in 1998. Average inflation, as measured by the HICP declined by 0.5 per cent. to 1.1 per cent. in the euro area and by 0.4 per cent. to 1.3 per cent. in the EU as a whole in 1998. Over the same period, US consumer price inflation declined from 2.3 per cent. to 1.6 per cent. while consumer price inflation in Japan declined from 1.7 per cent to 0.6 per cent. Producer price inflation also turned negative in many of Ireland's trading partners during 1998. Producer prices declined by 1.9 per cent. in the EU, by 0.7 per cent. in the United States and by 2.1 per cent. in Japan.

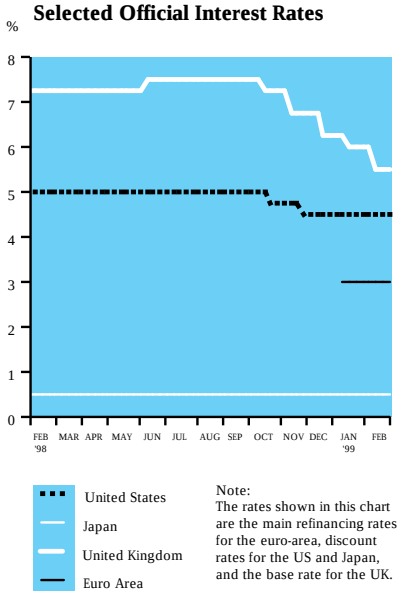
The strong disinflationary trends evident internationally in 1998 are likely to persist and perhaps intensify in the coming year. There is significant excess productive capacity in the world, much of it located in Asian economies whose currencies have depreciated sharply. Weak

demand in many of these countries has been a major contributory factor in the fall in commodity prices. With growth set to slow in most industrial economies, the output gap for the OECD area is likely to become more negative. Against this background, projections from most international agencies including the OECD and the European Commission suggest continuation of weak inflationary pressures in 1999. In December last, the OECD forecast an average increase in the consumption deflator in the OECD (less high inflation countries) of 1.2 per cent. unchanged from an estimated 1.2 per cent. in 1998.

The implications for inflation in Ireland over the coming year of the easing of inflationary pressure internationally are clearly positive. The consequential easing of goods price inflation will act to offset a likely acceleration of inflation in the services sector arising from the emerging overheating in the domestic economy. If the current weakness in the euro exchange rate persists, however, there may be some upside risk to traded goods price inflation in the latter half of the year.

CHART 1

Selected Official Interest Rates



Note:
The rates shown in this chart are the main refinancing rates for the euro-area, discount rates for the US and Japan, and the base rate for the UK.

Monetary Developments

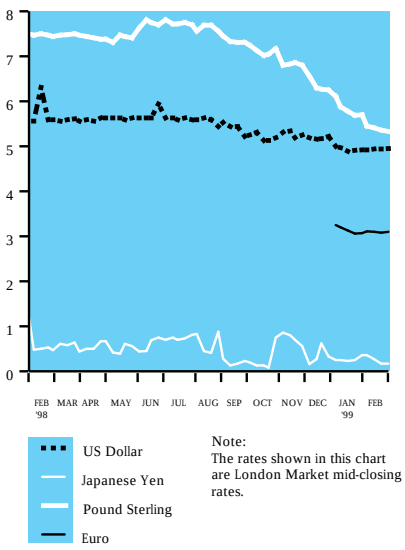
The period under review was characterised by a further easing of concerns that economic and financial crises in a number of emerging market economies would cause contagion of other emerging markets with spillover effects on the industrialised countries. This was despite the fact that the Brazilian real came under sustained attack, leading to an abandonment by the authorities of the crawling peg exchange rate regime that the previously agreed support package was designed to preserve. Although this precipitated a bout of volatility in financial markets, it was overshadowed by the resilience of the US economy, which grew well ahead of expectations in the fourth quarter of 1998. By comparison, the economic data emanating from the euro-area indicated a weakening of activity, while Japan is showing mixed economic signals. As a result, market expectations about official interest rate changes in the major economies have diverged. While interest rates have been expected to decline in the euro-area and the UK, markets believe that US rates could rise over the coming year.

In the **euro-area**, the transition to the new monetary strategy and operational framework under Economic and Monetary Union went smoothly. The key features of the new framework are set out in the article ''Monetary Policy in EMU'' contained in this Bulletin, (pages 11 to 14). The new strategy is based on a broad assessment of the outlook for price stability and the judgement of monetary growth against a reference value of 4.5 per cent. per annum. At its meeting of 22 December 1998, the Governing Council of the European Central Bank made three key decisions regarding the operation of monetary policy, which were confirmed at the meeting of 7 January 1999. Firstly, it was decided that the initial main refinancing operations would take the form of fixed rate tenders with the rate set at 3 per cent. This was the rate judged by the Council, in early December 1998, to be compatible with medium-term price stability. The second decision was to set the interest rate on the deposit facility at 2 per cent. with the marginal lending rate set at 4.5 per cent. Finally, in order to smooth the transition to the new system and to allow banks to adjust, the corridor between the two standing facilities was narrowed to 50 basis points from 4 to 21 January 1999 by raising the deposit rate to 2.75 per cent. and

CHART 2

Selected Three-Month Interest Rates

% End-week data



Note:
The rates shown in this chart are London Market mid-closing rates.

lowering the marginal lending rate to 3.25 per cent. This measure was terminated, as intended, at the Governing Council meeting of 21 January.

Turning to the stance of policy over the period, the Governing Council has kept interest rates unchanged at the levels pertaining since the start of Stage Three of Economic and Monetary Union. Their analysis of the evolution of the monetary aggregates is that there is no signal of future inflationary pressures. The three month moving average of annual M3 growth was stable over the final quarter of 1998 at 4.7 per cent. but rose to 4.9 per cent. in January 1999. Although these growth rates are slightly above the reference rate of 4.5 per cent., they should be viewed in the context of the transition to EMU and the broader outlook for price stability. On the basis of accumulating economic data, the Council took the view that there are no significant pressures on prices in the short-term. On the downside, the slowdown in the euro-area economy is identified as an area of concern. On the upside, wage developments and a possible loosening of the fiscal stance have been identified as potential problems. Exchange rate developments and commodity price trends need to be monitored.

Market interest rates, at both one and three month maturities, declined in the first few weeks of Stage Three, continuing the downward trend started in 1998. The three month Euribor rate fell from 3.24 per cent. in early January to 3.09 per cent. at the start of March 1999 and market expectations, as reflected in futures rates, are for a gradual decline in short-term interest rates to below 3 per cent. in mid-1999. At the longer end of the spectrum, 10 year bond yields increased by about 40 basis points since the start of Stage Three. This reflects, in large part, the sharp increase in ten year US government bond yields during February 1998 and the volatility of the Japanese bond market.

Monetary policy in the **US** was eased markedly during the third and fourth quarters of 1998 with the Federal Funds target rate being lowered to a rate of 4.75 per cent. In his recent Humphrey-Hawkins testimony, Federal Reserve Board Chairman Greenspan confirmed that this policy easing was a response to the turbulence on financial markets and the weakening outlook for the global economy as a result of the crises in emerging market economies. Although Chairman Greenspan implied in his testimony that the Federal Reserve is as likely to raise official interest rates as to lower them, the markets still expect an increase in US short-term interest rates in 1999. This is also reflected in bond markets, where a downward trend in yields has been reversed by a reassessment of the outlook for the US economy. As a result, US ten-year government bond yields have risen by over 60 basis points over the course of February to stand at 5.43 per cent. on 4 March 1999.

The authorities in **Japan** eased interest rates further on 12 February 1999 with the Bank of Japan announcing that it would guide overnight call rates down to a target 0.15 per cent. from a sustained level of 0.25 per cent., which was the target set in September 1998. In addition, the interest rate on the emergency lending facility for banks was halved to 0.25 per cent. on 22 February and it was decided to expand the money supply by injecting funds through the money market. The markets

continue to expect an increase in short-term interest rates over the course of 1999. In part, this may reflect the weakening of the yen on foreign exchange markets. There has been considerable uncertainty in the Japanese bond markets concerning possible intervention by the Bank of Japan and whether the Japanese Trust Fund Bureau (JTFB) would continue to be a net purchaser of Japanese bonds. This precipitated volatility in the market which saw bond yields rise from about 1.8 per cent. in early January 1999 to almost 2.3 per cent. in early February before declining again to 1.6 per cent. on 4 March 1999.

Monetary policy in the **UK** eased further over the period since end-November 1998 in response to a perceived weakening of the UK economy. Bank base rates were lowered by half a percentage point on 10 December 1998, by a quarter of a point on 7 January 1999 and by, a larger than expected, half a point on 4 February 1999 to stand at 5.5 per cent. These reductions were largely expected and occurred against the background of US interest rate cuts and general fears about the spillover effects of the global financial crisis. Although the last reduction was larger than expected, the markets still expect a further cut in interest rates in the Autumn. Although UK ten year yields have risen since mid-January 1999, to stand at 4.82 per cent. on 4 March 1999, the UK yield curve remains inverted. The general market sentiment is that UK interest rates are expected to fall further.

Exchange Rate Developments

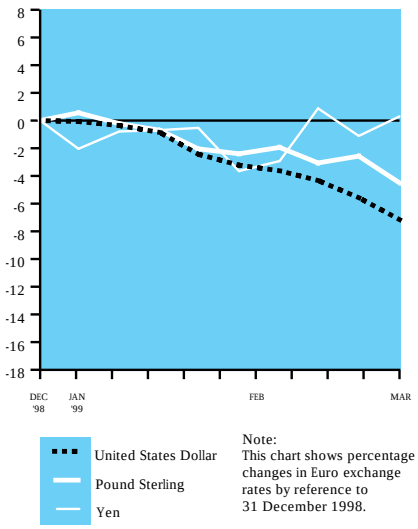
The currencies of the eleven euro-area members having converged on their bilateral ERM central rates, the irrevocable conversion rates to the euro were announced on 31 December 1998 and trading in the euro commenced on 4 January 1999. After an appreciation of the euro at the start of trading, foreign exchange markets have been characterised by a strengthening of the US dollar and sterling, and by significant volatility in the Japanese yen relative to the euro. Although the devaluation and floating of the Brazilian real created some nervousness, the spillover effects on other foreign exchange markets were limited. The exchange rate of the euro reflected the differing outlooks for economic fundamentals and interest rates in the euro area by comparison with other regions, as set out above.

Against the **US dollar**, the euro has weakened by over 8 per cent. from 1.18 dollars to the euro on 4 January to 1.08 on 4 March. This strengthening of the US dollar reflects the unexpectedly strong growth performance of the US economy in conjunction with low inflation, and the market expectations of higher interest rates in the US relative to the euro-area. **Sterling** moved in line with the US dollar, appreciating from 0.71 to the euro on 4 January to 0.67 on 4 March. This 5.2 per cent. strengthening of sterling against the euro reflected a slightly different interest rate outlook relative to the euro area. Finally, the **Japanese** yen was volatile against both the US dollar and the euro. After a particularly volatile period during January and February, which saw a level of 126 yen to the euro on 11 January, the yen closed on 4 March at 134 to the euro compared to a close of 133 on 4 January 1999. This volatility reflected uncertainties about the economic outlook, the growing fiscal deficit and the problems in the bond market in Japan.

CHART 3

Exchange Rate Changes for the Euro

% End-week data



Note:
This chart shows percentage changes in Euro exchange rates by reference to 31 December 1998.

The euro has also weakened against the currencies participating in ERM II, the successor to the Exchange Rate Mechanism of the European Monetary System, that is, the **Danish kroner** and the **Greek drachma**. After a sharp appreciation in early January, both currencies have traded in a less volatile manner against the euro but with an underlying trend towards strengthening.

Domestic Economy — Real and Financial Developments[1]

Overview[2]

In spite of the somewhat weaker demand growth in a number of its trading partners outlined in the preceding chapter, the Irish economy continues to record very rapid growth. The volume of GNP is estimated to have risen by as much as 8¼ per cent. last year, a strong performance, even by recent historical standards. Some deceleration is likely this year but growth seems set to remain robust, with GNP projected to increase by 6½ per cent. in real terms The indications are that this rate of expansion will maintain upward pressure on a range of domestic costs and asset prices. Developments and prospects in this regard are described in detail in the next chapter.

Domestic demand has contributed very significantly to growth in recent years. A major driving force has been the rapid growth in personal consumer spending. This has reflected a combination of strong income growth — due to increased employment as well as higher real earnings and declines in personal income tax — and a tendency for savings to fall as a proportion of disposable household income. The prospects are for this pattern to continue with all of these factors remaining in place. Earnings and employment growth are likely to remain robust and income tax reductions have been announced in the Budget. In addition, the labour market continues to tighten, interest rates have fallen to a low level and recorded levels of consumer confidence are high with few signs of a significant impact from the weaker external environment. As well as personal consumer spending, investment has also strengthened in recent years. Demand for construction output by households, government and the business sector has increased rapidly. Machinery and equipment purchases have also accelerated reflecting strong inward investment as well as additions to the capital stock of existing enterprises. The prospects are for investment to remain strong this year although the less favourable external environment may lead to some reduction in the growth of spending on machinery and equipment.

Slower growth in external demand has had relatively little impact on export volumes to date. Although export growth was spread across a range of sectors last year, there was a particularly strong performance by the leading high-technology sectors. Agricultural exports showed some recovery but they continued to be affected by weak demand and market access difficulties. Despite the limited impact to date, some deceleration in export growth is projected this year due to slower demand growth in a number of important export markets, as outlined in the preceding chapter. The high-technology sectors are likely to

1. Data for dates prior to 1 January 1999 have been notionally re-denominated in euros using the fixed conversion factor of 1EUR = £0.787564. This method of conversion preserves quantity, price and value changes as previously expressed in Irish pounds. Comparisons of this type of data across countries are, however, not valid. In particular, those relating to wage and cost developments have to take account of actual exchange rates for dates prior to 1 January 1999 and this is the basis of the relevant calculations referred to in this and the subsequent chapter.

2. This and the subsequent chapter were prepared on the basis of the available data up to end-February 1999 and assume the maintenance of interest and exchange rates at their average levels for February 1999.

Expenditure on Gross National Product 1997, 1998[e] and 1999[f] **Table 1**

	1997	% Change in		1998[e]	% Change in		1999[f]
	€million	Volume	Price	€million	Volume	Price	€million
Personal Consumer Expenditure	31,986	8¾	2¼	35,565	8¼	2¼	39,390
Public Net Current Expenditure	8,468	5	5½	9,380	3¾	3½	10,070
Gross Domestic Fixed Capital Formation	11,996	11½	6½	14,255	9½	7	16,695
of which:							
• Building and construction	7,941	11¼	8½	9,576	10¾	9½	11,612
• Machinery and equipment	4,055	12	3	4,679	7	1½	5,083
Value of Physical Change in Stocks	685			580			530
Gross Domestic Expenditure	53,135	8½	3¾	59,780	7¾	3½	66,615
Exports of Goods and Services	51,569	19¾	3¼	63,900	12¾	1¼	72,850
Final Demand	104,704	14	3½	123,680	10¼	2¼	139,535
Imports of Goods and Services	43,451	20	2½	53,380	13¼	1	61,015
Gross Domestic Product	61,253	10	4¼	70,300	8¼	3¼	78,520
Net Factor Income from rest of the world	8,027			10,050			11,990
Gross National Product	53,226	8¼	4½	60,250	6½	3¾	66,530

continue to record significant increases in output, although their rate of expansion may decelerate somewhat, reflecting both the direct impact of demand developments and a more indirect effect through slower inward investment. Import demand was also very strong last year driven by the robust nature of both domestic demand and export production. This pattern is set to continue this year, although the deceleration in exports is likely to feed through to imports given the high import content of much of merchandise exports. The overall current account balance will probably decline somewhat in absolute terms and as a proportion of GNP, reflecting a shift in demand to domestic sources.

The continuing strong growth in output is reflected in labour market trends with employment in all sectors, except agriculture, growing strongly. It is estimated that, allowing for the part-time nature of much of recent employment growth, the numbers employed in the economy, converted to a full-time equivalent basis, rose by about 4½ per cent. in 1998. There is likely to be only a modest deceleration in employment growth this year to about 3½ per cent. Much of the increase in employment has been met by the natural increase in the labour force augmented by net inward migration, increases in female participation and a decline in the rate of unemployment. Such has been the strength of employment growth, however, that labour shortages have begun to emerge. These were initially confined to certain sectors but have now become increasingly widespread. These pressures seem set to persist in 1999 with the Standardised Unemployment Rate (SUR) projected to decline from an average of 7¾ per cent. in 1998 to about 6½ per cent. this year.

Domestic Demand

Personal Consumption

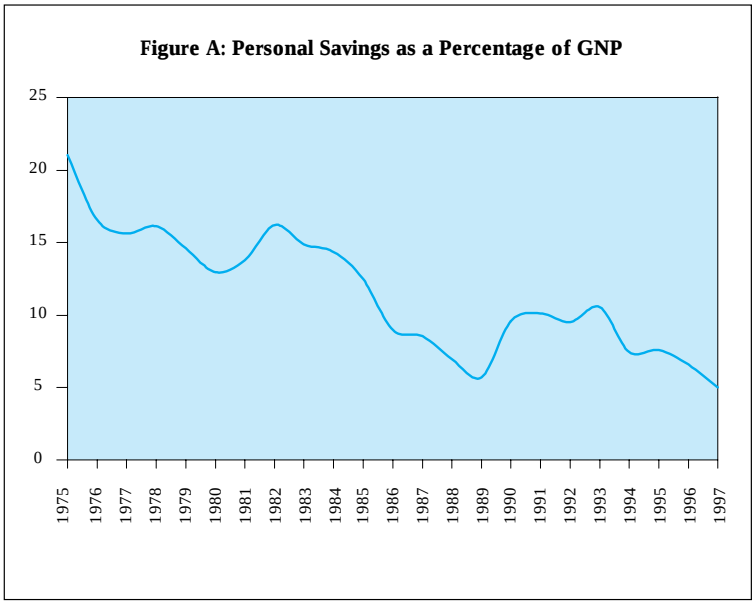
Consumer spending grew particularly strongly last year. This reflected both strong growth in personal disposable incomes and a continuation of recent declines in the proportion of household income saved rather

than spent. Disposable incomes were boosted by a range of factors – strong growth in average earnings, substantial increases in employment and reductions in personal income taxes – all of which seem likely to be repeated in 1999. Along with this growth in income came a further reduction in the propensity for households to save out of current income. Some decline in household savings is likely in the present context, reflecting factors such as lower levels of interest rates and the changed expectations as regards future taxation due to the improved position of the public finances. There is always the concern, however, that falls in the personal savings ratio may reflect an overestimation of future income growth with consequent possibility that the savings ratio may rise again if expectations are undermined.

Personal Savings

The ratio of personal savings to GNP in Ireland has declined significantly over the last two decades, as Figure A illustrates. Personal savings is defined as that portion of personal income which is not spent on consumer goods and services or on the payment of taxes on income and wealth. While savings behaviour is difficult to explain fully, changing expectations are clearly very important. The personal savings ratio is likely to rise (fall) when people are pessimistic (optimistic) about economic growth, inflation, interest rates, unemployment and the management of the public finances, as these factors may all impinge on their disposable incomes in the future.

Figure A: Personal Savings as a Percentage of GNP



The pattern of personal savings in Ireland can probably be explained by a number of these factors. The period of economic growth in the late 1970s saw personal savings fall relative to GNP, albeit from an exceptionally high level in the mid-1970s, but the rapid deterioration in the economic situation in the early 1980s resulted in the personal savings ratio increasing once more. The poor state of the public finances at that time, along with rising unemployment levels, meant that the personal sector's level of confidence was low. In particular,

the Government sector throughout the early to mid 1980s was 'dis-saving' significantly, typically borrowing 10% of GNP or more per annum. The personal sector is likely to have anticipated having to repay this borrowing through higher taxes in the future and this may have had an impact on savings.

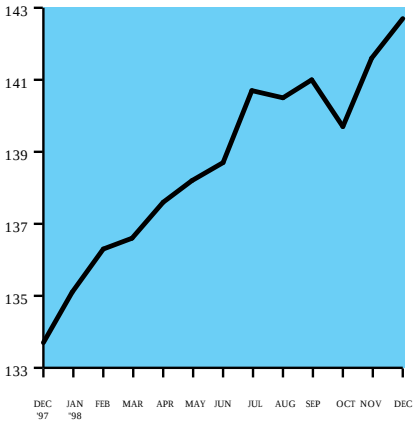
The personal saving ratio seems to have declined substantially over the 1980s, from an average of about 15% of GNP up to 1985 to 8% in the latter half of the decade. This decrease coincided with a period of significant falls in the level of interest rates and inflation rates internationally and with the establishment of a much more stable economic environment domestically. The downward trend in the personal savings ratio in Ireland would have been reinforced further by the dramatic turnaround in the public finances in the late 1980s. The fall in the personal savings ratio could also have reflected a downward trend internationally, attributed by some to the liberalisation of financial markets and removal of credit controls, making it easier to access credit, so requiring less precautionary need for savings.

At the start of the 1990s interest rates, arising within the ERM in part from German reunification, and a slowdown in economic growth meant that the personal savings ratio increased again towards 10%. The increasing expectation of further strong economic growth in more recent years, however, as well as actual increases in asset values, is likely to be boosting households' assessment of their own wealth. This is being reinforced by both prospective and actual interest rate declines and a low inflation environment at the start of Stage 3 of Economic and Monetary Union. In addition, the Government sector has now become a net saver rather than a borrower. Against such a backdrop, it is not surprising that personal savings seem to be on a declining path relative to GNP.

CHART 1

Index of Volume of Retail Sales

THREE MONTH MOVING AVERAGE (seasonally adjusted)
1990 = 100



There seems to be relatively little indication of any deterioration in consumer confidence. The EU survey of consumers in Ireland showed very little impact on sentiment from either the turbulence on international financial markets or the weaker prospects for the external environment. All the available indicators point to a continuing strength in spending, albeit with some deceleration towards the end of last year. The volume of retail sales for 1998 as a whole grew by 8.8 per cent. compared with 1997. The number of new and imported second-hand cars sold is estimated to have grown by 6.6 per cent. according to data produced by the Society of the Irish Motor Industry (SIMI). The available information also suggests that tourism and travel expenditure by Irish residents abroad grew very strongly last year with spending up 13.5 per cent. year-on-year in the first three quarters. While there are conceptual differences between these various measures and the personal consumption aggregates in the national accounts, it would seem likely that the latter grew by as much as $8^{3}/_{4}$ per cent. in volume terms last year.

This pattern of strong spending is likely to persist in 1999. All of the factors which contributed to the growth in expenditure seem likely to remain in place. Increases in average earnings will be underpinned by labour shortages, employment growth will still be significant while further reductions in personal taxes have already been announced. The

less favourable international climate has had little impact on sentiment to date and it seems unlikely that the savings rate will rise unless there is a significant deterioration in the general economic climate. The prospects are, therefore, for further strong growth in consumer spending of about 8¼ per cent. in volume terms.

Public Consumption

The growth in public consumption in recent years has been generally somewhat lower in volume terms than the higher rates recorded by the other components of domestic demand. This pattern is reflected in an estimated 5 per cent. outturn for last year and is likely to be a little lower this year with volume growth in the region of 3¾ per cent. in prospect on the basis of expenditure plans.

Investment

The volume of fixed investment is estimated to have increased by about 11½ per cent in 1998. Machinery and equipment investment probably increased by about 12 per cent in real terms and it seems likely that a volume increase of about 11¼ per cent was recorded for building and construction investment.

Within the construction sector, both residential and non-residential construction recorded large volume increases in 1998. In the first three quarters of last year, total house completions were up by 7.5 per cent. when compared with the same period last year. Private housing completions increased by 8.4 per cent. during this period but this increase was offset somewhat by a 3.4 per cent. decline in social housing completions. Housing starts, as proxied by Homebond registrations increased by 7.3 per cent. in 1998.

The index of employment in construction increased by 8.8 per cent in 1998, reflecting the continued strength of activity in the sector. The Quantity Surveyors' Inquiry recorded a 14.5 per cent. increase in the value of recommended progress payments for major non-residential building projects in the first half of 1998.

Available indicators point to strong volume growth in investment in machinery and equipment in 1998. Figures supplied by the Society of the Irish Motor Industry (SIMI) show a 38.4 per cent. increase in sales of light commercial vehicles in 1998. Heavy commercial vehicle sales were up 20.9 per cent. in the same period. The year-to-date increase in value of capital goods imports was 35.4 per cent. in the first ten months of 1998. The Capital Assets in Industry enquiry also recorded a 31.8 per cent. increase in spending on machinery and equipment in industry in the first three quarters of 1998 over the same period in 1997.

Overall, the volume of fixed investment is set to increase by about 9½ per cent. in 1999. Building construction investment is likely to increase by about 10¾ per cent. with output increases well balanced between residential and non-residential construction. Machinery and equipment investment is likely to increase by about 7 per cent. in volume which represents a slowdown from the likely outturn in 1998. The main factors behind this likely deceleration are increased uncertainty

internationally and weaker growth in the volume of world trade this year which may lead to a slowdown in inflows of foreign direct investment into Ireland.

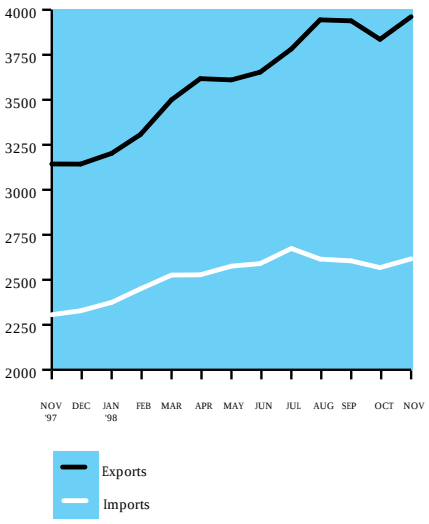
Stock Changes

The accumulation of stocks has been substantial in recent years reflecting two contrasting influences. There has been voluntary build-up of non-agricultural stocks mainly reflecting the substantial growth of the economy, with stronger domestic demand and expanding exports pushing up the desired level of stocks across a wide range of sectors. Agricultural stocks have also been under upward pressure reflecting an involuntary accumulation resulting from depressed demand conditions. The build-up of stocks in the non-agricultural sector seems likely to be repeated this year due to further strong growth in the overall output of the economy. The accumulation of agricultural stocks is likely to ease off as supply and demand conditions come more into line although the prospects for the sector remain uncertain. The build-up in overall stocks in 1998 was probably slightly smaller than in 1997 and is likely to be smaller again this year. As a result, stock changes will probably make a small negative contribution to overall output growth.

Merchandise Trade and the Balance of Payments

Merchandise Trade

CHART 2
Value of External Trade
THREE MONTH MOVING AVERAGE (seasonally adjusted)
£ Million



The volume of merchandise exports grew strongly last year despite a slackening pace of demand growth in the country's main export markets. Most of the increase was driven by the high-technology sectors. The office and data processing machinery sector experienced a deceleration in growth, but this may have reflected specific sectoral developments as much as the impact of slower world growth. The performance of the pharmaceuticals sector was particularly strong and contributed significantly to export growth. Some of the more traditional sectors also experienced growth, albeit at a more modest pace, although agricultural and related food exports continued to suffer from adverse trading conditions. The positive adjustment made to the export trade statistics by the CSO for balance of payments purposes, which includes some items not covered in the monthly trade statistics, also dropped substantially over the first three quarters of 1998. While this rather volatile item makes it difficult to predict the end-year outturn, overall export volumes on a balance-of-payments basis probably grew by 21½ per cent. last year, somewhat less than suggested by the monthly trade data.

A deceleration in export growth is in prospect for this year. On the basis of OECD and EU Commission projections, slower growth in the euro area itself and in some of the country's trading partners outside of the euro area will inevitably have an impact, as will weaker direct investment inflows. The prospects for agricultural and related products also remain uncertain. Short-term competitiveness developments may also be less favourable, although not markedly so, unless domestic wage increases accelerate further. Allowing for all these factors, it

Merchandise Trade 1997, 1998[e] and 1999[f] **Table 2**

	1997	% Change in		1998[e]	% Change in		1999[f]
	€million	Volume	Price	€million	Volume	Price	€million
Merchandise Exports (adjusted)	46,353	21½	3½	58,217	13¼	1	66,580
Merchandise Imports (adjusted)	32,379	17¼	2½	38,767	12	1¼	43,945
Trade Balance	14,074			19,450			22,635
(% of GNP)	(26½)			(32¼)			(34)

would seem likely that volume growth in exports will decelerate this year to about 13¼ per cent.

Merchandise imports on a balance-of-payments basis grew by an estimated 17¼ per cent. in 1998 reflecting both the strength of domestic demand as well as the rapid expansion in export production. The continuing strength of domestic expenditure is likely to underpin further robust growth this year, although the deceleration in export growth will have a noticeable impact, given the large import content of a wide range of merchandise exports.

Trade prices showed significant increases last year reflecting the relative weakness of the Irish Pound in effective terms in the early part of 1998. In the latter part of last year, however, the Irish Pound appreciated and traded goods prices came under downward pressure against a background of weak prices internationally. Traded goods prices both inside and outside the euro area seem likely to remain subdued in 1999, although developments in euro exchange rates will clearly have an impact. Combining these prospective volume and price developments suggests that the merchandise trade balance may rise from €19,450 million or 32¼ per cent. of GNP in 1998 to €22,635 million or 34 per cent. of GNP this year.

Services, International Transfers and Net Factor Income Flows

In contrast to the increasing merchandise trade surplus, the deficit on services transactions widened substantially in 1998, reflecting very strong growth in imports of services by the high-technology sectors. Earnings from inward tourism increased more slowly than spending by Irish residents abroad leading to a decline in net receipts. These patterns seem set to be repeated this year although the growth in imports by the high-technology sector may decelerate somewhat reflecting slower export growth. The balance of international transfers also declined last year and a further small fall is in prospect for this year. A pattern of long-term decline in these transfers is likely to set in as changes occur in the allocation of various EU funds.

Net factor income outflows increased substantially last year as a reflection of strong output growth in the foreign-owned sectors of the economy. Further significant growth in these outflows is likely this year although some deceleration is possible given the prospect of more modest export growth. While official data are not yet available for the full year, it seems likely that the overall current account surplus remained broadly unchanged last year with the increase in the merchandise trade surplus being offset by a deterioration in other

Balance of Payments 1997, 1998[e] and 1999[f] **Table 3**

€million	1997	1998[e]	1999[f]
Current Account			
• Merchandise trade balance (adjusted)	14,074	19,450	22,635
• Services	–5,956	–8,930	–10,800
• Current international transfers	1,638	1,355	1,295
• Net factor income from rest of world	–8,027	–10,050	–11,990
Balance on Current Account	1,729	1,825	1,140
(% of GNP)	(3¼)	(3)	(1¾)
Capital and Financial Account			
• Capital transfers	734	891	
• Official transfers	–2,769	–1,741	
• Transactions of credit institutions	–385	5,464	
• Official external reserves (adjusted)*	957	–2,087	
• Private capital/residual	–266	–4,302	

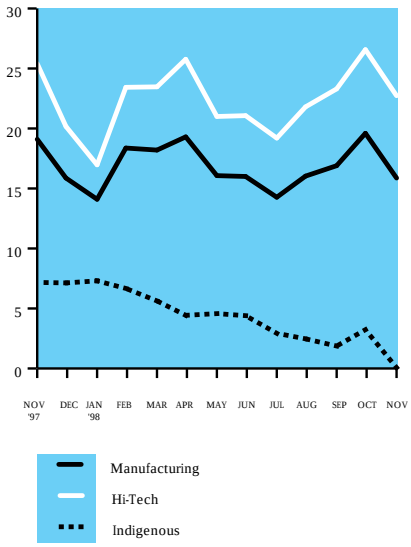
* Change in reserves less valuation changes. A minus figure equals a net increase in reserves.

components. The available information would suggest a figure of about € 1,825 million or 3 per cent. of GNP for the year as a whole. A decline in the surplus to about € 1,140 million or 1¾ per cent. of GNP seems likely this year with a smaller increase in the merchandise trade balance being more than offset by a further deterioration in the other balances.

The Capital and Financial Account

The current account surplus in 1998 was, by definition, reflected in a corresponding deficit on the capital and financial account (including residual unexplained flows). Developments were dominated by inflows arising from an increase in both the aggregate net external liabilities of credit institutions and in capital transfers, mainly EU Regional and Cohesion Fund receipts. These were largely offset by private-capital and residual outflows and by official capital outflows. There was also an increase of €2,087 million in the official external reserves, adjusted for valuation changes.

CHART 3
Volume of Industrial Production
YEAR-ON-YEAR % CHANGE 3 MONTH MOVING AVERAGE



Inflows through credit institutions amounted to close on €5,464 million, partly reflecting transactions related to forward purchases of foreign currency from bank customers, foreign currency swaps and an increase in resident foreign-currency borrowing in excess of resident foreign-currency deposits. Net foreign-currency lending by credit institutions to non-bank IFSC companies and institutional portfolio outflows contributed to the outflows shown under the private-capital and residual heading. Official capital outflows amounted to €1,741 million, comprising mainly foreign-currency debt repayments and a reduction in non-resident holdings of Government debt.

Output Trends and the Labour Market

Industry and Services Output

Manufacturing output continued to grow strongly in 1998. In the period from January to November, the volume of output was 16.6 per cent. higher than in the same period of 1997. The largely foreign-owned 'high-tech' sector continues to be the driving force behind the

Manufacturing Output (annual percentage change) **Table 4**

	Total	High-Technology*	Indigenous
1993	5·4	9·3	0·4
1994	12·7	18·1	5·3
1995	20·1	28·9	6·3
1996	8·2	10·9	3·3
1997	16·6	21·9	5·7
1998[e]	16½	22	3
1999[f]	12½	15½	3
Average (1994-1999)	14½	19½	4½

*The 'high-technology' sector comprises the pharmaceuticals, office and data processing, other foods, electrical and instrument engineering sectors. Indigenous industry comprises the remaining sectors.

strong growth performance, with output growth of 22.4 per cent. in this period. Within this sector, growth in pharmaceuticals (up 32.4 per cent.) and electrical engineering (up 27.8 per cent.) was particularly strong. In the traditional, indigenous sector, output growth was more modest. In the first eleven months of the year, the output of this sector was 3.0 per cent. higher than in the same period of 1997.

There is some degree of uncertainty regarding the outlook for manufacturing output this year, given weak export market conditions. Some slowdown in the level of foreign direct inflows into Irish manufacturing, partly reflecting global economic difficulties, is expected. This may impact adversely on the output growth of the 'high-tech' sector. At the same time, less favourable prospects for the UK economy may affect some parts of indigenous industry, although, sustained levels of domestic demand should continue to underpin modest growth in this sector. This uncertainty in international export markets is reflected in the monthly IBEC\ESRI industrial survey, where expectations relating to export sales in the months ahead were negative in the closing months of 1998. In this general environment, the outlook is for some moderation in output performance, with growth of about 12½ per cent. expected.

As mentioned earlier, building and construction output is likely to continue to expand this year. Sustained levels of domestic demand, together with a continuation of strong employment growth, should also continue to support strong growth in service sector output, while public sector output growth is expected to remain subdued in 1999.

Agricultural Output

The volume of gross agricultural output declined by 0.4 per cent. in 1998, according to preliminary estimates from the Central Statistics Office (CSO). The volume of output from the livestock sector increased by almost 2 per cent. This, however, was more than offset by weather-related declines in the volume of milk and cereal output. Due to the poor weather conditions, usage of feeding stuffs and fertilisers increased substantially, resulting in a 12 per cent. increase in the volume of inputs of materials and services. With output slightly lower and greater use of imports, the volume of gross agricultural product declined by 12¾ per cent. A combination of domestic and international events resulted in a substantial decline in livestock prices, although this was offset to some extent by buoyant milk prices.

Summary of Agricultural Output and Incomes 1997, 1998[e] and 1999[f] **Table 5**

	1997	Percentage Change in			1998[e]	Percentage Change in			1999[f]
	€million	Value	Volume	Price	€million	Value	Volume	Price	€million
Gross Agricultural Output[a]	4,209	–1¾	–½	–1¼	4,139	1½	2	–½	4,208
Farm Materials and Services	2,095	6¾	12	–4¾	2,235	–5	–7¼	2¼	2,120
Gross Agricultural Product at Market Prices	2,115	–10	–12¾	3¼	1,905	9½	12¾	–2¾	2,086
Other Subsidies less Expenses	364				452				272
Income from Self-Employment	2,480	–5			2,355	0			2,358

a Including the value of stock changes.

Combined with an increase in subsidies, this resulted in an overall decline in agricultural incomes of 5 per cent. in nominal terms (7.4 per cent. in real terms) in 1998.

In terms of output, the outlook for 1999 is more benign. Assuming normal weather conditions, some increase in milk output is expected as well as a decrease in the volume of inputs. In this general environment, the volume of gross agricultural product at market prices is expected to rise by about 12¾ per cent. With a small decrease in output prices expected, together with a reduction in subsidy payments, the overall level of agricultural income is expected to remain broadly unchanged in nominal terms; this implies a decline of 1½ per cent. in real terms in 1999.

The Labour Market

Buoyant economic conditions continue to have a positive impact on the labour market. Results from the Quarterly National Household Survey (QNHS) show that total employment increased by nearly 115,000 between April 1997 and April 1998[3]. This was largely driven by an increased incidence of part-time employment, which rose by 79,700. Full-time employment increased by 34,900. The overall figures must be treated with caution, however, because methodological differences mean that direct comparisons with the 1997 Labour Force Survey are not possible. The CSO estimate that the 'underlying' twelve month increase was of the order of 95,000. Even with this downward adjustment, the increase in employment is still the largest on record. In terms of full-time equivalent jobs, the estimated increase was of the order of 4½ per cent. in this twelve month period.

Analysing sectoral changes is also complicated by methodological changes to the survey although some estimates are possible. The downward trend of recent years in agricultural employment was again evident, with the number employed in this sector falling by 5,500. While employment in this sector has been declining for some time now, the magnitude of the latest fall probably reflects the difficult conditions of more recent years. Public sector employment remained static, partly reflecting the Government's commitment to restrain current expenditure. Elsewhere, there were large increases in employment numbers. The largest percentage increase occurred in the building and construction sector, where there was an increase of 25,900, or 23.5 per cent. This, in turn, reflects the boom conditions in the domestic property market. Total manufacturing employment

3. The QNHS was conducted over the period March-May 1998 rather than in April but its results are taken as being representative of the position in that month.

increased by 38,700 or 9.7 per cent. There were also strong employment gains in the service sector, with categories such as hotel/restaurant, financial services and transport/storage/ communications recording particularly strong growth.

The QNHS confirms the downward trend in unemployment, with a decline of 32,400. According to the survey, there were 126,600 people unemployed in April 1998. On an International Labour Office (ILO) basis, Ireland's unemployment rate was 7.8 per cent. in April 1998, compared with 10.3 per cent in April 1997. Long-term unemployment – defined as persons unemployed for one year or more – continued to decline, falling to 3.9 per cent. in April 1998, from 5.6 per cent. twelve months previously.

The size of the labour force increased by 82,100 or by an estimated 62,100 when account is taken of methodological changes in the twelve months to April 1998, continuing the trend of recent years. While this partly reflects the increased demand for labour as a result of the overall strength of the economy, the main factors underlying the expansion are demographic in nature, reflecting the underlying age structure of the population. Furthermore, the participation rate continues to rise, reaching 56.5 per cent. in April 1998, which in turn reflects the increase in female participation. At the same time, net inward migration continues to boost the size of the labour force. This is confirmed by population and migration estimates from the CSO, which show that there was a net inflow of 22,800 into the country in the year to April 1998, following net inflows of 8,000 and 15,000 in the years to April 1996 and April 1997, respectively.

The QNHS covers the period to April 1998 only. However, short-term sectoral indicators, together with income tax receipts, point to a continuation of strong employment growth during the full calendar year of 1998. Manufacturing employment, for instance, was 4.3 per cent. higher in the first half of 1998 than in the same period of 1997, while employment in financial services in the first three quarters of 1998 was 8.2 per cent. higher than in the corresponding period of 1997. In the building and construction sector, data are available for the full year and show that employment increased by 8.8 per cent., on average, during 1998. Taking these trends into account, it is possible to form a tentative estimate for average employment levels during the full calendar year of 1998, although methodological changes add to the difficulties in estimating annual figures. It is likely that the decline in agricultural employment continued throughout the calendar year, in line with the trend of recent years and as a result of the difficult conditions prevailing in this sector during the year. The expansion of industrial employment is likely to have continued, with large increases in construction employment. Employment growth in the services sector is expected to have been particularly strong in 1998, with an estimated 51,000 jobs being created, although it is likely that many of these were part-time jobs. Taking all of this into account, total employment is expected to have increased by 79,000, or 5½ per cent., in 1998 including those in part-time employment. The Standardised Unemployment Rate (SUR), which represents an accurate basis for international comparisons, averaged 7.7 per cent. in 1998, considerably below the EU average.

Employment and Unemployment 1997, 1998*e* and 1999*f* **Table 6**

(annual average 000's)	1997	1998*e*	1999*f*
Industry	411	440	463
Services	877	928	963
Agriculture	135	134	130
Total Employment	1,423	1,502	1,556
Unemployment*	155	126	109
Labour Force	1,577	1,628	1,665
Standardised Unemployment Rate (SUR)*	(9¾)	(7¾)	(6½)

*Based on International Labour Office (ILO) definitions.

The outlook for this year is for further strong growth in employment. Employment numbers are expected to expand by a further 54,000, or 3½ per cent., although the outturn may be somewhat higher if the expansion in part-time employment continues. Agricultural employment is likely to decline further during 1999, after a number of difficult years, together with a less than optimistic outlook for beyond 1999 due to impending reform of the Common Agricultural Policy. Industrial employment is expected to expand by a further 23,000, reflecting further output growth. Again, the largest increases are expected to be found in the services sector, with an additional 35,000 projected. The labour force looks set to rise by about 2¼ per cent., with the SUR expected to fall to about 6½ per cent. on average.

The Public Finances

The Public Finances continue to benefit from a favourable macroeconomic environment. In particular, higher than expected tax receipts have contributed to Exchequer and General Government balance outturns being considerably better than budget-day forecasts. In its *Stability Programme 1999 to 2001* (published on 2 December 1998) the Government indicated its intention to run significant budget surpluses in the years 1999 to 2001.

1998 Exchequer Outturn

The Exchequer Returns for end-December 1998 showed an Exchequer surplus for 1998 of €948 million, which compared with a borrowing requirement of €298 million in 1997. Central Fund Services outlays, at €4,360 million, were €39 million in excess of the Budget target but 7.0 per cent. lower than the 1997 outturn. The €39 million overshoot comprised additional costs of some €136 million on the EU budget contribution being partially offset by savings on debt interest. Current supply services totalled €13,940 million, broadly in line with the Budget target and an increase of 6.3 per cent. on the 1997 outturn. Current supply services coming in close to target was attributable to excess expenditure in certain areas being offset by savings elsewhere, in particular on Social, Community and Family Affairs where spending was €196 million below estimate. This particular saving was principally due to buoyant PRSI income and lower-than-expected Live Register (i.e. unemployment) expenditure. Areas where there were outlays in excess of the budget targets included Justice (€113 million), Education

and Science (€51 million), Agriculture and Food (€34 million) and Health and Children (€25 million).

Tax revenue was up 13 per cent. on the 1997 outturn and was €1,222 million or 6.3 per cent. ahead of the Budget target. Corporation Tax was up 21.5 per cent. on the 1997 outturn reflecting strong growth in profits. Value-Added-Tax was 14.8 per cent. higher. Buoyant car and tobacco sales contributed to the 12.6 per cent. increase in Excise. Income Tax was 9.9 per cent. higher reflecting strong employment growth while non-tax revenue was 13.3 per cent. ahead of the Budget target.

Exchequer borrowing for capital purposes came to €1,707 million compared with a Budget target of €1,521 million. Voted Capital expenditure amounted to €2,452 million. This was €104 million above the Budget target with overshoots on Education and Science (€71 million) and the Office of Public Works (€84 million) being partially offset by savings elsewhere. Capital issues under the Acts were well above Budget arising mainly from a decision to meet commitments to Telecom Eireann and the Irish Aviation Authority in 1998. Exchequer Capital Resources exceeded Budget expectations by some €56 million. This was due principally to higher than anticipated EU receipts and the repayment of IDA grants.

Taking the current surplus and capital deficit together, total Exchequer transactions generated an overall surplus of €948 million. This surplus compares favourably with a €113 million deficit forecast in the 1998 Budget. The General Government Surplus for 1998 was just over 2 per cent. of GDP, which compares with a 0.3 per cent. forecast surplus in the 1998 Budget.

A tax revenue take in excess of expectations was the principal reason behind these improvements on the 1998 Budget forecasts of the Exchequer and General Government balances. Stronger than expected economic growth is the principal reason for tax revenue exceeding Budget targets. This favourable influence of economic growth on the Government finances has been in evidence in recent years. In particular, economic growth has been significantly above what could be considered the economy's long-run trend growth rate. These above-trend rates of growth have led to a situation where, on some estimates, the economy's actual output is now above its potential output level. To arrive at a better understanding of the underlying position of the government balance, account should be taken of the impact that this so-called positive output gap is having on the public finances. In its *Stability Programme 1999 to 2001*, the Department of Finance calculated that the difference between the raw or unadjusted General Government balance and balance adjusted for the favourable cyclical position of the economy was of the magnitude of 1.2 per cent. of GDP in 1998. This would suggest, given that the (unadjusted) General Government Surplus was 1.8 per cent. of GDP, that the cyclically-adjusted 1998 General Government Surplus was substantially lower, at about 0.6 per cent. of GDP.

Main Budget Aggregates 1998 and 1999 **Table 7**

	1998 Budget Estimate	1998 Outturn	1999 Budget Estimate
	€million	€million	€million
Current Expenditure:			
— Central Fund Services[a]	4,321	4,360	4,326
— Non-Capital Supply Services[b]	13,948	13,940	15,229
Total	18,269	18,300	19,555
Current Revenue:			
— Tax Revenue	19,258	20,480	22,011
— Non-Tax Revenue[c]	419	475	509
Total	19,677	20,955	22,530
Current Budget Deficit[d]	**–1,408**	**–2,655**	**–2,965**
Exchequer Borrowing for Capital Purposes	1,521	1,706	1,790
Total Exchequer Borrowing Requirement[d]	**113**	**–948**	**–1,175**
General Government Surplus[e] (% of GDP)	**0·3**	**2·3**	**1·7**

a Debt servicing, judicial salaries and pensions and EU Budget contribution.
b Government current expenditure on areas such as Social Welfare, Health, etc.
c Central Bank surplus income, National Lottery surplus, interest and dividends, etc.
d A positive sign indicates a deficit, a negative sign indicates a surplus.
e The calculation of the General Government Surplus for 1999 reflects new measurements of debt-service costs and GDP. These changes have the effect of reducing the 1999 surplus by 0·4 per cent. of GDP.

1999 Outlook

In the 1999 Budget (presented to the Dáil on 2 December 1998), further strong growth in tax revenue of 7.7 per cent. in 1999 was forecast. This expected increase in tax revenue, combined with a forecast rise in non-tax revenue of 11.1 per cent., implies a projected rise in total current revenue of 7.8 per cent.

The Government's target expenditure variable, total current spending, is forecast to rise by 6.4 per cent. in 1999. This comprises a slight fall in the Central Fund Services outlay of 0.8 per cent. and a rise in Net Non-Capital Supply Services expenditure of 8.7 per cent.[4]

The net amount of Budget day tax reductions was estimated at €374 million. Income tax reliefs were estimated at €399 million and other tax deductions (in VAT, Corporation Tax, Capital Tax, Betting Tax and the abolition of the Employment and Training Levy) at €216 million. These were partially offset by increased Excise, Vehicle Registration Tax and other revenue raising measures totalling €80 million and additional buoyancy from Budget day measures of €159 million. On the expenditure side, increased outlays on Social Welfare, Health, Enterprise, Trade and Employment, Education and Science and other miscellaneous items totalled €193 million. These increases were partially offset by a higher projected Health Contribution take of €127 million.

4. In its ''Action Programme for the Millennium'' (its programme for government) the government commits itself to limiting growth in total current spending to 4 per cent. (in nominal terms) on average up to 1999. When account is taken of a technical adjustment to the Environment vote, the average yearly increase in the target variable over the two years 1998 and 1999 comes in at the 4 per cent. target.

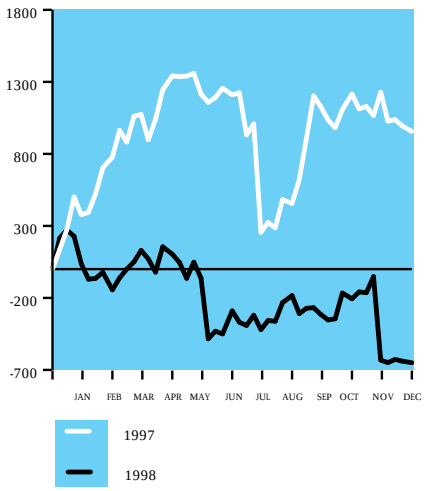
Exchequer Financing **Table 8**

€million	End-December 1997/ End-December 1998	End-September 1998/ End-December 1998
1. Net sales of Irish-pound denominated securities to:	**–860**	**–456**
i) Credit institutions	587	198
ii) Other domestic	–612	–720
iii) Non-residents	–833	66
2. Small savings	**232**	**102**
3. Foreign-currency borrowing (including S69 Bonds)	**–950**	**–476**
4. Small savings reserve	**151**	**44**
5. Change in Government balances	**477**	**1,544**
6. Exchequer Borrowing Requirement (+)/Surplus(–)	**–948**	**758**

Exchequer Financing

With the Exchequer recording a surplus for last year, the Government was able to reduce the outstanding amount of domestic and external debt, rather than being a net borrower in financial markets.

CHART 4
Cumulative Sales of Government Securities
£ million



Repayment of Exchequer foreign debt amounted to €476 million in the final quarter and around €952 million in the year as a whole. Net sales of Irish Government securities fell by €456 million in the final quarter, the third consecutive quarter in which there has been a fall. The total reduction was €860 million in the year as a whole. Domestic holdings fell by €522 million in the final quarter with increased holdings by credit institutions being exceeded by a fall in other domestic holdings. Non-resident holdings of Irish Government securities increased marginally in the three months to end-December, the second quarter this year in which non-resident holdings have risen. With larger reductions occurring in the other two quarters, however, the net result was a fall of €833 million in non-resident holdings in the year as a whole.

The Exchequer raised €102 million from small savings in the final quarter, compared with a total of €131 million in the preceding three quarters. The main reason for this was an increase in flows into Government savings schemes, especially Savings Certificates, probably reflecting the reductions in credit institutions' deposit rates in the final months of the year. The Exchequer borrowed an additional €44 million from the small savings reserve in the final three months of the year, bringing the cumulative borrowings from this source to €151 million in 1998. Borrowings from the reserve occurred for the first time in 1997 when they amounted to €366 million. The Small Savings Interest Reserve Fund was created in 1994 to address the growing unfunded interest liabilities of Government savings schemes.

Financial Sector Developments

Money and Credit

Money and credit growth remained strong in 1998. Taking average annual growth rates for the past two years, adjusted private-sector credit increased by just over 24 per cent. in 1998, compared with a little under 20 per cent. in 1997. Broad money supply grew by around 19 per cent. in both years. The faster growth in credit relative to the

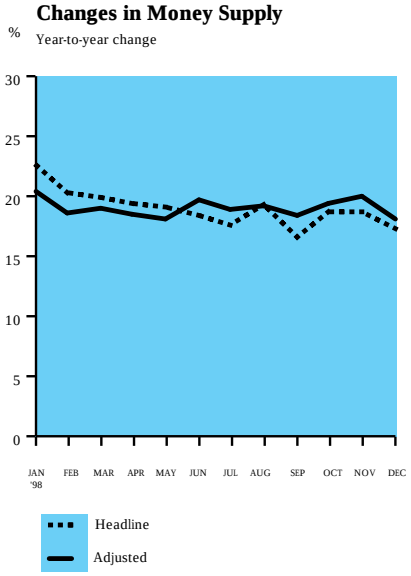
Monetary Aggregates — Annual Rates of Change (%) **Table 9**

		Private-sector credit			M3E[a]
		Residential mortgages	Irish-pound non-mortgage	Total[a]	
1998	January	20·6	24·5	24·4	20·4[e]
	February	20·6	26·7	26·0	18·6[e]
	March	20·7	22·7	24·4	19·0[e]
	April	20·8	22·1	24·3	18·5[e]
	May	18·9	22·2	24·2	18·1[e]
	June	19·5	21·6	22·7	19·7[e]
	July	20·5	22·7	23·1	18·9[e]
	August	20·7	24·6	24·6	19·2[e]
	September	18·9	23·4	23·9	18·4[e]
	October	19·6	24·8	25·1	19·4[e]
	November	20·1	24·0	24·5	20·0[e]
	December	18·8	24·1	23·6	18·1[e]

a Adjusted for transactions between credit institutions and non-bank IFSC companies and valuation effects arising from exchange-rate movements. The total includes both Irish pounds and foreign currency credit.

money supply last year was reflected in a substantial increase in the net external liability of domestic credit institutions; in other words they borrowed from abroad to fund lending to residents.

CHART 5
Changes in Money Supply
Year-to-year change



Broad money supply growth slowed a little in the final quarter of last year, compared with both the previous three months and the final quarter of 1997, resulting in a deceleration in the annual growth rate. The annual adjusted growth rate for M3E was 18.1 per cent. at end-1998, compared with 19.1 per cent. a year earlier and a peak of 22.5 per cent. in October 1997. There was a shift towards more liquid components of money supply during 1998: at end-year, current account deposits amounted to 14.7 per cent. of total resident non-Government deposits of domestic credit institutions, compared with 13.2 per cent. at end-1997, with the increase occurring at the expense of term and notice account balances. This development is probably due in part to the low level of interest rates, which has reduced the opportunity cost of holding funds in more liquid forms. It may also reflect strong transactions demand for money, which would be consistent with the strength of domestic demand discussed earlier.

The annual rate of increase for adjusted private-sector credit slowed from a peak of 26.0 per cent. in February to 23.6 per cent. in December. This rate has generally fluctuated around a level of about 24 per cent. since December 1997. The annual growth rate for Irish-pound denominated credit averaged 24.4 per cent. in the final quarter of 1998, slightly faster than in each of the preceding two quarters. Residential mortgage lending contributed to this development. The published series for residential mortgage credit is distorted somewhat by a number of securitisations, which reduced the stock of outstanding mortgage loans, and by a reclassification of some items which occurred in December 1997. Making an adjustment for these factors points to an acceleration of residential mortgage lending in 1998, especially in the second half of the year. Underlying mortgage growth would appear

Change in Money Supply and Counterparts[a] **Table 10**

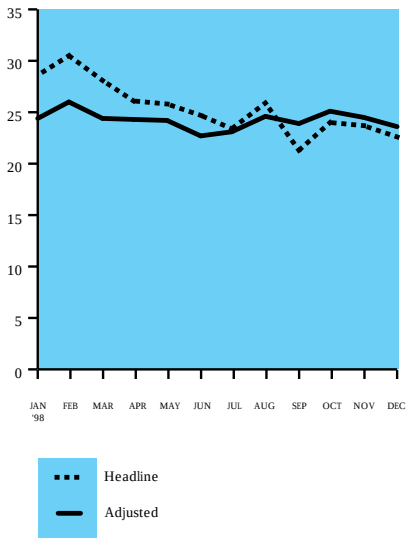
€million	End-December 1997/ End-December 1998		End-September 1998/ End-December 1998	
Liabilities				
Broad money stock (M3E)		**9,298 (17·3%)**		**3,044 (5·1%)**
i) Currency	422		335	
ii) Current accounts	2,035		1,086	
iii) Deposit accounts	6,832		1,619	
iv) Post Office Savings Bank deposits[b]	9		3	
Net external liability		**4,951**		**3,314**
Government deposits at Central Bank		**613**		**–446**
Net non-monetary liabilities		**806**		**202**
Total		**15,666**		**6,114**
Assets				
Official external reserves		**2,301**		**951**
Domestic credit		**13,365 (21·4%)**		**5,163 (7·3%)**
i) Government	625		311	
ii) Private-sector	12,741		4,852	

a Unadjusted for the effects of transactions between credit institutions and non-bank IFSC companies and valuation effects arising from exchange-rate movements.
b Includes an estimate for accrued interest. The counterpart of these deposits is in the Government credit item.

to have been of the order of 22 per cent. in the year to December, compared with an 18 per cent. rate in December 1997. To the extent that the securitised mortgages were acquired by other resident credit institutions, the securitisations which occurred last year would have boosted non-mortgage Irish pound credit. This may account for the acceleration in the annual growth rate of this item in the second half of last year. Netting out this item, the annual growth rate of non-mortgage Irish-pound lending to the private sector would have fluctuated around a level of 23 per cent. in the final nine months of 1998 showing no clear trend.

The sectoral distribution of credit growth is generally well spread. Over the nine months to end-November, the most striking increases included lending to real estate activities and the construction sector, consistent with the strength of the property market. There was also strong growth in lending to manufacturing and in non-housing personal sector lending; the latter is consistent with the strength of consumer demand in 1998, mentioned earlier.

CHART 6
Changes in Private-Sector Credit
Year-to-year change



Financial Markets

The convergence of Irish short-term interest rates on those of other euro-area countries was completed in the final quarter of 1998. The Central Bank's sale and repurchase (repo) rate was reduced in three steps from 6.19 per cent. at end-September to 3 per cent. by early December. The alignment of interest rates led to a convergence of the Irish pound on its ERM central rates. On 31 December, the irrevocable conversion rate for the Irish pound was set at €1 = IR£0.787564.

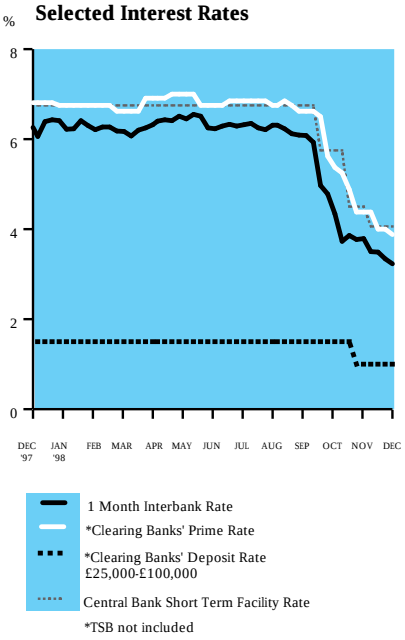
Change in Credit Institutions' Non-Government Credit by Sector* **Table 11**

	End-February 1998/ End-November 1998		End-August 1998/ End-November 1998	
	€million	%	€million	%
Agriculture and forestry	171	6·6	5	0·2
Fishing	9	9·2	10	10·7
Mining and quarrying	47	31·1	–3	–1·3
Manufacturing	861	26·2	259	6·7
Electricity, gas and water supply	117	81·4	39	17·8
Construction	526	42·6	163	10·2
Wholesale/retail trade and repairs	424	14·6	585	21·3
Hotels and restaurants	391	18·7	137	5·8
Transport, storage and communications	93	8·8	27	2·4
Financial intermediation	1,808	10·9	915	5·2
Real estate and business activities	861	22·1	–168	–3·4
Education	13	18·5	–6	–7·2
Health and social work	44	25·7	25	13·2
Other community, social and personal services	104	16·3	–25	–3·3
Personal:	3,711	16·6	1,175	4·7
– House mortgage finance	2,504	14·6	810	4·3
– Other housing finance	109	28·1	52	11·7
– Other	1,098	22·5	312	5·5
Local authorities/regional governments	17	11·9	–	–
Total	**9,194**	**16·0**	**3,140**	**5·0**

* See Note a, Table 10.

CHART 7

Selected Interest Rates



The falls in official and market interest rates in the final months of last year prompted reductions in retail interest rates in the period from October to February. The scope to reduce ordinary demand deposit rates was limited because they were already so low; the clearing banks reduced these rates by cumulative amounts of up to one percentage point and by mid-January they ranged from just 0.10 per cent. to 1.25 per cent. Maximum clearing bank rates for term loans and overdrafts for personal borrowers and small to medium sized businesses and farmers were reduced by cumulative amounts ranging from 0.75 to 2.5 percentage points. Most of the major mortgage lenders reduced standard mortgage rates by around 2 percentage points, bringing them within a range of 5.1 to 6.0 per cent. Many commercial borrowers are charged a rate based on the prime rate plus a margin. The prime rate is directly linked to developments in market rates and accordingly it also fell from October 1998 onwards. By end-February, clearing bank prime rates were in a range of 3.62 to 3.67 per cent.

In the final quarter of 1998, Irish Government bond yields fell further towards German levels, reflecting reductions in short-term interest rates and the imminence of monetary union. By end-1998, the five-year yield was around 3.2 per cent. and the ten-year yield was just below 4 per cent. Both had declined fairly steadily from a peak of around 9 per cent. in late-1994/early 1995. The five-year differential with respect to German yields had fallen to below 0.10 of a percentage point by the end of last year; this compares with an average differential of just over 1 percentage point in 1997, 1.7 percentage points in 1996 and 2.1 percentage points in 1995. The ten-year differential was around 0.2 of

Interest-Rate and Bond-Yield Differentials **Table 12**

End-month		5-year Bond yield	Differentials against:			10-year Bond Yield	Differentials against:		
			Germany	UK	US		Germany	UK	US
1997	December	**4·95**	0·27	–1·58	–0·81	**5·48**	0·21	–0·87	–0·33
1998	January	**4·70**	0·19	–1·55	–0·71	**5·29**	0·31	–0·75	–0·25
	February	**4·62**	0·20	–1·76	–1·04	**5·18**	0·28	–0·93	–0·58
	March	**4·57**	0·22	–1·64	–1.13	**5·07**	0·21	–0·83	–0·69
	April	**4·81**	0·36	–1·27	–0·89	**5·16**	0·24	–0·68	–0·61
	May	**4·77**	0·49	–1·27	–0·81	**5·08**	0·27	–0·63	–0·51
	June	**4·66**	0·45	–1·82	–0·87	**5·00**	0·28	–0·86	–0·53
	July	**4·53**	0·40	–1·86	–1·03	**4·87**	0·28	–0·90	–0·70
	August	**4·23**	0·57	–1·59	–0·78	**4·59**	0·42	–0·71	–0·51
	September	**3·75**	0·21	–1·55	–0·65	**4·22**	0·29	–0·64	–0·29
	October	**3·62**	0·11	–1·49	–0·57	**4·35**	0·23	–0·68	–0·17
	November	**3·46**	0·12	–1·49	–1·21	**4·16**	0·24	–0·49	–0·61
	December	**3·21**	0·06	–1·38	–1·47	**3·99**	0·18	–0·44	–0·70
1999	January	**3·25**	0·04	–0·93	–1·33	**3·84**	0·21	–0·32	–0·84
	February	**3·47**	–0·03	–1·13	–1·72	**4·18**	0·19	–0·43	–1·09

Note: (–) denotes Irish yields are lower than foreign yields.

a percentage point at end-December having contracted from a peak of 1.9 percentage points in April 1995. Following the start of monetary union, short-term money-market rates became essentially the same for all euro-area countries, but bond yields may still vary, reflecting differences of risk and liquidity. In the early part of 1999, Irish yields remained very close to German levels for both the two-year and five-year bonds while the ten-year differential remained fairly stable at around 0.2 of a percentage point.

Central Bank support to the domestic market fell by €338 million in the final quarter of last year. The main influences on market liquidity were net Government expenditure over the quarter and the activities of the NTMA. In early 1999, there was a reduction in support to the Irish market reflecting mainly net Government expenditure and liquidity inflows through the TARGET system, the latter being largely due to cross-border interbank activity.

Financial Institutions

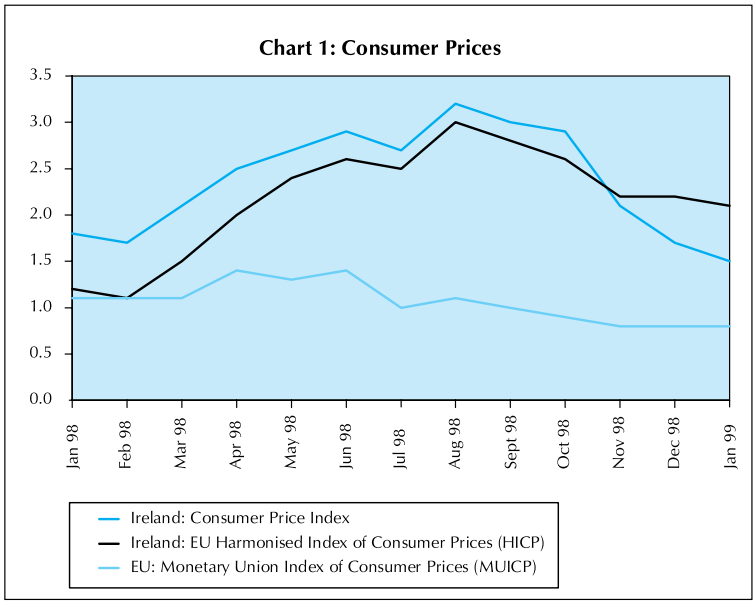
In line with the international trend towards financial sector consolidation, there have been some recent developments in this area concerning domestic financial institutions. The main development has been the proposed merger between Irish Permanent plc, a former building society which converted to a bank, and the largest life assurance company in the country, Irish Life. The new institution, to be called Irish Life and Permanent, will become the third largest financial services group in the state. In addition, the Government intends to divest itself of its interest in the two state-owned banks, the ICC Bank plc group and ACC Bank plc, and it has also agreed to the proposed merger between the ACC and TSB Bank. Finally, Anglo-Irish Bank Corporation plc has announced its intention to acquire Smurfit Paribas

Bank Limited. All of the proposed mergers described in this section are subject to regulatory approval. A further recent development was the conversion of First National Building Society to a bank, called First Active plc., in September 1998.

Domestic Prices, Costs and Competitiveness

Overview

Ireland's overall inflation performance deteriorated somewhat in 1998, both in absolute and relative terms. Average inflation, as measured by both the Consumer Price index (CPI) and the Harmonised Index of Consumer Prices (HICP) accelerated by 0.9 percentage points to 2.4 per cent. and 2.1 per cent. respectively. By contrast average inflation in the euro area, as measured by the Monetary Union Index of Consumer Prices (MUICP), declined by 0.5 per cent. to 1.1 per cent. Wage inflation accelerated sharply in 1998 while average earnings growth in Ireland's major trading partners slowed somewhat. A deterioration in Ireland's competitive position was, however, avoided in 1998 due to an offsetting decline in the average value of the exchange rate and higher Irish productivity growth.



During 1998, the annual rate of increase in the CPI accelerated sharply in the first half of the year, peaked at 3.2 per cent. in August and declined thereafter to a rate of 1.7 per cent. in December. Inflation as measured by the HICP followed a similar pattern, but started the year at a lower rate than the CPI, peaked at 3 per cent. in August and declined more slowly thereafter. According to the most recent available data, relating to January 1999, annual CPI inflation was 1.5 per cent. while HICP inflation was 2.1 per cent. Recent CPI data are being flattered somewhat by the inclusion of mortgage interest rates

which have fallen sharply since October last. The HICP, which does not include mortgage interest rates, has been more indicative of underlying inflation.

Against a background of rapid output growth, strong domestic demand, an increasingly tight labour market and a sharp decline in the average value of the exchange rate during the previous year, a deterioration in Ireland's inflation performance was expected in 1998. The extent of that deterioration was, however, relatively modest and somewhat below consensus expectations at the beginning of the year. A very benign external environment was a major contributory factor. Commodity prices including oil fell to historically low levels. Global excess production capacity, much of it concentrated in Asia, combined with sharp currency depreciations in that region, put downward pressure on goods prices internationally. Producer price inflation is negative in most industrial countries. In addition, while there was evidence of an exchange rate impact on Irish goods price inflation in the first three quarters of the year, the pass-through from the decline in the value of the pound was quite slow and relatively moderate. This reflected a combination of resistance to price increases at the retail level arising from intense competition in that sector and apparent pricing-to-market behaviour by UK exporters in particular.

Turning now to domestic inflationary pressures, the combination of accelerated wage inflation and strong domestic demand contributed to an acceleration in underlying services inflation but this was to a large extent offset by much lower telecommunications charges due to the ongoing effect of deregulation and increased competition. The strongest indicator of domestic overheating was the sharp increase in prices for a wide range of fixed assets including land, housing and commercial property. In addition, capacity constraints combined with strong demand in the construction sector underlay significant price increases for investment goods, as reflected in the investment deflator which increased at an estimated $6\frac{1}{2}$ per cent. in 1998.

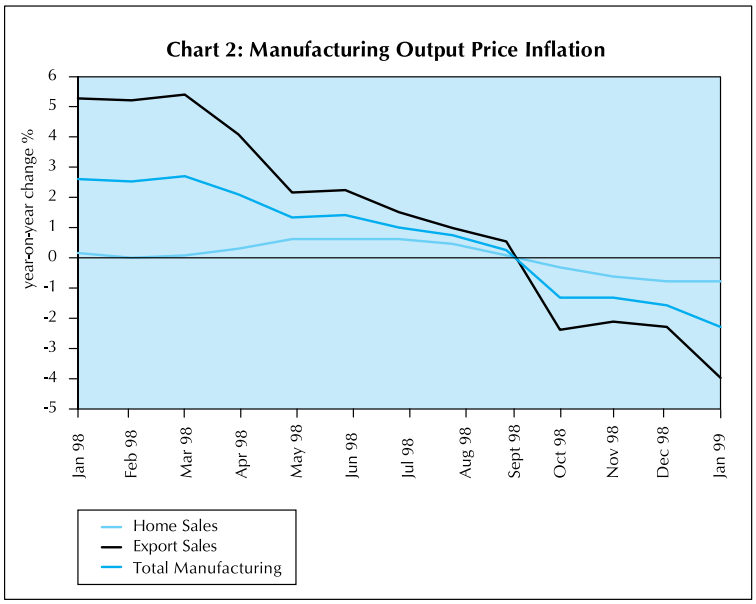
In summary, Ireland's inflation performance slipped slightly in 1998 but the extent of the deterioration was less than expected. Inflation has been decelerating since August 1998 due mainly to a combination of disinflation internationally and a stronger exchange rate in the second half of 1998. In addition, headline CPI inflation has fallen sharply since October 1998 due to the effect of lower mortgage interest rates.

Producer prices

Producer prices, which reflect price trends at the factory and farm gate level, can provide an early indication of the likely future trends in consumer prices. Recent trends in producer prices have been generally weak. The manufacturing output price index (OPI) declined in each of the last three quarters of 1998. The year-on-year change in the index decelerated from plus 2.6 per cent. in the first quarter of 1998 to minus 1.4 per cent. in the final quarter of the year. In the three months to January 1999, the index declined by 0.6 per cent. compared to the previous three months and by 1.7 per cent., year-on-year.

The OPI is a weighted average of two sub-indices – the export sales sub-index and the home-sales sub-index. Trends in the export sales sub-index are closely related to exchange rate movements, reflecting the fact that most Irish exports are priced at the going foreign currency prices overseas. The export sales sub-index declined sharply in the last three quarters of 1999 and accounted for much of the decline in the overall index. In the three months to January 1999, it declined by 0.6 per cent. compared to the previous three months and by 2.8 per cent., year-on-year. A rebound in this sub-index is likely over the coming months if the recent weakness in the exchange rate is sustained.

The home sales sub-index of the OPI reflects, to some degree, domestic inflationary pressures at the factory gate for goods sold domestically. This sub-index has been remarkably stable over the last three years. In 1998, it increased by just 0.1 per cent., on average, following no effective change in the previous year. In the three months to January 1999, it declined by 0.6 per cent. compared to the previous three months and by 0.7 per cent., year-on-year.



Much of the weakness in the OPI is accounted for by price declines in the food sector where prices fell by 3.2 per cent., on average, year-on-year, in the three months to January 1999. Over the same period, the average year-on-year price decline for manufacturing industries excluding food was 0.6 per cent.

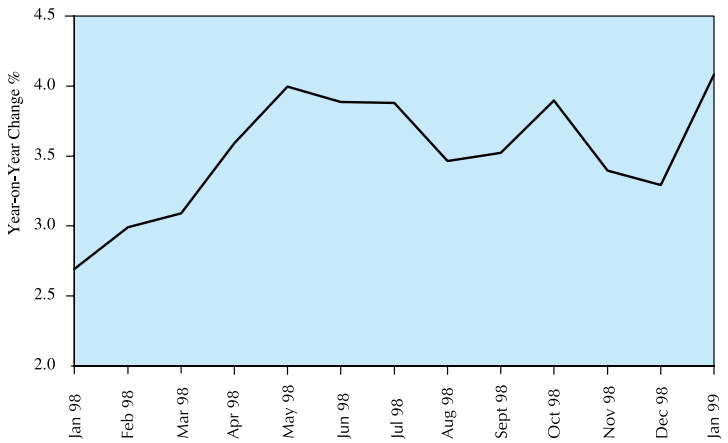
The seasonally adjusted agricultural output price index (API) declined at a quarterly rate of 4.1 per cent. and by 3.8 per cent., year-on-year, in the last quarter of 1998. Livestock prices were particularly weak especially for sheep and pigs which declined by 28.4 per cent. and 28.6 per cent., year-on-year, respectively, in the final quarter of 1998. By contrast, some crop products recorded price increases during 1998.

For example, vegetable prices increased by 10.2 per cent., year-on-year, in the last quarter of 1998 while potato prices were up by 81.7 per cent. over the same period.

Services Sector

Services sector inflation, as measured by the services and related expenditure sub-index of the CPI, averaged 3.5 per cent. in 1998 which was 1.1 per cent. higher than the rate of increase in the overall index. In January 1999, services sector inflation accelerated to 4.1 per cent. due partly to a base effect.

Chart 3: Services Sector Inflation*



*services and related expenditure sub-index of the CPI.

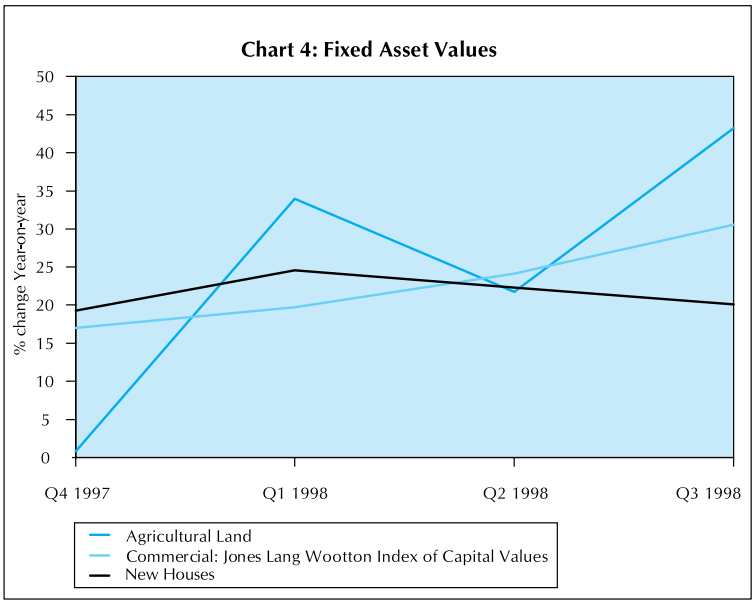
The services sector is relatively labour intensive with, in many instances, less scope for increases in measured productivity than other sectors of the economy. In addition, unlike the exposed traded sector, it is largely immune to international competitive pressures. Accordingly, it is usually the case in most countries that services inflation is somewhat higher than for traded goods. This differential can vary considerably, however, depending on relative trends in external and domestic demand and costs. In addition, while exchange rate movements have a significant bearing on traded sector inflation, the services sector is largely unaffected at least in the short run. Another important factor is the effect of administrative decisions which essentially determine the evolution of price changes for services such as health care and education which account for a significant proportion of expenditure on services.

When the gap between inflation rates in the services sector and for traded goods begins to widen, it is typically a reflection of emerging overheating in the domestic economy. Given the strength of domestic demand and the increasing tightness of the labour market, it was probably inevitable that this differential widened in 1998 although the excess would, at first sight, seem relatively modest by historical standards. However, goods price inflation increased during 1998 due

to previous exchange rate weakness and this factor, *ceteris paribus*, would cause the differential to narrow. In addition, services sector inflation has been restrained by the effect of sharp declines in telecommunications prices. Abstracting from the effect of the latter, the underlying rate of services sector inflation is approaching 5 per cent. and has been accelerating over the last year. Accordingly, the underlying gap between services sector inflation and goods inflation is wider than is apparent from the headline data and, given expected trends in domestic costs and the likely decline in goods inflation, it is likely to widen further during 1999.

Asset Prices

The relatively modest rate of consumer price inflation over the past year has not been mirrored in asset markets where prices have risen sharply. House prices are currently at an historic high both in real terms and by reference to average incomes. According to the latest Department of Environment data, relating to the third quarter of 1998, the highest rates of increase were recorded in the market for second hand houses in the Dublin area, where prices increased at a year-on-year rate of 41.7 per cent. Nationally, second-hand house prices increased at a rate of 36.6 per cent. in the third quarter compared with a rate of 27.3 per cent. in the first quarter of 1998. The rate of increase in new house prices nationally slowed somewhat to 20.1 per cent. in the third quarter from 22.3 per cent. in the second quarter and 24.6 per cent. in the first quarter of 1998, perhaps reflecting, to some extent, the impact of measures introduced in the light of the publication of the Bacon report to reduce investor demand.

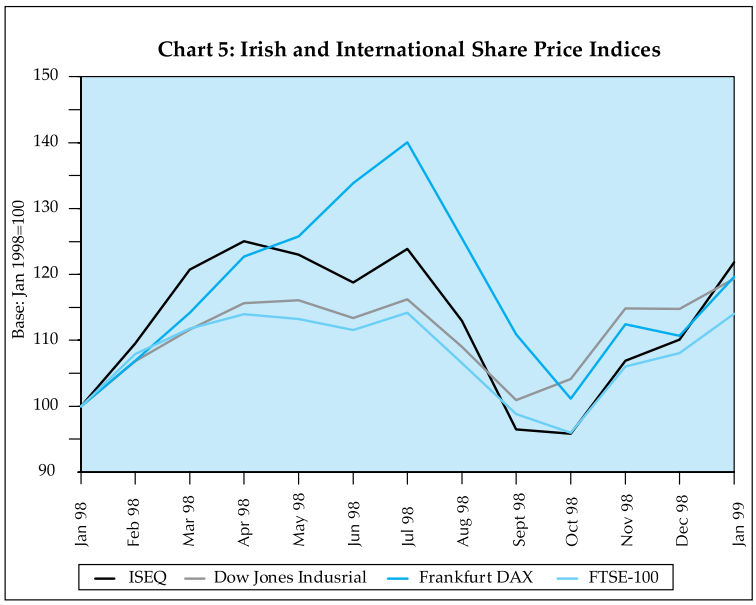


Agricultural land prices increased sharply during the first three quarters of 1998, according to CSO data. The price per hectare was 43.2 per cent. higher, year-on-year, in the third quarter. This rate of increase is surprising given the weakness in agricultural incomes in 1998. It should be noted that this price series is quite volatile reflecting the relatively

low volumes of land sales relative to overall holdings. In fact, the high recorded rate of increase in the third quarter of 1998 reflects, in part, a negative base effect due to a fall in average prices in the same period in 1997.

Low nominal interest rates, historically low vacancy rates and a high degree of business confidence underpinned the demand for commercial property over the last year and both capital values and rents increased. The Jones Lang Wootton Index of Capital Values for a representative sample of commercial property increased by 30.6 per cent. in the twelve months to September 1998.

The average value of the Irish Stock Exchange Index (ISEQ) increased by 42.2 per cent. in 1998. Prices peaked in mid year but weakened significantly between mid-July and October in line with international trends in the light of the Russian financial crisis. Despite a recovery since then, Irish share prices had not reached previous peak levels by the end of 1998. In January, the ISEQ increased by 10.6 per cent. and was up 21.8 per cent., year-on-year.



In line with trends in other industrial countries Irish bond prices increased and yields fell sharply in the second half of 1998 reflecting a flight to quality by international capital in the light of the Asian and Russian financial crises. In addition, EMU related convergence was a factor for shorter dated Irish bonds.

There are two main channels by which the acceleration in asset price inflation is likely to impact on consumer price inflation. Firstly, the increase in wealth may stimulate consumption putting pressure on resources through increased demand. Secondly, increased asset price inflation could spill over into the labour market by increasing price and wage expectations among workers. While equity prices have increased sharply in recent years, they do not constitute a large proportion of

personal sector wealth. Similarly, commercial property, although accounting for a significant proportion of investment and pension funds, does not directly account for a large proportion of personal sector wealth. However, house price inflation, reflecting the high degree of home ownership in Ireland, has led to a significant direct increase in personal sector wealth in recent years. This may have contributed to the high and sustained real increases in the volume of consumer spending and the decline in the savings rate among households. In addition, the rate of house price inflation has outstripped the rate of wage inflation and the ratio of average house prices to average incomes is at an historically high level. In the past, such peaks in this ratio have been unwound either by a period of ongoing declines in real house prices, as happened in the 1980s, or an increase in wage inflation relative to house price inflation, as was the case in the early 1990s. In current circumstances, given labour market conditions, the latter outcome seems more likely.

Pay

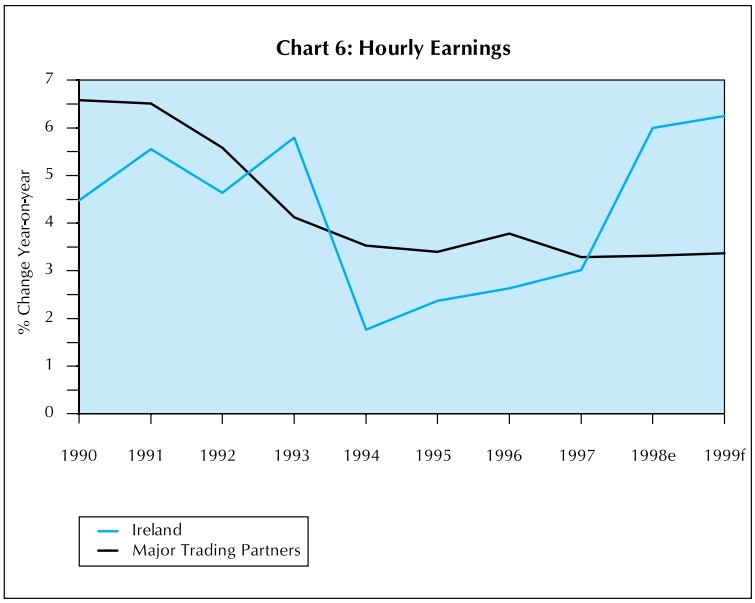
Conditions in the labour market have become increasingly tight. Various surveys point to increased shortages of both skilled and unskilled labour. Furthermore, the most recent short-term earnings indicators are consistent with a further tightening of labour market conditions. Hourly earnings in manufacturing rose by 5.6 per cent., year-on-year, in the first three quarters of 1998, according to estimates from the CSO. Over the same period in the building and construction sector, wage inflation has accelerated substantially, with hourly earnings 10.9 per cent. higher year-on-year. For skilled construction workers, the rate of increase was even more marked.

On the other hand, weekly earnings in the financial sector rose rather more modestly at a rate of 3.5 per cent., year-on-year, in the first three quarters of the year. The overall rate of increase in this sector, however, is being depressed by an increased level of job sharing and increased employment at lower grades in banking and building societies. In the insurance sector, the year-on-year rate of increase in the first three quarters was a rather more substantial 8.3 per cent. At the same time, anecdotal evidence points to pay pressures in the services sector and to increased difficulties in filling vacancies.

The Exchequer pay and pensions bill rose by an estimated 9 per cent. in 1998, with part of the increase attributable to settlements made under the Programme for Competitiveness and Work (PCW) and some increase in numbers employed. In aggregate, non-agricultural earnings per capita are expected to have risen by $6\frac{1}{4}$ per cent. in 1998. After adjusting for the fact that a large part of the increase in total employment in 1998 was due to an increased incidence of part-time employment, an increase of $4\frac{3}{4}$ per cent. in non-agricultural employment is expected. As a result, the total non-agricultural pay bill is estimated to have risen by about $11\frac{1}{2}$ per cent. in 1998.

The acceleration in wage inflation over the last two years reflects shortages of both skilled and unskilled labour. With another year of strong economic growth in prospect for 1999, it is reasonable to expect further shortages to emerge. In these circumstances, wage inflation is expected to increase again. Therefore, taking into account

increased bonuses, overtime payments and the general upward drift in wages reflecting labour market shortages, earnings per capita are expected to rise by about 6½ per cent. this year. With non-agricultural employment expected to rise by 4 per cent., an increase of 10¾ per cent. in the non-agricultural pay bill is expected next year.



Competitiveness

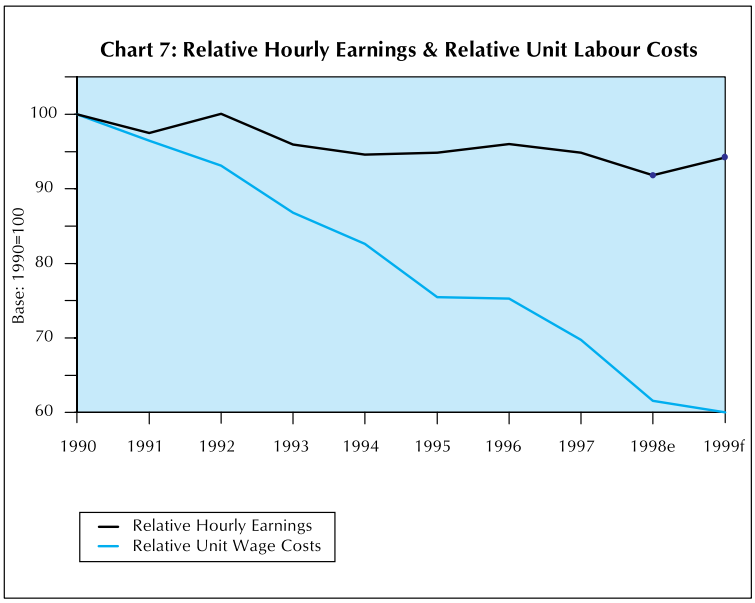
Average hourly earnings increases in Ireland were higher than those in our major trading partners in 1998. Higher nominal wage inflation was offset by a decline in the value of the exchange rate so that relative hourly earnings expressed in common currency declined. Exchange rate movements together with a faster rate of labour productivity growth lead to a decline in relative unit labour costs. However, these productivity gains were in large part attributable to the foreign-owned, high-technology sectors where labour productivity has expanded significantly in recent years. Elsewhere, productivity gains have been considerably less, if still reasonably satisfactory.

Because of its lower rate of productivity growth, short term trends in the competitiveness of the more labour intensive indigenous sector may be more accurately assessed by reference to relative hourly earnings rather than unit wage costs. If pay increases of the magnitude currently being experienced persist, they could lead to lower increases in output and employment, and eventually, perhaps, to some downturn, with the indigeneous sector at particular risk.

Charts 6 and 7 are constructed using the following sources: Ireland — Central Statistics Office and Central Bank of Ireland estimates and projections; Major trading partners — historical data estimates and projections are derived from the OECD.

In 1999, average hourly earnings in Ireland are again expected to accelerate more rapidly than in our major trading partners. The decline in the value of the euro relative to sterling in the opening months of the year will act as a short-term buffer against adverse pay developments for indigenous industry competing with UK firms. Nevertheless, it is likely that relative hourly earnings in common currency terms will increase in 1999, reversing the decline in 1998. In

the longer term, the higher rate of wage inflation relative to the UK in particular could have negative implications for indigenous industry. For sectors of industry trading mainly in the euro area adverse cost developments and accelerating wage inflation will have an inevitable impact on competitiveness unless offset by superior productivity performance, since no offsetting exchange rate movements can occur.



Assessment and Outlook

The outlook for CPI inflation over the next year is for a further decline in the year-on-year rate until about mid-year, followed by a pick-up in inflation in the second half of the year. The combination of base effects and mortgage interest rate reductions could see headline CPI inflation falling to close to an annual rate of 1 per cent. by mid-year before rebounding sharply towards the end of the year as the mortgage rate effect falls out. The CPI is likely to increase by about $1\frac{1}{2}$ per cent. on average in 1999.

Wage inflation is likely to increase further in 1999 against a background of ongoing wage moderation in most of Ireland's trading partners. Relative hourly earnings, in common currency terms, are likely to increase with negative implications for the competitive position of the more labour intensive sectors of industry in particular. Already, wage inflation in the construction sector has inflated costs considerably and is reflected in the investment deflator which is set to increase by about 7 per cent. this year.

Given the state of the domestic economy, there is considerable upside risk for wage inflation and non-traded inflation in the year ahead. In addition, if the current weakness in the value of the euro were to persist, this could generate higher than expected goods price inflation. Downside risks, at least in relation to traded goods prices, are also significant however, given the extent of deflationary pressures internationally as evidenced by the continued weakness of commodity

prices and widespread declines in manufacturing output prices. In addition, disinflationary pressures arising from increased competition, deregulation and rationalisation in the domestic economy, particularly in the distribution and retail sectors and for services such as telecommunications are likely to persist for some time.

Inflation Analysis: An Overview

by Terry Quinn, Geoff Kenny and Aidan Meyler[1]

1. Introduction

The primary focus of monetary policy, both in Ireland and elsewhere, has been the maintenance of price stability. In operational terms, this can be thought of as the maintenance of a low and stable rate of aggregate price inflation as defined by commonly accepted measures such as the consumer price index. In the period prior to the launch of the euro, the objective of price stability in Ireland was pursued, as in other small open economies in the European Monetary System (EMS), via an intermediate exchange rate target. Throughout the 1980s and in the 1990s (up to the end of 1998), monetary policy strategy was focused on the maintenance of the Irish pound within the exchange rate mechanism (ERM) of the EMS. The analysis of inflation played an important role in this strategy. In this context, the purpose of this article is to describe how inflation analysis and forecasting has been carried out in the Bank, with particular emphasis on recent research and the new challenges facing the Bank following the launch of the euro on 1 January 1999.

Broadly speaking the approach adopted by the Bank over a number of years has been an eclectic one which combines judgement and a range of formal approaches. The latter include structural models which are strongly influenced by basic macroeconomic theories of the small open economy (SOE), indicator analysis, including a composite leading indicator, and time series methods such as autoregressive integrated moving average (ARIMA), vector autoregressive (VAR) and Bayesian VAR (BVAR) models. The emphasis on particular methodologies has evolved over time but in all cases judgement has played a central role. This reflects the fact that while individual formal approaches have particular advantages, they also tend to have certain limitations. In particular, model-derived forecasts often have relatively large confidence intervals around the point forecasts. Structural models are, however, useful in clarifying the relationships among the key macroeconomic variables which determine the rate of inflation and consequently provide a framework within which an eclectic approach to inflation forecasting can be applied. Unfortunately structural models often have difficulty dealing with regime changes such as the entry of the Irish pound into the EMS or the adoption of the euro. In addition, forecast errors from structural models can arise due to problems of mis-specification, measurement error and feedback from supposedly exogenous policy variables (the Lucas critique). In response to such problems, and the resulting poor forecast performance of structural models, atheoretical time series models, such as ARIMA and VAR models, are being used increasingly for forecasting in the Bank and elsewhere. These methods are not without their problems. For example, while efforts to obtain parsimony in structural modelling can

1. The authors are economists in the Economic Analysis, Research and Publications Department. The views expressed in this paper are not necessarily those held by the Central Bank of Ireland and are the personal responsibility of the authors.

lead to the exclusion of potentially useful information, time series models can suffer from overfitting problems whereby they allow for short term influences which have little explanatory power in uncovering the long term determinants of inflation. This ensures a good in-sample fit but can result in poor out-of-sample forecasting performance. The estimation of BVAR models allows the modeller to include all useful information, attenuating problems of overfitting and lack of degrees of freedom.

In the Bank, ARIMA models have proved particularly useful in the analysis of short term (out to one year) trends in the overall harmonised index of consumer prices (HICP) and in sub-indices of the HICP while BVAR analysis is more powerful when forecasting up to two years ahead. Other research topics currently underway include the estimation of core inflation and an examination of the determinants of services sector inflation.

In the next section a brief outline is presented of the monetary policy strategy that will be followed by the European System of Central Banks (ESCB) and the role of inflation analysis and forecasting in this strategy. The following section will deal with structural models, indicator analysis, ARIMA and BVAR models. In addition, current research topics including, core inflation and services sector inflation are discussed.

2. Current Setting for Inflation Analysis

The primary objective of the ECB, as mandated by the Treaty establishing the European Community, is the maintenance of price stability in the euro area. The Governing Council of the ECB has adopted the following working definition of price stability: *''Price stability shall be defined as a year-on-year increase in the Harmonised Index of Consumer Prices (HICP) for the euro area of below 2%''*. Furthermore, ''*price stability is to be maintained in the medium term*'' and reflecting the existence of short-term volatility in prices which cannot be controlled by monetary policy, the latter will have a ''*forward-looking, medium-term orientation*''. This forward looking medium-term orientation motivates attempts to estimate accurate measures of core or noiseless inflation as discussed below.

The monetary policy strategy to be followed by the European System of Central Banks (ESCB) in pursuit of the primary objective of price stability was agreed by the governing council of the ECB at its meeting on 13 October 1998. This strategy has two key elements. First, money is assigned a prominent role and the relationship between broad monetary growth (M3) and its pre-announced reference value will be regularly and thoroughly analysed. Second, in parallel with the analysis of monetary growth, a broadly based assessment of the outlook for price developments and the risks to price stability in the euro area will play a major role in the ESCB's strategy.

Apart from their role as an input into monetary policy formulation, however, forecasts of Irish inflation are likely to have a continued – or perhaps even greater – role in other areas of economic policy-making. In particular, it has been argued that the sacrifice of monetary autonomy which results from Irish participation in EMU has increased the need to consider fiscal policy as a counter-cyclical demand

management tool (or at least fiscal policy should not adopt a pro-cyclical stance). Arguably, therefore, the state of the economy and the inflation forecast should be given greater weight in the formulation of fiscal policy in Ireland than has been the case in the past. In addition, it is clearly the case that, notwithstanding the common currency which is shared by each participant in EMU, inflation differentials could arise between member states.[2] On the one hand, such differentials may be expected in the presence of productivity differentials between the traded and non-traded sectors of individual economies. However, should they become too large, such differentials may undermine a country's competitiveness. With a common currency in the euro area the forecast of Irish inflation is therefore essentially a forecast of the likely evolution of Irish competitiveness within the euro area. It is likely, therefore, to have an important role in the wage-bargaining process.

3. Inflation Analysis in Practice

3.1 Structural Modelling of Inflation

The SOE model of inflation and the concept of long run purchasing parity (PPP) underlie most structural models of Irish price determination both within the Bank and elsewhere. If absolute PPP holds then the price of a basket of goods domestically will equal the world price converted at the relevant nominal exchange rate. The SOE model posits that PPP holds in the long run, and that domestic inflation equals the sum of the change in the world price and the change in the nominal exchange rate. Furthermore, in a fixed exchange rate regime, on the basis of price taking behaviour in a small open economy, domestic inflation will be entirely determined abroad. In a flexible exchange rate regime, however, if long-run PPP holds and the nominal exchange rate is depreciating then an analysis of domestic factors which may be contributing to the decline in the exchange rate such as excessive wage inflation, the fiscal stance and the rate of *ex ante* money creation also warrant analysis.

Most studies of Irish inflation during the 1970s when the Irish pound was linked to sterling accepted the long run implications of the SOE model, and the main area of disagreement centred on the speed of adjustment of domestic inflation to changes in world inflation. See, for example, Geary and Jones (1975), Geary (1976a, 1976b) and Bradley (1977). Since the 1980s however, following the entry of the pound into the EMS, more emphasis has been placed on domestic factors. Browne (1984), for example, found that changes in domestic monetary policy had an enduring effect on Irish inflation in the post-EMS period. Fountas, Lally and Wu (1995) found evidence of a role for wages in the determination of inflation. Callan and Fitzgerald (1989), however, found wages to be insignificant in the long-run determination of Irish inflation.

Flynn (1986) and Honohan and Flynn (1986) find support for the view that PPP holds in the long run and that changes in the exchange rate will eventually pass through fully to domestic prices. By contrast, O'Connell and Frain (1989) conclude that only about half of the effect of a change in the exchange can be identified as having passed through to domestic prices over a period of one year to eighteen months. Kenny and McGettigan (1998) find evidence to support the existence

2. For a recent discussion and empirical analysis of this issue see Alberola and Tyrvainen (1998).

of very close to full pass through from exchange rate changes in the case of both Irish import prices and domestically competing prices in the long run but with a rather slow speed of adjustment, lending support to the existence of incomplete pass through in the short run.

Kenny and McGettigan (1999) apply a hybrid two-sector model which draws a distinction between traded and non-traded prices in order to access the role of foreign prices, the exchange rate and wages as determinants of Irish inflation. They find strong evidence that long run PPP holds for traded goods. For non-traded goods strict PPP was rejected and a much weaker relationship was found to exist between external factors and non-traded inflation.

The emphasis in many of the structural models above was on finding a model which best accounts for the in-sample properties of the data and not on forecasting performance *per se*. As discussed in Cecchetti (1995), good in-sample properties do not necessarily imply good forecasting properties. In fact, the confidence intervals around forecasts derived from structural models, even those primarily focused on forecasting performance are normally quite large and consequently need to be supplemented by complementary approaches such as indicator analysis and time series analysis

3.2 Inflation Indicators

Several recent Central Bank of Ireland studies have specifically examined the information content of a variety of different inflation indicators. The basic findings of these studies are reviewed below in brief. To anticipate, these studies have in general found that the indicators under analysis invariably have *some* predictive power. However, it is also the case that the estimated econometric relationships are rarely found to be stable and this complicates their use in the formulation of monetary policy. This general finding is consistent with results in the international literature (see, for example, Cecchetti, 1995), which point toward an inherent lack of stability in the relationships between most inflation indicators and inflation itself.

3.2.1 Monetary Aggregates/Financial Indicators

Howlett and McGettigan (1995) concentrate on an analysis of the information content of monetary and credit aggregates using an astructural VAR methodology. The authors hypothesise that, following the widening of the exchange rate bands within the EMS in August 1993, the potential relevance of such variables in terms of forecasting Irish inflation may have increased. The results underline the need to extend the analysis of inflation beyond the closed economy model. Using a basic three variable VAR (including M1/M3, credit and prices), it was found that neither domestic money nor credit were strongly related to domestic consumer prices. Subsequently, the VAR was extended to include domestic output and short-term interest rates and, once again, this simple closed economy specification failed to reveal any significant explanatory power for either money or credit aggregates. However, when the VAR is extended to an open economy setting, i.e. including foreign monetary variables, the performance of the domestic monetary aggregates is enhanced. M3 is, for example, shown to have some significant predictive power at the longer forecasting horizon (5 years). Another interesting finding in this study,

and one which is common across the international literature, is that prices explain a very significant proportion of their own variation.

McGettigan (1995) has examined the usefulness of the Irish term structure of interest rates as a possible tool in the construction of the inflation forecast. The paper uses discount functions to estimate the term structure indirectly. Unfortunately, it is found that this approach to measuring the Irish term structure does not yield any significant information which could be usefully applied in the formulation of monetary policy. One possible explanation for this is that certain stocks in the Irish bond market have, in the past, been relatively illiquid and only traded infrequently.

3.2.2 Output Gap/Capacity Utilisation

Following the large international literature which posits a relationship between the deviation of actual output from potential output (the output gap) and the rate of inflation, Kenny (1995) constructs a range of output gap measures for Ireland and examines their usefulness as predictors of inflation. A variety of techniques are employed to estimate the output gap for Ireland. These include simple/split trend approaches, peak-to-peak extrapolation, Hodrick-Prescott filters and also a structural model based on the estimation of an aggregate production function. The author examines the contemporaneous correlation between these output gap measures and inflation over the period 1960 – 1995. While the expected positive correlation is clearly evident over time and the output gaps are shown to Granger-cause inflation, like Cecchetti (1995), the author stresses the instability in this relationship across a number of sub-samples and, as a result, he questions the usefulness of the output gap in forecasting Irish inflation.

In another study, Kenny (1996) examines the predictive power of another measure of economic slack – capacity utilisation (CU) in the manufacturing sector. The analysis highlights the problems associated with surveyed measures of CU and emphasises the need to construct more formal estimates of CU which are grounded in economic theory. The short-run information content of an estimated CU series is assessed by examining the contemporaneous correlation between CU and inflation and also using Granger-causality tests. A rise in CU is, in general, shown to be associated with a pick-up in inflation, but this effect is once again shown to be unstable. Interestingly, the relationship between CU and inflation is more robust for a measure of manufacturing sector CU which excludes production in the high-technology sector which is dominated by foreign multinationals. It is found, for example, that the measure of CU in the indigenous sector of Irish manufacturing explains 15% more of the variation in manufacturing output prices than does the corresponding measure for the entire manufacturing sector.

3.2.3 Leading Indicators

A paper by Quinn and Mawdsley (1996) has examined the usefulness of a composite leading indicator of inflation. The methodology used is similar to that employed by Bicker (1993) for Dutch inflation. The basic idea is to find a set of time series which has cycles that resemble the inflation cycle itself. These series are then weighted together into a composite indicator using principal components techniques. A number

of candidate component series were considered on the basis of economic relevance. Series were then ranked in terms of correlation with inflation and those with weak correlation or insufficient lead times were rejected. The series which were finally chosen as components of the leading indicator were M3, Irish output prices, UK output prices, manufacturing wages, world inflation (weighted using import shares) and the nominal effective exchange rate.

Rather than providing an accurate forecast of the level of inflation, the primary use of the indicator is as a predictor of inflation turning points. On this basis it has been found to perform reasonably well, especially since the mid-1980s.

3.3 Time Series Models

Unlike structural models which impose restrictions based on economic theory, time series models are atheoretical models which use only the observed time series properties of data to forecast economic variables. There are a number of approaches available for forecasting economic time series. One approach, which uses only the past history of the time series being forecast plus current and past random error terms is known as univariate forecasting. Autoregressive integrated moving average (ARIMA) modelling is a specific subset of univariate modelling, in which a time series is expressed in terms of past values of itself (the autoregressive component) plus current and lagged values of a white noise' error term (the moving average component). An alternative approach is multivariate time series forecasting. In a multivariate model the series to be forecast is modelled as a function of current and past values of itself and other variables plus a random error term. One such model is known as the Bayesian vector autoregressive (BVAR) model. Two studies, one dealing with the use of ARIMA models (Meyler *et al*, 1998) for forecasting inflation, and another dealing with the use of BVAR models (Kenny *et al*, 1998) for the same purpose have recently been published by the Bank and are discussed below.

3.3.1 ARIMA Models

In their paper Meyler *et al* (1998) illustrate the use of ARIMA models in the forecasting of the harmonised index of consumer prices (HICP) and a number of sub-indices of the HICP. The forecasting of the sub-indices: unprocessed foods, processed foods, non-energy industrial goods, energy and services, is central to the short term analysis of price data which in turn complements the forecasts of price series and the real economy over the medium term. A semi-automatic algorithm was developed for fitting an ARIMA model to stationary time series data. Optimal ARIMA models were selected using objective penalty functions which optimised the trade-off between in-sample goodness-of-fit and model parsimony. In general, for the HICP and its sub-components, a relatively parsimonious ARIMA representation was found to be optimal both for fitting in-sample and for maximising the out-of-sample forecasting performance reflecting the relative stability of inflation over the period of the sample and the dominance of seasonal influences. In terms of forecast performance, ARIMA models were most successful forecasting out to an horizon of one year. Forecast errors were lower for the overall HICP than for its sub-components. The highest root mean square error (RMSE) at 1.9 per cent per quarter was found in the case of seasonal food. For the overall HICP, the RMSE

varied between 0.43 per cent and 0.38 per cent for horizons up to six quarters out implying a 90 per cent confidence interval of approximately 1.4 per cent per quarter. While this appears relatively high, it compares favourably with results reported by Cecchetti (1995) for the United States who calculated a 90 per cent confidence interval of approximately 1.3 per cent for one step ahead inflation forecasts by commercial forecasters. Over horizons of one year or less, ARIMA models outperform BVAR models as reported below, but are less successful at longer horizons.

3.3.2 Bayesian VAR Models

Kenny *et al* (1998) use the Bayesian approach to the estimation of vector autoregressive (BVAR) models developed by Doan, Litterman and Sims (1984). In contrast to structural macroeconomic models, a VAR is a set of dynamic linear equations in which each variable is determined by every other variable in the model. VAR models have been criticised insofar as they lack strong theoretical justification over and above the use of theory as a guide in deciding which variables to include in the analysis. Doan, Litterman and Sims (1984) in an attempt to improve the forecasting performance of unrestricted VAR models suggested that they could be estimated using Bayesian techniques which take account of any prior information which may be available to the modeller. Kenny *et al* (1998) evaluate this approach to the forecasting of inflation in Ireland, as measured by the HICP. Three possible models are considered. The first baseline model was a three variable SOE model including the HICP, the import-weighted measure of foreign consumer prices and the nominal effective exchange rate. In addition, two augmented SOE models were considered, one augmented to account for the interaction between wages, prices and domestic demand, and another which extends the SOE model to account for a possible role for domestic credit and short term interest rates. In all three models, the Bayesian approach to parameter estimation resulted in a dramatic improvement in forecasting performance relative to unrestricted models. Even the best performing Bayesian autoregression, however, had a confidence interval of about 1.5 per cent per quarter based on forecast errors computed over the period 1992-1998. Reflecting the robustness of the simple SOE model of inflation, neither of the augmented models could improve on the base line SOE model. When compared to the ARIMA model of the HICP, the Bayesian VAR approach performed better at longer horizons of five to eight quarters but was less accurate than the ARIMA model over the shorter term out to one year.

4. Current Research

4.1 Core Inflation

A medium term forward-looking monetary policy has been adopted by the ECB reflecting the existence of short term volatility in measured inflation which is not amenable to control by monetary instruments and is unrelated to underlying trends in inflation. In analysing high frequency price data, such as the monthly consumer price index (CPI) and the HICP which has been available for Ireland since January 1997, it is important to be able to distinguish between movements in underlying price trends which constitute core inflation and short term 'noise'. There are a number of sources of noise in high frequency price

data including changing seasonal patterns, exchange rate changes, indirect tax changes and idiosyncratic shocks in specific markets (e.g. commodity price shocks).

A common approach to the estimation of underlying core inflation is to omit certain categories of goods such as mortgage interest or, most commonly, seasonal food and energy which are regarded as being more volatile than other components of the CPI. Ironically, in the case of the US, Cecchetti (1996) found that the exclusion of seasonal food and energy resulted in a series that was more volatile than the original CPI. A statistical approach to the estimation of core inflation currently being examined in the Bank involves the construction of limited influence estimators such as trimmed means which remove outlying observations at either end of the distribution of price changes. In addition an alternative approach, developed by Quah and Vahey (1995) is being pursued which involves the estimation of a structural VAR (SVAR) model which identifies a measure of core inflation defined as that component of measured inflation which has no long-run impact on output.

4.2 Services Sector Inflation

Services constitute about one third of the overall HICP index. While traded goods price inflation, which has been anchored by strong disinflation trends in the world economy, has remained low in Ireland in recent years, there has been a gradual acceleration in underlying inflation in the services sector. Reflecting the non-traded and relatively labour intensive nature of many services, inflation in the sector is often modelled as being a function of wages adjusted for productivity improvements. However, the 'catch all' classification services does not represent a homogenous group of activities but covers a wide range of heterogeneous activities. As a first step in Bank research attempting to model services sector inflation in Ireland, the services sector has been decomposed into a number of sub-categories. These are administered services, alcohol-related services, services which are in transition from having essentially administered prices to being fully-contested services, and general domestically- contested services. The first two categories, administered and alcohol-related services are heavily influenced by government taxation and administrative decisions which are difficult to model. Transition services refers to just telecommunication services, but may in the future include items such as public transport (bus), taxi or electricity. It is probable that continued price decreases will be observed in this area especially as the domestic telephony market has been opened up to competition and given the pace of technological change in this field. PPP or wage-mark-up models would be unsuitable for modelling this component, at least during the transition phase. The final category of services, general domestically-contested services is considered the most promising candidates for successful modelling.

5. Summary and Conclusions

Inflation analysis constitutes a key input into euro-area monetary policy and, reflecting the principle of subsidiarity, the NCBs including the Central Bank of Ireland will play a important role in this regard. In addition to its role as an input into euro-area monetary policy, analysis of Irish inflation will play an important role in assessing the

appropriateness of the fiscal stance and in assessing likely trends in Irish competitiveness in the euro area.

The eclectic approach to inflation forecasting adopted in the Bank combines a range of formal approaches including structural models, time series methods and indicator analysis with an important role for judgement. Recent research has focused on the development of time series models such as ARIMA and BVAR models. Reflecting the need to uncover information about the true underlying trend in inflation from recently available monthly data and the medium term focus of policy concerns, research is under way into the construction of a measure of core inflation. In addition research has begun into the modelling of inflation in domestically-contested services.

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