
# BANK OF FINLAND BULLETIN

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# Monetary policy and economic outlook

The stabilization of global economic conditions and recovery in world trade provide a favourable external environment for the Finnish economy. Export competitiveness is good, and there are no financial factors holding back new business investment. The confidence of both firms and households concerning future economic developments is at a high level.

According to the forecast produced by the Bank of Finland in the autumn, total output in Finland is projected to grow at an annual rate of about 4 per cent in the period 1999–2001. Economic growth slowed in the latter part of 1998 and early part of the current year but nevertheless remained moderate. The economy grew at an annual rate of 3.4 per cent in the first half of the year. Both exports and imports are projected to pick up, broadly in line with the growth of export markets. Private consumption is expected to remain strong, reflecting the low level of interest rates and favourable outlook for incomes. Consumption will also be underpinned by a rise in housing wealth. Private investment is forecast to increase strongly as a result of both low interest rates and the improved prospects for demand and profitability in many sectors.

Finnish inflation remained below 1.5 per cent in the summer and autumn, as measured by the consumer price index (CPI). The inflation rate is forecast to accelerate gradually to about 2 per cent in the years ahead as a result of a rise in import prices and pick-up in the rate of increase in unit labour costs. Services prices in Finland have risen faster than consumer prices on average, and this trend is expected to continue during the forecast period.

The financial surplus of the private sector is forecast to turn into a deficit, reflecting the strength of both household and business investment. By contrast, the financial position of general government will strengthen further over the forecast period, as central government finances move into a sizeable surplus.

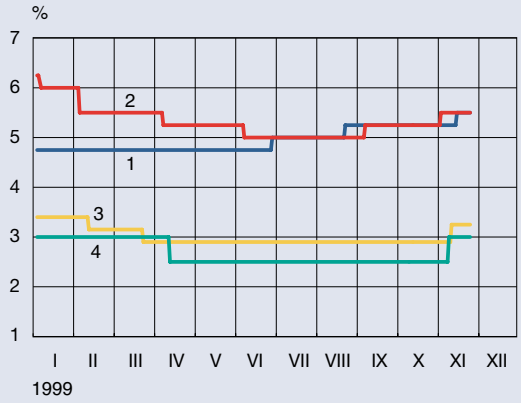
Although the forecast points to relatively balanced growth in the Finnish economy, three main risks attach to this picture, especially in the medium term. First, the pick-up in world economic growth could lead to a faster-than-forecast rise in import prices, particularly prices of raw materials important for Finland. This, in turn, could result in a larger-than-forecast increase in the inflation differential between Finland and the rest of the euro area. The second major risk to price stability is related to developments in domestic wage costs. If the next round of wage increases turns out to be too large from the point of view of balanced growth, this will jeopardize the prospects for moderate price developments and improved employment. Third, the pressures in the housing and credit markets seem likely to continue, owing to low interest rates and strong income expectations.

Even if the problems in the economy do not intensify over the forecast period, a pronounced rise in, say, interest rates or a disturbance in the world economy could cause major difficulties for households and firms alike. This could be the case especially if economic agents become over-indebted and competitiveness deteriorates vis-à-vis other euro area countries.

The surplus in public finances, and especially the surplus in central government finances, is forecast to grow faster than previously projected as a result of good economic performance and a fall in interest payments on government debt. However, the balance in general government finances is built on a very high tax ratio, which, for structural reasons, is not sustainable. If economic growth is to be secured in the future, there will have to be a marked reduction in taxation and thus further adjustment in public expenditure so that balance can be maintained in central and local government finances at a substantially lower tax ratio than at present. In particular, it has become more important than ever to reduce the tax burden on work

**Chart 1.**

**Official interest rates**




1. USA: fed funds target rate
2. United Kingdom: base rate
3. Sweden: repo rate
4. Eurosystem: main refinancing rate

and reform taxation and transfer systems that maintain employment traps so that labour shortages do not become an obstacle to growth and a threat to price stability. This is not to mention the need for such action on wider social policy grounds.

Lowering taxation in the current phase of the economic cycle without offsetting cuts in public expenditure would pose a risk to balanced macroeconomic development. The improved economic outlook should be taken into account in the central government budgetary framework by lowering spending ceilings by an amount corresponding to the fall in outlays on unemployment benefits and interest payments on government debt. In conditions of rapid growth and low interest rates, strict spending discipline has a vital role to play anyway in reducing the risk of overheating in the economy. The need for fiscal tightening will be the greater the more likely it is that the domestic risks referred to above will be realized.

## Improved growth prospects for the world economy

Developments in the global economy have been favourable in recent months. Growth in the United States has remained robust, and in Japan the recession has bottomed out and total output has begun to increase in the course of this year. Economic recovery in the South East Asian crisis economies has continued at a generally rapid pace. In Finland's key export markets, the United Kingdom has returned to a moderate growth path and the economic outlook for Sweden is bright.

World oil prices have risen sharply in the course of 1999, but so far this has had relatively little impact on the general level of consumer prices in the industrialized countries. Overall, inflation in these countries has remained fairly subdued, reflecting increased competition in many areas of economic activity and the continued availability of spare capacity. The risks of an acceleration in inflation have nonetheless increased, and this has led to rises in official interest rates in the euro area and in other major economies, including the United States, the United Kingdom and Sweden (Chart 1).

World economic growth is expected to accelerate further. In response to the positive economic news, growth forecasts have generally been revised up during the autumn. For example, the International Monetary Fund forecasts world economic growth of 3 per cent this year and 3.5 per cent next year.

The risks to global growth prospects have diminished. The main risks continue to be a pronounced fall in asset prices and a resultant marked slowing in growth of domestic demand in the United States. The large US current account deficit further illustrates the imbalances associated with economic growth in the United States. On the positive side, the broad-based recovery of the world economy has reduced the potential impact of a sharp slowdown in the US economy on growth in the rest of the world.

Another significant risk to the outlook for world economic growth is uncertainty about the sustainability of the incipient recovery in the Japanese economy. This is despite the fact that many features of the recent developments in Japan have been positive from the point of view of recovery in the long term. Progress has been made in implementing structural reforms, as witnessed by, for example, the restructurings in the corporate and banking sectors. In the short term, however, the rise in unemployment could depress consumer confidence, and firms' willingness to invest still seems weak. In addition, large fiscal stimulus packages have led to a deterioration in public finances. The appreciation of the yen in the course of this year could also weaken growth in Japan, although it should boost exports of other Asian economies.

## Growth in the euro area is picking up

In the euro area there was increasing evidence of a strengthening of growth in the spring and summer of 1999. The pace of economic growth slowed in 1998, largely because of the poor performance of the world economy. Although the slowdown bottomed out around the end of the 1998, growth remained fairly slow in the early months of 1999. In the second quarter of 1999 total output in the euro area increased by 0.5 per cent from the previous quarter and by only 1.6 per cent compared with the same quarter in 1998. Exports and industrial production in the euro area started to recover in the second quarter, however, and industrial production picked up further in the latter part of the summer.

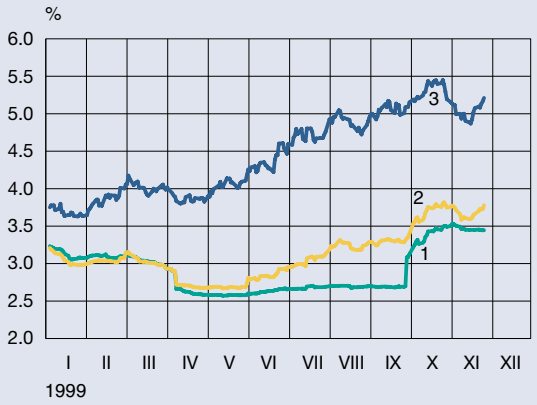
Economic activity in the euro area is expected to grow at a fairly rapid pace in the final months of 1999 and in 2000. Among the factors pointing to a pick-up in growth are survey data showing a rise in industrial confidence and the continued strength of consumer confidence as well as the faster pace of world economic growth and the prospect that it will strengthen further. As growth recovers, unemployment is expected to start falling again. In addition, differences in growth rates between euro area countries are projected to diminish as growth accelerates in hitherto slow-growth countries. In early 1999 cross-country differences in growth rates were considerable: growth was robust in, for example, Spain, the Netherlands and Finland, but weak in Italy and Germany.

## Euro area official interest rates were raised at the beginning of November

Euro area money market rates, which had started to move higher in early June, stabilized in the latter part of the summer but resumed their upward trend towards the end of September (Chart 2). Underlying the rise were the improved growth prospects for the euro area and expectations of increases in the Eurosystem's official interest rates. On 4 November the Governing Council of the ECB decided to raise the interest rate on the main refinancing operations of the Eurosystem by 0.5 percentage point to 3.0 per cent. This represented a return to the level that prevailed before the decision to cut the refinancing rate in April of this year.

**Chart 2.**

**Interest rates in the euro area**




1. 3-month Euribor
2. 12-month Euribor
3. 10-year German government bond yield

The ECB's decision to raise the steering rate was based on the view that the balance of risks to price stability had gradually shifted upwards since the beginning of the summer. The prospects for economic growth had improved and several indicators, including the growth of broad money and credit, pointed to easy monetary conditions in the euro area.

The November decision to raise interest rates corresponded fairly closely to market expectations, and so money market rates hardly moved at all following the decision. Besides expectations of a rate increase, developments in money market rates during the autumn were influenced by uncertainty concerning the millennium date change. At the end of September the three-month Euribor rose by nearly 40 basis points when the first three-month contracts with a maturity date in 2000 were made.

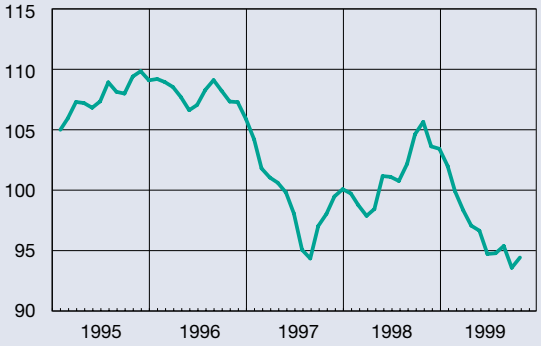
Movements in long-term interest rates in the euro area during the autumn were explained partly by developments in US bond yields and partly by internal factors, notably the improved growth prospects, fear of higher inflation and expectations concerning monetary policy. In November news of the ECB's decision to raise interest rates reduced market uncertainty, and long-term interest rates subsequently edged down slightly. The ten-year German government bond yield stood at a little over 5 per cent in late November.

**Chart 3.**

**Effective exchange rate of the euro**

January-March 1999 = 100

Index



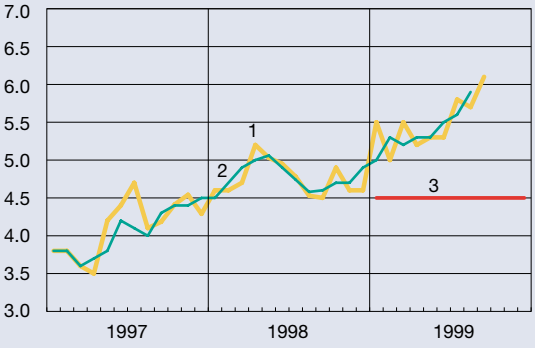

Before 1999 the trade-weighted index for the currencies of the euro area countries. An upward movement of the index represents an appreciation of the euro (currencies of the euro area countries).

Source: ECB.

**Chart 4.**

**Growth of monetary aggregates in the euro area**

%




1. M3 (12-month percentage change)
2. M3 (3-month centred moving average of 12-month percentage change)
3. Eurosystem's reference value for the growth of M3

Source: ECB.

The euro remained relatively weak throughout the autumn (Chart 3). In late November the euro was about 10 per cent weaker than it had been at the beginning of the year, as measured by the effective (trade-weighted) exchange rate of the euro. In recent months the euro has fluctuated considerably against the US dollar, and in late November it was weaker than at any other time during 1999. By contrast, the yen has appreciated against both the euro and other major currencies.

Monetary aggregates in the euro area grew at a fairly rapid pace in the summer and early autumn. The annual rate of growth of the key monetary aggregate M3 accelerated to about 6 per cent in the early autumn (Chart 4). The most liquid components of M3 grew particularly fast. Credit also continued to expand at a rapid pace. The annual rate of growth of loans granted to the private sector remained at around 10 per cent in the early autumn. The high rate of growth of monetary aggregates and credit points to easy monetary conditions. In some euro area countries, such as Spain, the Netherlands, Ireland, Portugal and Finland, rapid credit growth has been associated with a strong rise in asset prices, including house prices.

## Temporary increase in euro area inflation

The rate of increase in consumer prices in the euro area has picked up in the course of the current year. Measured by the Harmonized Index of Consumer Prices (HICP), the annual rate of inflation in the euro area was 1.4 per cent in October, compared with 0.8 per cent in January (Chart 5). The main factor behind the acceleration in inflation is the rise in energy prices as a consequence of higher oil prices. By contrast, a slowing in the rate of increase in, for example, food and services prices had a downward impact on inflation. Services prices increased at an annual rate of about 1.5 per cent in the summer and autumn, compared with about 2 per cent in the last months of 1998. The deceleration in services price inflation is due in part to deregulation of telecom markets in Germany and other euro area economies.

The rate of increase in consumer prices in the euro area is expected to accelerate slightly in the near term. Expectations of higher inflation have strengthened as a result of the rise in oil prices and the improved

outlook for economic growth in the euro area. The relatively rapid rate of growth of monetary aggregates and credit also point in the same direction. On the other hand, continuing deregulation in, for example, telecom and electricity markets in many euro area countries will dampen the rise in prices.

## Robust growth of the Finnish economy set to continue

According to the Bank of Finland's latest forecast, which was produced in the autumn and covers the period up to the end of 2001, Finnish GDP is expected to continue growing at a robust pace over the forecast horizon.[1] Growth is projected to stabilize at a rate of about 4 per cent a year, which is somewhat slower than the strong growth recorded in 1997 and 1998. Owing to the relatively sluggish performance of the economy in the early part of the year, the average annual growth rate for 1999 will be in the region of 3.7 per cent. The growth figures have been revised up slightly compared with the spring forecast, partly because of the more upbeat picture concerning the pick-up in exports (see the Table and Chart 6).

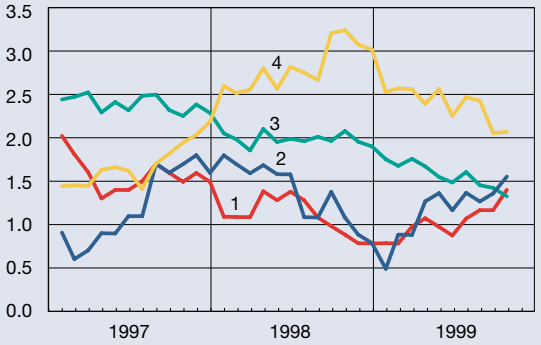
The growth of industrial production is expected to slow during the forecast period, compared with the rate of growth in 1998, but to remain strong at about 5.5 per cent. Growth of output is forecast to accelerate in all sectors except the manufacture of electrical equipment (notably telecommunications and electronics), which for some years now has been the driving force of growth. It will nevertheless continue to be the fastest growing sector. Because of rapid growth in recent years, this has quickly become the largest manufacturing sector in the Finnish economy, measured in terms of value added. The projected slowdown in activity in the sector is partly due to labour shortages, as a result of which firms are likely to expand operations abroad.

[1] The forecast is based on the assumption of no change in monetary policy. This means that the short-term interest rate and exchange rates are kept unchanged throughout the forecast period. The short-term interest rate is set at about 3 per cent while exchange rates are fixed at the levels prevailing in late October. The forecast figures are also conditioned on assumptions concerning wage developments, the international economic environment, prices of crude oil and other world commodities and fiscal policy.

**Chart 5.**

**Harmonized Index of Consumer Prices**

12-month percentage change




1. Euro area, total index
2. Finland, total index
3. Euro area, services
4. Finland, services

According to survey data, order books in the forest industries have begun to strengthen, suggesting that growth will start to pick up towards the end of this year. In fact, output in the paper industry already started to increase in the autumn. Furthermore, paper prices are expected to increase slightly, which will boost firms' profitability. Besides industry, growth will also remain strong in the rest of the private sector, fuelled by domestic demand. Latest available data point to a renewed strengthening in output in the trade sector in the early autumn to an annual rate of almost 5 per cent. The recovery in exports will also boost activity in the service sector, either directly as increased export demand or indirectly through the provision of services to industry.

## Domestic demand expected to remain strong

Although the growth of private consumption slowed in the first half of 1999 as compared with the rapid rate of increase in late 1998, the annual rate of growth was still about 4 per cent. Consumption is projected to grow by about 3.5 per cent in 1999 as a whole and to continue growing at approximately the same rate over the forecast horizon. Consumption will be underpinned by continuing strong consumer confidence, further

**Table.**

**Demand and supply 1997–2001 (1995 prices)**

| | 1997 | 1998 | 1999 | 2000 | 2001 |
|---|---|---|---|---|---|
| **Percentage changes on a year earlier** | | | | | |
| Gross domestic product | 5.6 | 5.6 | 3.7 | 4.0 | 3.8 |
| Imports | 11.4 | 9.4 | 0.9 | 7.4 | 6.9 |
| Exports | 14.2 | 9.6 | 1.0 | 7.0 | 6.1 |
| Private consumption | 2.9 | 5.5 | 3.4 | 3.6 | 3.3 |
| Government consumption | 2.9 | 1.4 | 1.4 | 2.2 | 2.1 |
| Private fixed investment | 11.5 | 11.0 | 9.7 | 6.3 | 6.7 |
| Public investment | 12.6 | –0.2 | –6.4 | 4.1 | 3.1 |
| Change in inventories and statistical discrepancy, per cent of total demand in the previous year | –0.4 | –0.1 | 0.2 | 0.0 | 0.2 |
| Total demand | 6.9 | 6.5 | 3.0 | 4.8 | 4.6 |
| Final domestic demand | 3.9 | 5.1 | 3.9 | 3.8 | 3.9 |

**Key economic indicators and assumptions of the forecast**

| | 1997 | 1998 | 1999 | 2000 | 2001 |
|---|---|---|---|---|---|
| **Percentage change** | | | | | |
| Consumer prices | 1.2 | 1.4 | 1.3 | 1.7 | 2.1 |
| Unit labour costs | –0.7 | 1.9 | 2.2 | 2.6 | 2.7 |
| Number of employed | 2.0 | 2.4 | 3.5 | 2.0 | 1.7 |
| Employment rate, 15–64 year-olds, % | 62.8 | 64.1 | 66.1 | 67.3 | 68.4 |
| Unemployment rate, % | 12.6 | 11.4 | 10.1 | 9.2 | 8.4 |
| **Per cent of GDP (National Accounts)** | | | | | |
| Central government net lending | –4.1 | –1.7 | 0.0 | 1.3 | 1.7 |
| General government net lending | –1.6 | 1.4 | 3.4 | 4.8 | 5.1 |
| Central government debt | 66.1 | 61.3 | 55.3 | 48.5 | 42.6 |
| General government debt | 53.9 | 48.5 | 42.9 | 37.9 | 33.6 |
| Trade account | 9.5 | 9.7 | 7.5 | 7.2 | 7.4 |
| Current account | 5.5 | 5.7 | 3.6 | 3.7 | 3.9 |
| Finnish export markets, percentage change | 9.7 | 8.0 | 4.1 | 7.0 | 7.3 |
| Finnish import prices, percentage change | 0.6 | –3.0 | –0.7 | 2.6 | 1.4 |
| 3-month Helibor/Euribor, % | 3.2 | 3.6 | 3.0 | 3.0 | 3.0 |
| Overall ratio of taxes to GDP, % | 45.9 | 46.2 | 46.4 | 45.9 | 45.1 |

improvement in employment and steady growth in real incomes. The household saving rate is expected to fall slightly in the current year, as asset prices continue to rise at a fairly rapid pace and households' willingness to borrow still seems to be strong. In recent months the stock of housing loans has been growing at an annual rate of about 16 per cent.

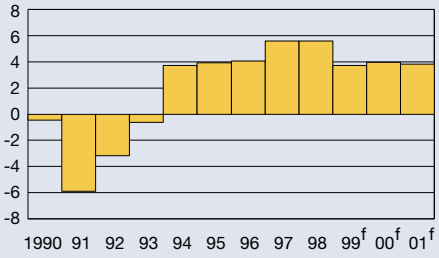
The saving rate is forecast to continue falling over the next two years, since real interest rates will remain low and the risk of unemployment will diminish further. As income expectations are likely to remain strong, there will be no need for precautionary saving by households. The saving rate is expected to be 2 per cent in the latter part of the forecast period, which is lower than the average for the 1980s and 1990s. The annual rate of growth of lending to the household sector is projected to slow slightly in 2000 but to remain at over 10 per cent. The ratio of bank loans to household disposable income is expected to increase to almost 55 per cent this year and grow further in 2000

**Chart 6.**

**Key economic indicators for Finland**

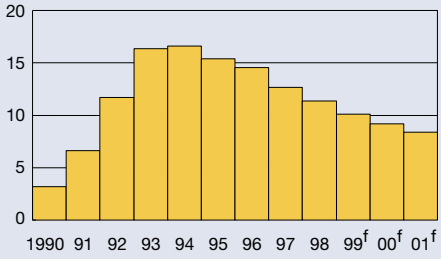
Gross domestic product

Change, %



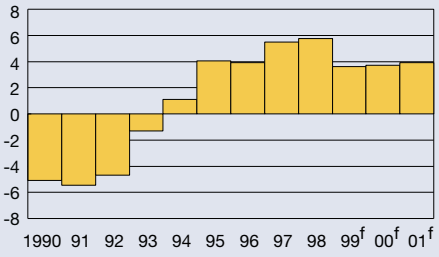

Unemployment rate

%




Current account

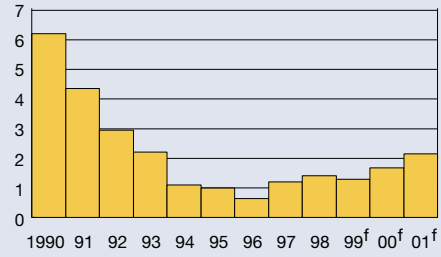
% of GDP




Inflation

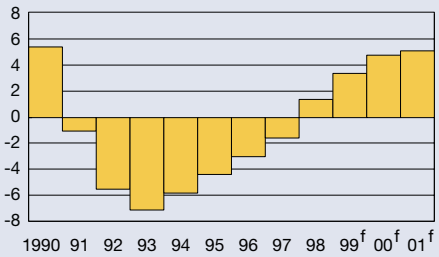
Consumer price index

%



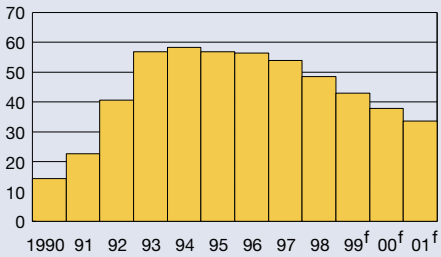

General government fiscal position (Maastricht definition)

% of GDP




General government debt (Maastricht definition)

% of GDP




f = forecast.

and 2001. But despite the rapid growth of lending, households' indebtedness is forecast to remain well below the levels reached at the end of the 1980s.

Industrial investment has hardly increased at all in 1999 compared with last year. By contrast, investment activity in other sectors, notably services, has been buoyant. The growth of industrial investment is expected to pick up from 2000 onwards. According to latest available data, capacity utilization rates have already started to rise, and the factors that have hitherto weakened firms' willingness to invest are receding into the background. The perception of future developments in world markets has become noticeably more positive, the prospects for profitability are improving and uncertainty, which was the underlying cause of firms' cautious investment intentions, has decreased. The low level of real interest rates will also support growth of investment.

In the rest of the private sector, investment growth is projected to slow next year but nevertheless to re-

main strong. Here, too, the prospects for firms' profitability are fairly good, given that domestic demand will remain robust.

## Growth of exports expected to pick up

The growth of both exports and imports has slowed considerably in 1999 compared with last year. Latest survey data on export expectations nevertheless indicate that order books have strengthened and that export prospects have improved, especially in the forest, chemical and basic metal industries. The resumption of growth in exports has been slower than expected, and the volume of exports is estimated to increase by only about 1 per cent this year owing to the poor performance in the early part of the year. But the growth of goods and services exports is nevertheless projected to accelerate to 6 to 7 per cent in the years 2000–2001 along with the strengthening in the growth of world markets.

Export competitiveness is expected to remain good, but as unit labour costs are likely to increase more strongly in Finland than in competitor countries this will lead to a slight weakening in competitiveness and loss of market shares in the latter part of the forecast period. Prices of Finnish exports are nevertheless projected to develop broadly in line with competitors' export prices over the forecast horizon.

Sectoral differences in developments in export volumes and prices are expected to be large. The electronics industry stands out in sharp contrast to other sectors in this regard. Depending on the magnitude of the fall in prices of electronics products, it is even possible that Finnish export prices as a whole could decline and that the terms of trade weaken further. But rapid productivity gains in the electronics industry will act as a counterbalance to falling prices and lessen the macroeconomic impact of any deterioration in the terms of trade.

The growth of import volumes has also been weak in the current year, mainly reflecting the sluggish developments in exports and industrial investment. Imports are nevertheless expected to grow in the future in step with exports, as, in the traditional export industries in particular, the pick-up in export activity will lead to increased imports of raw materials and producer goods, which together make up more than 50 per cent of total goods imports. Moreover, the upturn in industrial investment will boost imports of investment goods while continuing robust private consumption will sustain imports of consumer goods. Overall, the growth of import volumes is projected to amount to about 7 per cent a year in 2000 and 2001.

Import prices are expected to rise appreciably, owing to higher world market prices for oil and other commodities. The turnaround in import prices occurred during the first half of this year, when prices of goods and services imports started to rise. For 1999 as a whole, however, import prices will still show a decline compared with the previous year. In 2000 and 2001 import prices are projected to increase by some 2 per cent a year on average. The strongest phase in the rise in oil and other commodity prices is expected to be over by the beginning of 2000. A significant upside risk attaches to developments in import prices, however.

## Inflation is picking up

Despite the rapid economic growth of recent years, the rate of increase in consumer prices in Finland has been subdued, less than 1.5 per cent in 1999, as measured by the CPI. Inflation slowed in the latter part of 1998, mainly owing to a fall in import prices as world commodity prices declined in response to the slowdown in world trade. The subsequent upturn in import prices, notably energy prices, will lead to a temporary acceleration in the rate of inflation around the end of this year to close to 2 per cent, as measured by the 12-month change in the CPI. In 2000 the inflation rate is forecast to fall back to 1.5 per cent but to accelerate to just over 2 per cent towards the end of the forecast period as a result of rising unit labour costs.

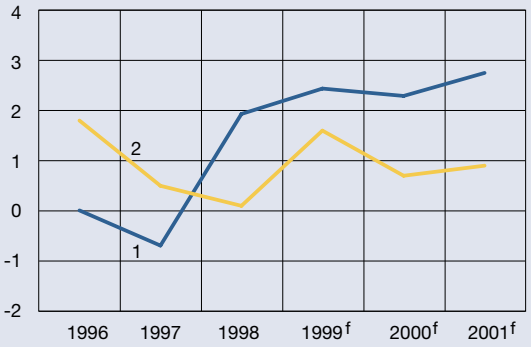
Underlying the rise in unit labour costs will be a combination of relatively slow productivity growth and a fairly rapid increase in average wages over the forecast period. Productivity growth has slowed during the current year, as compared with 1998, both in the economy as a whole and in its various sectors. Productivity growth is expected to pick up to some extent in the coming years but nevertheless to remain at about 2 per cent on average for the whole economy. Though productivity growth of this magnitude will be slower than what Finland has been accustomed to in the past, it will be about the average for the euro area.

In the forecast, the technical assumption has been made that the level of earnings in the total economy will rise by about 4 per cent a year in both 2000 and 2001. This assumption covers both increases in negotiated wage rates and wage drift. The annual increase in effective average hourly pay is likely to be slightly more than this, if flexible pay elements, such as overtime and bonuses, are added to basic rates for normal working time. The rapid rise in average pay in relation to productivity growth means that unit labour costs will rise in all sectors of the economy, although it is assumed that the rise will be clearly faster in the service industries and public sector than in industry. Whole-economy unit labour costs are projected to increase faster than the euro area average over the forecast period, and similarly unit labour costs in industry will increase at a slightly faster pace than in competitor countries (Chart 7). So, although firms' profitability will improve from present levels, especially in the export industries, it does not seem likely that it will regain the levels that prevailed in 1997 and 1998 during the forecast period.

**Chart 7.**

**Whole-economy unit labour costs**

Percentage change on a year earlier




1. Finland
2. Euro area

f = forecast.

Forecast for euro area: European Commission, November 1999.

## Employment set to improve further

Growth in both employment and the labour force has been exceptionally strong in the current year. The total number of employed has increased by about 3.5 per cent, and so the slowdown in productivity growth has been surprisingly large, even taking into account the cyclical situation. In the years ahead employment is forecast to grow at an average annual rate of about 2 per cent and the labour force at a rate of nearly 1 per cent. A continuing rapid rise in the labour force participation rate (the labour force as a percentage of the population aged 15 to 74) is a key assumption as regards the outcome of the forecast. If labour supply does not respond to labour demand as strongly as is assumed, it is highly probable that bottlenecks will appear in the labour market in the years ahead.

The unemployment rate is projected to fall further over the forecast period to 8.4 per cent in 2001. It should be noted, however, that about 100,000 persons are still participating in special labour market policy programmes operated by the public sector. According to the forecast, the employment rate (the total number of employed as a percentage of the population aged 15 to 64) will rise steadily to over 68 per cent in 2001.

## Private sector to move into financial deficit

The Bank of Finland's forecast is based on the technical assumption that short-term market interest rates will remain unchanged throughout the forecast period. A low nominal interest rate and strengthening inflation expectations imply a very low expected real short-term interest rate. This is important especially as regards developments in the difference between private sector saving and investment, ie the private sector financial deficit. A marked reversal is expected to occur in the relative debt positions of the various sectors in the economy over the forecast horizon. In the period since the recession in the early 1990s the private sector has been running down its debt. However, this process will be reversed already in 2000, as investment by both households and firms is projected to exceed their saving. The financial deficits of the private sector will nevertheless remain quite small over the forecast period, and there is no sign of a return to the large deficits that emerged in the 1980s. The situation in the public sector is the opposite. After being in continual deficit in the 1990s, the public sector is now shifting into a sizeable surplus.

## Rapid decline in central government debt

Continuing robust economic growth and the fairly stringent stance pursued in central government spending have helped to strengthen the financial position of the public sector in the current year. The public sector surplus will increase to approximately 3.5 per cent of GDP this year. The surplus is projected to widen to about 5 per cent of GDP during the forecast period, as central government finances move into a sizeable surplus and local government finances remain in broad balance. Public debt is forecast to decline to below 35 per cent of GDP at the end of the forecast period. The total tax ratio will fall only slightly over this period.

The central government surplus is projected to amount to 1.3 per cent of GDP (about FIM 10 billion) in 2000. The forecast is based on the assumption that spending remains within agreed ceilings and that cuts totalling some FIM 2 billion are effected in household income taxation. Interest payments on central government debt will decline as a result of the reduction in debt, lower interest rates and the continuation of privatization. With the fall in interest payments and continuing spending discipline, the central government surplus will strengthen. The surplus is expected to increase slightly further in 2001, and the ratio of central government debt to GDP is projected to decline notably over the forecast period, standing at close to 40 per cent at the end of 2001. But it is worth noting that the debt-to-GDP ratio was substantially lower at the end of 1990, at just over 10 per cent.

## Current account to remain in comfortable surplus

The current account surplus is expected to amount to about 3.6 per cent of GDP in 1999. This is smaller than last year's surplus owing to a weakening in the trade balance. The decline in the trade surplus is partly due to a marked deterioration in the terms of trade. The current account surplus is expected to remain at nearly 4 per cent of GDP over the forecast period. The strong trade balance will continue to sustain the current account surplus, whereas services, interest and dividend payments abroad and current transfers will all make negative contributions.

## Continuing pressures in the housing market

Construction output has continued to grow at a rapid pace. As profitability in the sector has improved, the focus of activity in the sector has shifted from maintenance and repairs supported by the public sector and production co-financed by the state to privately financed construction. Preliminary data indicate that the volume of construction output grew at an annual rate of just under 8 per cent in the first half of 1999, roughly the same rate of growth as in 1998. Increases in real estate tax and in the taxation of undeveloped building plots in land-use planning areas, together with the temporary lifting of the tax on proceeds from sales of real property to local authorities, should, in principle, help to boost housing supply. Residential investment is expected to increase faster in the current year than in 1998, but to slow gradually in the years ahead.

As real interest rates are expected to remain at a low level throughout the forecast period, they will not curb excess demand, which will therefore continue to be felt as upward pressure on housing prices. It will take time before housing production increases enough to satisfy demand. The rate of increase in whole-country housing prices picked up slightly towards the end of the summer, and housing prices are likely to increase by about 8.5 per cent this year. The rate of increase in housing prices is projected to slow to just over 6 per cent in 2000.

So far, the price pressures in the housing market have had fairly small spillover effects in other sectors. In recent years the rise in building costs has broadly mirrored the general rate of inflation, despite the fact that labour costs in the construction sector have risen notably. With the emergence of labour shortages, the rise in labour costs has already accelerated to 5 per cent. The revival of building activity has also been evident in the tender price index, which has been rising at an annual rate of 10 per cent. Moreover, the observed levelling off in willingness to tender suggests that the building industry is now running at close to full capacity.

## Risks to growth and inflation are on the upside

The Finnish economy is expected to continue growing at a faster rate than the euro area on average over the forecast period. Adding to the positive outlook is the prospect of more balanced growth as continuing robust domestic demand is accompanied by a recovery in exports along with the pick-up in world economic growth. As inflation is expected to be faster in Finland than in the rest of the euro area, keeping cost developments in check will be a key economic policy priority in the coming years (Chart 8).

In the forecast, risks to economic growth and price developments in the international environment are assumed to be relatively evenly balanced. This time the risks to balanced development are very much of domestic origin and hinge on developments in the labour market, housing and credit markets and public finances. If these risks are realized, economic growth and inflation could turn out to be faster than forecast.

Although a sharp slowdown in US economic growth is still a significant downside risk, the factors that have clouded the prospects for the international economic environment are now receding, with the exception of the economic situation in Russia. This also means that external risks to the prospects for the Finnish economy in the years ahead have diminished. Provided the global economy recovers as forecast, the main uncertainties will concern the speed at which exports in the traditional industries grow and the extent of the rise in export and import prices.

The technical assumption has been made in the forecast that the level of earnings will rise by some 4 per cent a year over the forecast horizon. This assumption covers both increases in negotiated wage rates and wage drift. It is further assumed that earnings will rise fairly evenly in all sectors of the economy. If costs develop in line with these assumptions, Finland's competitiveness will weaken over the forecast period in relation to the euro area average and main competitor countries. The rise in unit labour costs in the period 1999–2001 is forecast to exceed the euro area average by more than 4 percentage points. More moderate developments in earnings would result in higher-than-forecast growth and employment, which would be a desirable outcome.

Supply in the housing market cannot keep up with demand, especially in the growth centres, and factors curbing the rise in prices are either too few or very slow to operate. The combination of low real interest rates and strong income expectations could lead to faster-than-forecast growth in credit demand and to an unhealthy accumulation of debt and an increase in financial sector risks towards the end of the forecast period.

As domestic risks to inflation are clearly on the upside, it is of vital importance that public expenditure be kept on a tight rein, despite the growing surplus in public finances. To enable a permanent reduction in taxation and thereby, for example, strengthen employment, it is also necessary to maintain spending discipline during good economic times.

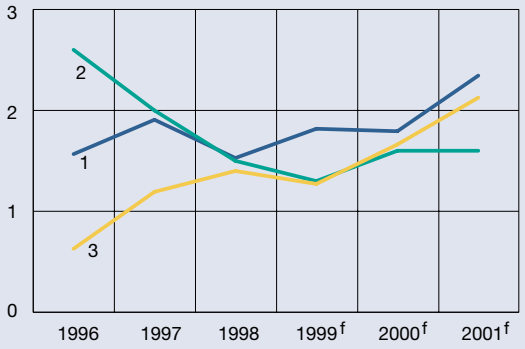
The forecast for GDP growth is conditional on the assumption that availability of labour does not become an obstacle to growth. This calls for measures to reduce structural unemployment and encourage people to work.

26 November 1999

**Chart 8.**

**Private consumption deflator**

Percentage change on a year earlier




1. Finland
2. Euro area
3. Finland (consumer price index)

f = forecast.

Forecast for euro area: European Commission, November 1999.

Key words: inflation, monetary policy, economic situation, forecast

# Financial stability in Finland

In recent months developments in international financial markets have been influenced by the favourable outlook for economic growth, on the one hand, and increased uncertainties, on the other. Long-term interest rates have been rising since the spring in several major markets. Movements in short-term interest rates have largely reflected uncertainties concerning the millennium date change. Investor behaviour continues to be characterized by caution, which has its origins in the turmoil that rocked international financial markets in autumn 1998.

For a long time now the possibility of a stock market crash in the United States, where equity prices have risen strongly, has been judged to pose a risk to global financial stability, which could be reflected in downward pressure on equity prices and increased uncertainty in other markets as well (Chart 1). However, the perception that equity prices could evolve in a more balanced way has also gained support. During the early autumn US stock market indices fell slightly without any clearly discernible impact on financial stability or real economic activity.

Stability has gradually been restored to Asian financial markets along with general economic recovery in the region. Notwithstanding this there is still a need for further clear signs that economic structures are being reformed so as to provide convincing proof that no new crisis spots are likely to emerge in Asian markets. In Japan the restructuring of financial markets has got under way with mergers and other arrangements in the banking sector.

In Russia the situation is being hampered by political problems and suspicions concerning the actions of senior officials, which, among other things, has led to postponement of new disbursements of loans under the IMF programme. The upcoming elections and the Chechen conflict have sustained uncertainty on Russian financial markets.

## The euro area adjusts to the single currency

The profitability of the largest banks in the euro area improved in the first half of 1999. Credit growth in the euro area has continued at annual rate of 8 to 9 per cent, and lending to the private sector in particular is still strong. After falling for some years, banks' average lending and deposit rates have started to rise in recent months. Numerous alliances and take-over bids have provided further impetus to rapid structural change in the euro area banking sector in the course of the year. With a few exceptions, most of the alliances and mergers have taken place between banks within national boundaries, though plans have also been announced for cross-border restructurings.

According to figures published by the Bank for International Settlements (BIS), the EU banking sector's share of exposures to borrowers in crisis regions grew further in the latter part of 1998. Exposures focused increasingly on eastern Europe, where EU banks' share of total reported claims grew to over 80 per cent. Over the same period the claims of the EU banking sector on Asian emerging economies decreased. There are major differences in the exposures of euro area banks to economic crisis areas. For example, the bulk of claims on eastern European borrowers is held by banks in a few large euro area countries.

Securitization in euro area financial markets has got off to a faster start than expected, and the expansion of markets has been accompanied by the entrance of new participants. Business and banking sector restructurings have increased the need for capital funding.

Although bond markets in the euro area have grown, they are still fairly fragmented. In particular, issues by corporate borrowers are for the most part still arranged at national level, and they frequently

lack international ratings. Secondary markets also remain fragmented.

## Rapid credit growth and narrowing of interest rate margins are a cause for concern

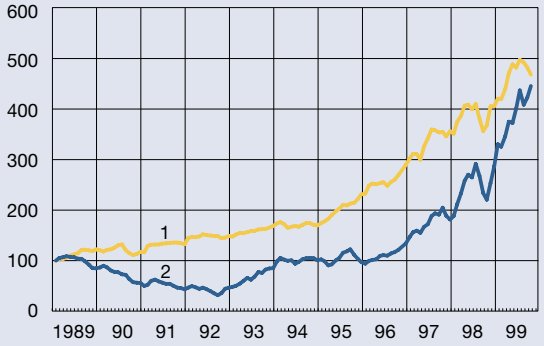
With the pick-up in economic growth in the euro area the outlook for the Finnish economy is for continuing stable development, and interest rates are still at a relatively low level. For example, compared with the conditions that prevailed during the economic boom of the 1980s, the financial position of banks' customers – households and firms alike – remains good, thanks to the low level of indebtedness. Though there are some signs that indebtedness has gradually started to increase, bankruptcies and payment arrears, for example, have not increased in Finland in the course of the current year. Nevertheless it is unlikely that bankruptcies will continue to decline in the way they have done in previous years. The financial performance of Finnish banks is still good but the growth of operating profits seems to be coming to an end. This is due to both a fall in net interest income and a slowing in the growth of other income. These developments reflect changes in the structure of banks' income and heightened competition, trends that are expected to continue in Finland and in Europe overall.

The stock of bank lending in Finland has continued to grow at a rapid annual rate of about 13 per cent in the course of the year, exceeding the euro area average. At the same time the average margin between lending and deposit rates has narrowed noticeably (Chart 2). Growth of the lending stock is due to a number of factors: the favourable macroeconomic outlook; the still relatively low level of interest rates; a rise in collateral values; and the release of pent-up credit demand in the post-recession period. Lending growth has also been fuelled by demand for dwellings, which is due in part to the recent wave of internal migration. The combination of growth of the lending stock and shrinking interest rate margins nevertheless suggests that tightened competition for market share may also be a contributory factor. A worrying development from the point of view of financial stability is that current interest rate margins will probably not generate enough income to cover growing loan losses in the longer term.

**Chart 1.**

**Dow Jones Industrial index and HEX all-share index**

Index 31 January 1989 = 100

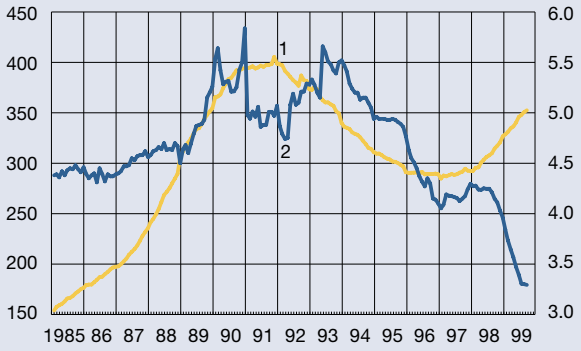



1. Dow Jones Industrial
2. HEX all-share

**Chart 2.**

**Deposit banks: lending stock and interest rate margin**

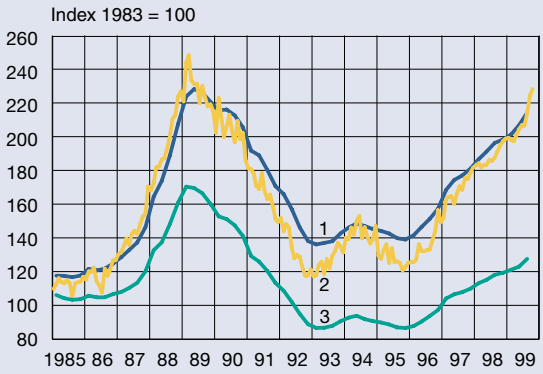
FIM billion %-pts




1. Lending stock (left-hand scale)
2. Difference between average rates on markka and euro-denominated lending and deposits, in percentage points (right-hand scale)

**Chart 3.**

**Housing prices in Finland**




1. Whole country
2. Old two-room flats in Helsinki
3. Whole country, real price

Only about 7 per cent of Finnish banks' markka and euro-denominated lending to the public is at fixed rates of interest (August 1999; this compares with an average of 8 per cent for the period 1994–1998). This means that the interest expenses of the vast majority of borrowers are linked to changes in market interest rates. If market interest rates move still higher, the financial position of borrowers will weaken as a larger proportion of disposable income will have to be spent on servicing debt. Higher interest rates could also erode bank profits as a result of writedowns in the values of their securities portfolios.

By and large, asset prices in Finland have risen in recent years (Charts 1 and 3). Various estimates have been put forward concerning the likelihood of a price collapse. If, for example, there were to be significant fall in equity prices, this would increase economic agents' uncertainty about future economic developments, weaken the financial position of borrowers as economic activity slows and lower the value of banks' own investments. In particular, a heavy fall in property and housing prices in Finland would increase banks' risks as nearly a third of all new corporate loans has gone to firms dependent on the property and construction sectors. The strong growth of housing loans has also increased the importance of dwellings as collateral in secured lending.

The direct credit exposures of Finnish banks to crisis areas in eastern Europe, Asia and Latin America are very small. The risks to Finnish banks arise indirectly, partly through their euro area and other international connections. With the start of monetary union, Finnish banks' business with the rest of Europe has increased and can be expected to increase further as integration deepens.

Changes in financial behaviour and forecasts of a gradual increase in financial disintermediation are putting pressure on the profitability and efficiency of Finnish deposit banks. Competition for bank customers in Finland is already intense, and, for example, margins on bank loans to corporate customers are low. In addition, financial diversification, strategic alliances and mergers are increasing pressures for change in the banking sector and altering the competitive situation. Naturally, this new operating environment brings with it risks as well as opportunities.

It seems probable that the tax-exempt status of deposits will be abolished in 2000. This is likely to increase banks' funding costs either directly or indirectly, since low-rate transactions accounts will no longer be as attractive to depositors when they lose their tax-exempt status. This upward pressure on funding costs could be reflected in the interest rates applied to some types of deposit and in, for example, the pricing of payment services. Banks will probably respond by increasing product differentiation in the range of accounts and payment services they offer. Part of these deposits will nevertheless probably be re-invested in bank-owned investment funds or other investment products.

Indicative of the pressures for change faced by the banking industry is the fact that the Ministry of Finance has set up a working group to examine existing legislation on acceptance of deposits (and other repayable funds) from the public and money transmission services. The task of the working group is to determine whether the provisions governing the competitive situation of various savings and investment products and payment transmission services can be simplified and harmonized.

The restructurings in the banking industry have continued in Finland as well. The growing trend towards cross-border consolidation of banking business, as evidenced, for example, in MeritaNorbanken's efforts to expand its operations in the Nordic area, poses a challenge to supervisors at home, to coop-

eration between supervisors in different countries and to the central bank in its macroprudential supervision of the financial system. Sampo and Leonia have agreed to merge to form the first financial conglomerate in Finland embracing both banking and insurance business. This is another challenge to which supervisors will have to respond.

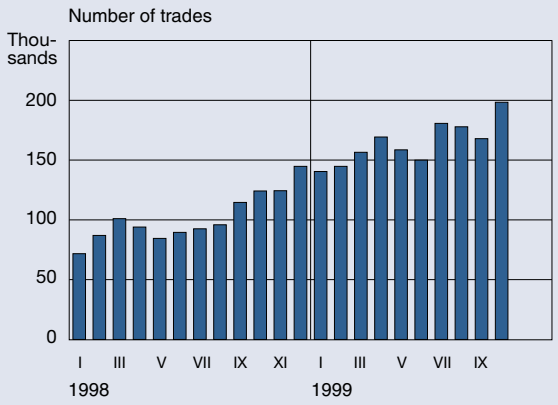
## Payment and settlement systems have made the transition to the euro era

Since the beginning of the year all payments executed through cross-border payment systems in the euro area have been denominated in euro. TARGET[1], the payment system maintained by the European System of Central Banks (ESCB), is an EU-wide real-time gross settlement system (RTGS) for euro payments in which payments are transmitted via participating central banks. In the first nine months of the year TARGET processed 27,580 transactions a day on average (with a total daily value of some EUR 351 billion on average). The other EU-wide euro payment system, Euro 1, is a net settlement system for large-value payments operated by the European Banking Association. Two Finnish banks, Merita and Leonia, participate in this system. Both systems have increased the efficiency of particularly large-value payment flows in the euro area. At the same time, the risks attached to large-value payments have decreased. Nevertheless there is still a need for improvement in the accessibility and operational reliability of TARGET, as use of the system has been hampered to some extent by operating difficulties. The introduction of the euro has had very little impact on cross-border retail payments and so there is still considerable room for improvement in this area.[2]

At present both markka and euro-denominated items are processed in Finnish payment systems. The share of payment flows based on self-service continues to expand, with strongest growth in the area of the services available on the Internet.

**Chart 4.**

**Volume of trades settled in the APK's OM equity settlement system**




The Finnish Central Securities Depository (APK) operates separate settlement and register systems for both equities (OM system) and debt securities (RM system). Volumes in the OM system have continued to grow at a rapid pace, mainly because of heavy trading in Nokia's shares (Chart 4). The OM system is vulnerable to risks owing to its decentralized structure and functional features. It therefore needs to be upgraded as quickly as possible so as to reduce risks. However, the planned centralization of the OM's (book-entry) register keeping in the APK will enable the introduction of alternative settlement procedures alongside the present net settlement method and thus greatly enhance the efficiency of the system. According to current plans, centralization is due to take place in October 2000.

## Year 2000 preparations enter final phase

Remediation work by Finnish banks to ensure that their IT systems are Year 2000 compliant have progressed as planned in the course of the year, and systems have been successfully tested.[3] Finland's Finan-

[1] TARGET stands for Trans-European Automated Real-time Gross settlement Express System.

[2] The Eurosystem has called for the introduction of improved systems by 1 January 2002 at the latest; see the ECB's press release of 13 September 1999 *Improving cross-border retail payment services in the euro area – the Eurosystem's view* (www.ecb.int).

cial Supervision Authority (FSA) has focused special attention on the Year 2000 preparations of the supervised entities during its on-site supervisory visits. It is expected that any difficulties that arise in the banking system during the millennium changeover will be minor and quickly rectifiable. Tested cash dispensers and ATMs are expected to function normally. Arrangements have also been made to ensure that there will be adequate supplies of banknotes and coins to meet increased demand over Christmas and the millennium weekend. Contingency plans have nevertheless been drawn up to deal with any unforeseen events and, similarly, detailed transition plans have been prepared for organizing monitoring of the millennium changeover. A progress report on the Year 2000 preparations of the financial sector is posted on the Bank of Finland's website (www.bof.fi).

The Year 2000 compliance of the Bank of Finland's own systems has been successfully tested. Joint tests have been conducted with both domestic account holders and the central banks participating in the ESCB. Account holders entitled to intraday credit can obtain credit from the Bank against eligible collateral in order to secure their intraday liquidity and the smooth flow of payments traffic.

## Market infrastructure must adapt to the European integration process

The deepening of integration in euro area financial markets is very closely tied up with the consolidation of securities market infrastructure. Recently, several initiatives have been announced for revamping share and derivatives trading and clearing and settlement of trades in Europe. It is of the utmost importance for the stability of the Finnish financial system that secure and effective links can be established between local securities market infrastructure and the main European systems. It seems that consolidation of infrastructure will advance largely on conditions dictated by the major financial centres. Step-by-step consolidation through a number of several alternative projects could, however, help the peripheral areas to get their views taken on board, albeit at the cost of slowing consolidation.

In the course of the current year consolidation of clearing and settlement systems for securities trades has been given added momentum by new initiatives for reforming clearing and settlement arrangements. Euroclear, Europe's largest international securities depository, put forward its blueprint for a pan-European settlement system based on the 'hub and spokes' model, in which national clearing and settlement systems (spokes) would be connected by links to an international centre (hub) where all cross-border transactions would be settled. Cedel International, the euro area's other international securities depository, and the German Deutsche Börse Clearing AG (DBC) decided to merge with the ultimate aim of creating a single Europe-wide clearing and settlement system called European Clearing House, which other central securities depositories were invited to join. Sicovam SA, the French CSD and clearing corporation, which initially planned to form an alliance with Cedel and DBC, announced in November that it was forming an alliance with Euroclear. An important development at global level is the announcement of a plan to establish a link between the UK-based CREST system and The Depository Trust Company, the leading US securities depository.

The consolidation of securities settlement systems in Europe has so far been based largely on the creation of links between national central securities depositories. Two-way links have been constructed between the Finnish APK's debt securities system and the systems operated by DBC in Germany and Sicovam in France. These links have been approved for transfers of collateral against credit granted by the ESCB.

The consolidation of the Finnish derivatives markets took a step forward at the end of September with the launch on Eurex, the joint German-Swiss derivatives exchange, of trading in the Helsinki Exchanges' most liquid derivatives products. At the same time links were opened between the APK's share system and the DBC system to allow for the possibility of delivery of underlying assets against stock derivatives traded on Eurex. In the cash market, the Helsinki Exchanges have been engaged for some time now in negotiations on the use of the Xetra trading system operated by Deutsche Börse AG for the trading of shares listed on the Helsinki Exchanges.

[3] For fuller details on this subject, see the article 'Finland's financial markets and the Year 2000, by Tuula Hatakka and Ari Voipio, in *Bulletin*, No 1, 1999.

In September eight leading European stock exchanges agreed on the introduction of a common market model by November 2000. The exchanges agreed on the harmonization of trading activities and on a common customer interface for their systems but postponed, for the time being, plans to construct a single trading platform. In addition, various other trading systems are evolving in European stock markets as rivals to traditional exchanges. For example, Nasdaq, the US exchange known particularly for its high coverage of the technology sectors, has announced plans to launch a pan-European trading system in the latter part of 2000.

## Stable near-term outlook for Finnish financial markets – some risks on the horizon

The near-term outlook for the Finnish financial system is for continued stability, although a number of challenges and risks loom on the horizon. At home, potential risks are posed by the rapid growth of lending combined with shrinking interest rate margins. The banks must pay more regard to the proper pricing of risks. Similarly, banks' customers need to pay attention to risk management and avoid becoming excessively indebted.

At present there does not seem to be very much likelihood of a major disturbance on international financial markets in the near future. In the event that a disturbance does occur, however, this could cause a sharp fall in domestic asset prices, which, among other things, would increase banks' risks by lowering the value of their own investment portfolios and weakening the financial position of their customers.

A worrying aspect from the point of view of the functioning of domestic financial markets is the settlement and register system for share trades operated by the APK, the upgrading of which is being held back by the system's decentralized register structure. It is important for the efficient functioning of markets that the centralization of register keeping can be implemented within the agreed timetable.

The internationalization of the Finnish financial system continues to advance and at the same time Finland's first merger between companies in the banking and insurance sectors is under way. Structural changes are a challenge to financial supervisors and serve to highlight the importance of cooperation between the competent authorities.

10 November 1999

Key words: financial system, stability, banks, financial markets, payment and settlement systems

# How important are differences between euro area economies?[1]

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Starting from the beginning of this year, euro area monetary policy has been formulated centrally by the Governing Council of the European Central Bank (ECB). Since the primary objective is to maintain price stability on an area-wide basis, policy decisions are based on average developments in the euro area as a whole. Individual countries' deviations from the euro area averages may not affect the common monetary policy.

Nevertheless, policymakers should be concerned if economies deviate very much in opposite directions. The larger such internal differences become, the less suitable the common monetary policy will be for some countries. For an economy that has different inflation and growth patterns from the euro area average, maintaining macroeconomic stability in the face of a common monetary policy will require compensating adjustment of fiscal and structural policies. This process may be difficult if the required adjustment is large, labour markets are rigid and/or fiscal policy constraints apply.

For this reason, it is important (i) to monitor economic divergences in the euro area and (ii) to strengthen the economies' capacity to adjust to a common monetary policy that will occasionally be too loose or too tight for local conditions.

## Differences between euro area economies

During the early and mid-1990s euro area economies seemed to be converging, driven by the priority of satisfying the economic criteria laid down in the Maastricht Treaty. Since 1997, however, the process of convergence has shown signs of slowing, and perhaps even reversing. These developments can be illustrated by the data in Charts 1 and 2.

Chart 1 shows a widening gap between the maximum and minimum inflation rates observed in euro area countries. Chart 2 shows a persistently high difference of 3.5 percentage points in GDP growth rates between slower-growing and faster-growing countries, even when we ignore the consistently above-average growth rates of Finland and Ireland. In spite of hopes to the contrary, macroeconomic differences between euro area countries have grown over the past two years.

To gain a more detailed understanding of the current differences between the euro area countries, it is important to compare countries across more than two key economic variables. The convergence barometer in Chart 3 makes a consistent point-in-time comparison of each euro area country with the euro area weighted average for six key policy variables: inflation, credit growth, unemployment, GDP growth, public sector balances and debt to GDP.

In the convergence barometer, the euro area averages are shown as a grey hexagon. The relative position of any given euro area country is superimposed on this hexagon to illustrate the size and direction of deviations in all six dimensions at the same time. For ease of interpretation, the scales on five of the six dimensions have been set so that 'good' deviations from the euro area average fall inside the hexagon and 'bad' deviations fall outside. In the case of credit growth, the desired direction of the deviation is ambiguous and needs to be interpreted in the context of the other variables, especially inflation. It should be borne in mind that, in a common currency area, very large deviations may be problematic even if they are in a positive direction.

[1] This article is based on the authors' discussion paper *Divergences in the Euro Area: a Cause for Concern?*, Bank of Finland Discussion Papers 11/99.

Looking at each euro area country in this way, the differences between the countries become obvious. Three other interesting observations also follow from this exercise. First, public sector deficits are larger in countries where growth is the slowest. Second, public sector deficits and debt are generally higher in countries with higher unemployment. In these countries, fiscal policy has less room for manoeuvre. Finally, high credit growth correlates strongly with inflation, probably because real interest rates are lower.

## Assessing the suitability of the common monetary policy

Given the differences between the economies of the euro area, it is impossible to tailor a common monetary policy to suit each country's circumstances. Moreover, if divergence continues, some countries may even encounter problems adjusting to the common monetary policy. It is therefore important to assess which countries run the greatest risk of facing such adjustment problems.

For this purpose, it is helpful to have a benchmark optimal policy for each country that can be compared against the policy that is currently being conducted. This tells us what the optimal monetary policy would be if the entire euro area were to look just like Ireland, or France, or Finland, etc.

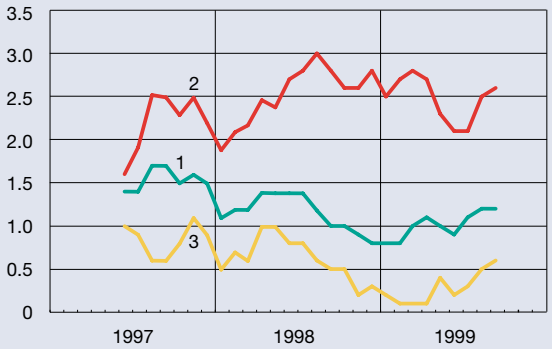
The 'monetary thermometer' in Chart 4 is designed to give us such benchmarks. The thermometer uses what is known as a Taylor rule formulation, which adjusts short-term interest rates according to (i) deviations of inflation from a target level and (ii) deviations of real output from potential output. The level of real interest rates corresponding to a neutral monetary policy stance is assumed to be 2 per cent. The result is a suggested set of interest rates that would fit the circumstances prevailing in individual euro area countries. As the thermometer suggests, high interest rates are appropriate for countries that are in danger of overheating and low interest rates for 'cold' economies in need of a monetary stimulus to growth.

The thermometer indicates that especially Ireland, Portugal, the Netherlands and Spain would benefit from higher interest rates, while France and Germany would benefit from lower rates. For the euro area as a whole, however, the current 2.5 per cent rate seems

**Chart 1.**

**HICP inflation rates in the euro area***

Annual percentage change



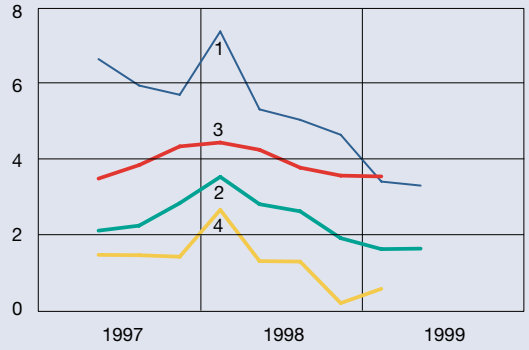

1. EU 11
2. Maximum
3. Minimun

* Maximum and minimum do not include data for Luxembourg.

**Chart 2.**

**GDP growth***

Annual percentage change

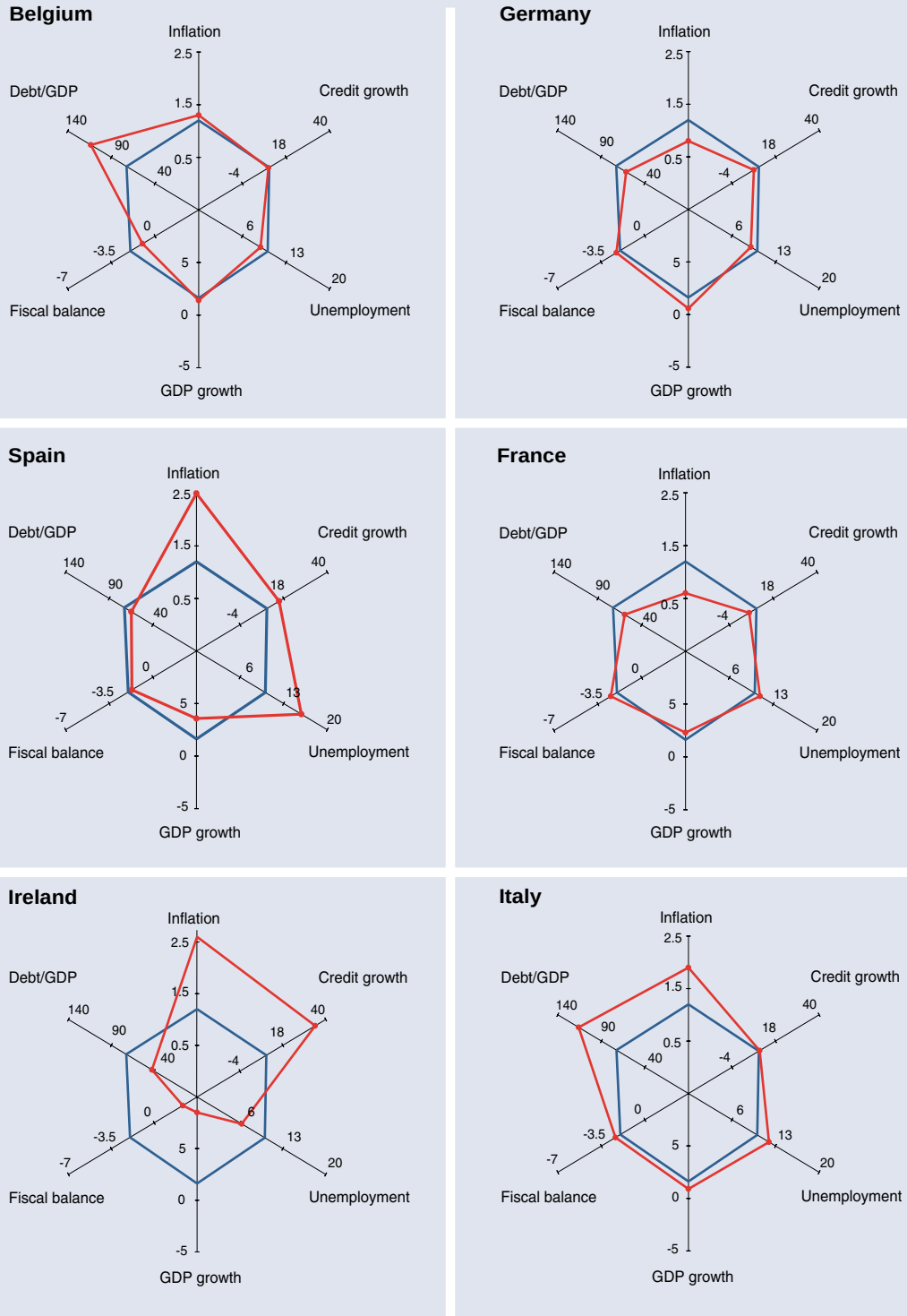



1. Finland
2. EU 11
3. Maximum
4. Minimum

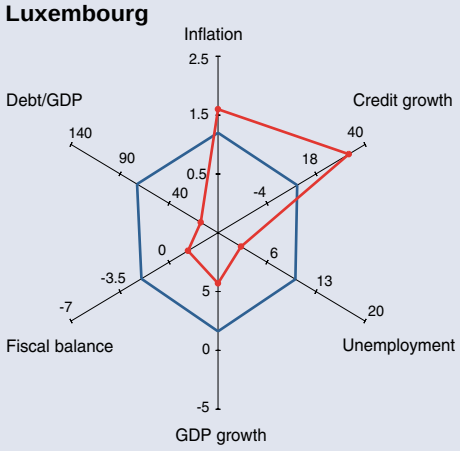
* Maximum and minimum do not include data for Ireland, Luxembourg or Finland.

**Chart 3.**

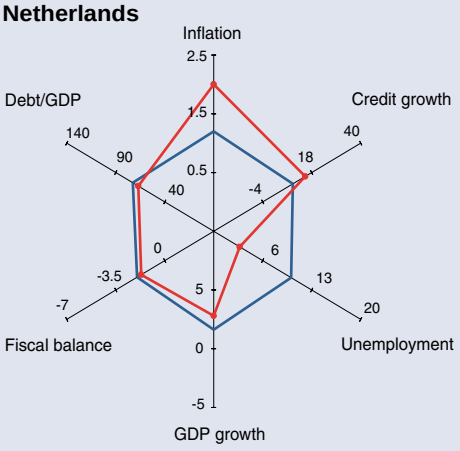
**Convergence barometers for euro area countries**



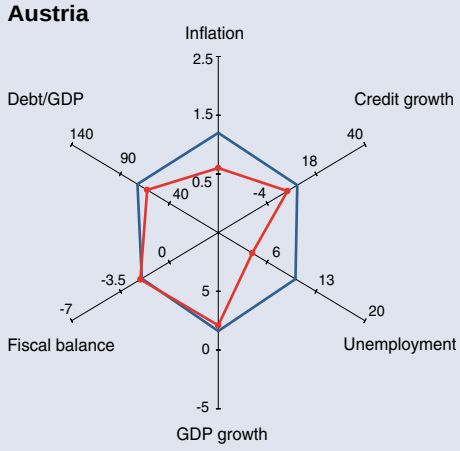
**Luxembourg**



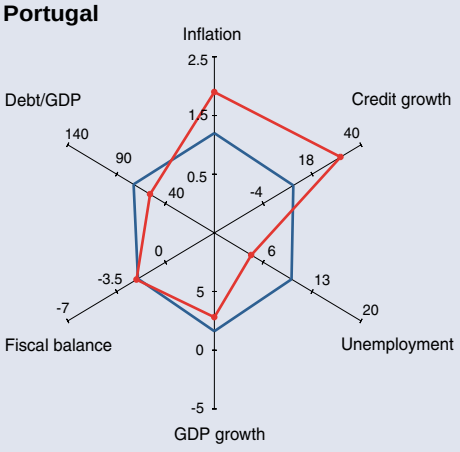

**Netherlands**



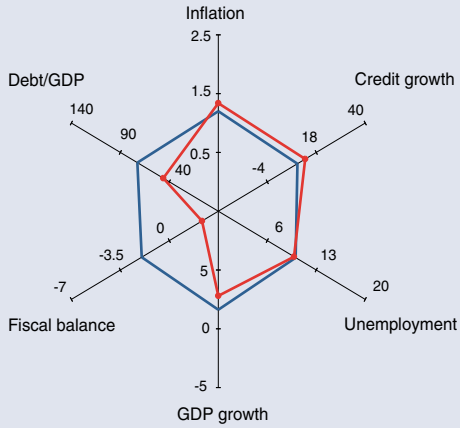

**Austria**




**Portugal**




**Finland**



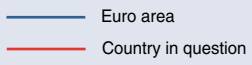
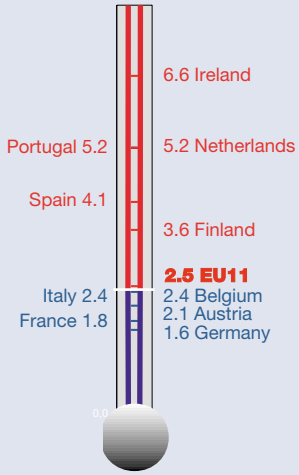



**Chart 4.**

**Monetary thermometer: optimal level of interest rates for euro area countries**




appropriate. It should be remembered that these conclusions are only approximate, since the results of any benchmark rule are dependent on, among other things, the limitations of input data and built-in assumptions or simplifications.

To the extent that economies diverge from the euro area average, they would benefit from a looser or tighter monetary policy than that now prevailing. However, it is neither possible nor desirable to adjust the common monetary policy to the circumstances of individual member countries. Therefore, to ensure stable economic developments, these countries have to compensate for the differences by adjusting their fiscal policies and implementing structural changes in labour and product markets. The greater the differences, the more compensating fiscal and labour market flexibility will be needed in individual economies.

## Fiscal flexibility

The room for manoeuvre in fiscal policy is constrained in two ways. First, there are political constraints associated with defending a fiscal tightening during times of rapid growth. Higher tax revenues tempt policymakers to lower taxes, or increase spending, or both. Thus, in an overheating economy, it may prove difficult to tighten fiscal policy by as much as might be necessary. This is especially true if unemployment and/or tax rates are already considered unacceptably high.

Second, upper limits on government deficits and debt levels have been laid down in the 1997 Stability and Growth Pact. Under this agreement, governments may not run public sector deficits exceeding 3 per cent of GDP. In exceptional circumstances of economic recession, however, there is an agreed procedure by which this limit can be temporarily exceeded.

It follows that, while small divergences in economies can be accommodated by fiscal policy measures, the same may not be true if divergences become very large. At present this situation appears to be more a hypothetical case than a reflection of current circumstances, but the developments nevertheless give cause for concern.

## Flexibility of labour and product markets

There is an impressive consensus among euro area policymakers that labour and product markets need to be made more flexible. In an increasingly competitive and dynamic environment of globalization, trade and technological progress are resulting in significant changes in relative prices. If labour and product markets are slow to adjust to market forces, changes will be absorbed through higher unemployment, which after some time becomes difficult to reduce to earlier levels. All parties agree that a more flexible real economy implies faster and less socially costly adjustment to change, whether in the form of globalization, shocks or diverging cyclical developments.

The complexities associated with increasing the flexibility of the real economy cannot be ignored. Change is constrained by existing institutional structures, which are generally slow to adjust. There is also considerable path dependency involved, meaning that the set of alternatives that is available today depends on choices that were made in the past. Nevertheless, it is still possible to identify a few proxies

for labour market flexibility, such as long-term unemployment rates, tax wedges and replacement rates, which give some indication of which euro area economies can adjust relatively quickly or slowly.

The results of one such exercise (see Björkstén and Syrjänen, 1999) show that Ireland, Luxembourg and Portugal seem to have the most flexible labour markets in the euro area. France, Finland and Belgium are among the countries with the least flexible markets.

## Should we be concerned about Finland?

Compared with the euro area averages, Finland is currently in an enviable position: most divergences are in a positive direction; government debt and deficit figures are among the best in the euro area.

Given Finland's prevailing strong economic growth and current cyclical position, an independent monetary policy would probably be somewhat tighter than is actually the case at present. For the euro area as a whole, however, the present stance of the single monetary policy is appropriate. Relatively loose monetary conditions in Finland can be offset by tight fiscal policy, so that an appropriate overall macroeconomic policy stance can still be maintained.

Over the longer term the Finnish economy would benefit from increased flexibility of its labour and product markets, which appear to be among the more rigid in the euro area. This would provide added insurance against shocks and cyclical divergences from the rest of the euro area in the future.

15 October 1999

Key words: economic and monetary union, monetary policy, divergence

# Fiscal policy and public finances

by **Anne Brunila**, Head of Division
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Consistent fiscal policy, combined with sustained rapid economic growth, has led to a turnaround in public finances in Finland. The large deficits of the early 1990s have been replaced by growing surpluses and public debt has begun to decline. In 1998 the general government fiscal position improved substantially and posted a surplus for the first time since 1990. At its peak in 1994 the deficit was almost 6 per cent of GDP. Given continued favourable economic developments and low interest rates, the prospects for public finances, especially central government finances, are good. It is probable that the general government fiscal position will improve faster than was estimated only last spring.

The guidelines for fiscal policy over the next few years are defined in the programme of the present Government in terms of four objectives: to achieve a structural surplus in central government finances; to reduce the ratio of central government debt to GDP to below 50 per cent; to keep real central government expenditure unchanged at the budgeted level for 1999 throughout the Government's four-year term; and to cut household income tax by FIM 10–11 billion over the same period. The budgetary framework agreed in May for the years 2000–2003 is based on the economic policy guidelines set out in the Government's programme. Similarly, the Government's budget proposal for 2000 and the September 1999 update of the stability programme for 1999–2003 are built on the policy guidelines laid down in the Government's programme and the budgetary framework.

## Faster-than-expected improvement in central government finances

As a result of a period of exceptionally good economic performance lasting several years and strict adherence to spending ceilings, central government finances will be close to balance at the end of 1999. In addition, the central government will shortly start to pay back its debt. Thanks to privatization proceeds totalling more than FIM 20 billion, the ratio of central government debt to GDP will fall to 55 per cent this year. Thus central government debt is being run down at a faster pace than foreseen in the budget, the Ministry of Finance's autumn forecast and the stability programme.

According to the Bank of Finland's forecast, continuing robust economic growth and rising employment will help to boost the central government surplus to over 1 per cent of GDP in 2000 – almost FIM 10 billion – provided spending is kept on a tight rein. This is a slightly larger surplus than in the budget, which projects a surplus of FIM 5 billion, measured on a national accounts basis. This is a remarkable development given the fact that, even as late as 1998, the general government surplus was due entirely to a surplus in social security funds. Sound central government finances are essential in economic and monetary union, as the room for manoeuvre required in fiscal policy to cope with fluctuations in the business cycle cannot be built on social security funds, whose purpose is to finance growing pension expenditure. The building-up of sizeable surpluses is particularly necessary in Finland because the impact of automatic stabilizers on the general government budgetary position has traditionally been greater and more variable than in large euro area countries.

As the central government surplus in 2000 will be almost entirely structural, the first of the Government's four fiscal policy objectives will be achieved already next year. Since the Government has announced that nearly all proceeds from privatization will be used to pay back debt, the ratio of central government debt to GDP will likewise fall below the 50 per cent target level in 2000. Given the favour-

able economic performance and magnitude of privatization proceeds, the objectives laid down in the Government's programme are not particularly ambitious.

If the economy continues to grow at a rapid pace, developments in central government finances will help to consolidate the general government surplus over the next few years, provided spending remains within ceilings. Interest payments will decrease as result of the fall in the level of debt, lower interest rates on central government debt and privatization. According to the Bank of Finland's forecast, the surplus will grow to FIM 14 billion in 2001, even though it is assumed in the forecast that income taxation will be cut by about 1 per cent and indirect taxation by about FIM 1 billion in net terms. The general government fiscal surplus is forecast to increase to 5 per cent of GDP and central government debt to fall to close to 40 per cent of GDP (close to 30 per cent on Maastricht definitions). But despite the additional leeway in fiscal policy, spending will have to be kept on a tight rein so that the necessary conditions for a lasting reduction in the overall tax burden can be secured in the medium term.

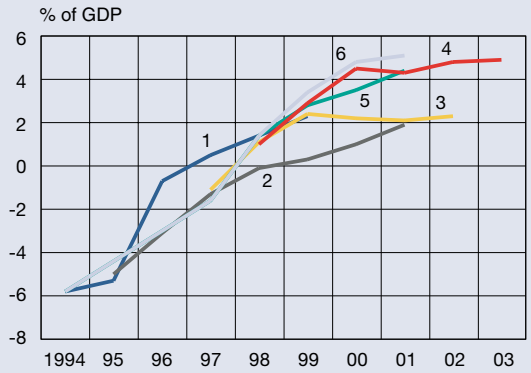
## Public finances are likely to improve more than envisaged in the stability programme

In the stability programme for 1999–2003 the general government surplus does not grow as large as in the Bank of Finland's forecast. This is partly because the assumed rates of economic growth for 2000 and 2001 are lower than in the Bank's forecast. The stability programme assumes that GDP will grow by 2.6 per cent a year in 2002 and 2003 and that the Government will implement income tax cuts totalling FIM 11 billion in the period 2001–2003. It further assumes reductions in indirect taxes totalling some FIM 5 billion. The stability programme shows that, even if growth turns out to be slower than projected or there is a moderate rise in interest rates, public finances will remain in surplus and that there is no danger of exceeding the deficit limit set in the Stability and Growth Pact.

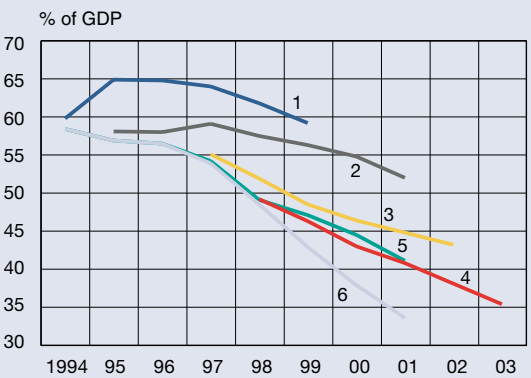
The medium-term outlook for public finances has improved year by year (Chart). In the September 1999 stability programme update the surplus is larger than projected a year ago largely because of a better start-

**Chart.**

**General government balance, 1994 – 2003**




**General government gross debt, 1994 – 2003**




1. Convergence programme, September 1995
2. Convergence programme update, September 1997
3. Stability programme, September 1998
4. Stability programme update, September 1999
5. Bank of Finland forecast, spring 1999
6. Bank of Finland forecast, autumn 1999

**Table 1. Public expenditure and revenue, per cent of GDP**

| | 1990 | 1994 | 1998 | 2001 |
|---|---|---|---|---|
| **Revenue** | | | | |
| Household taxes | 15.6 | 16.3 | 14.4 | 13.8 |
| Corporate taxes | 1.7 | 0.8 | 4.1 | 4.0 |
| Indirect taxes | 15.4 | 14.5 | 14.0 | 13.9 |
| Social security contributions | 12.9 | 15.9 | 13.1 | 12.9 |
| Other revenue | 13.5 | 22.1 | 16.3 | 13.4 |
| Total | 59.1 | 69.5 | 61.8 | 58.0 |
| **Expenditure** | | | | |
| Transfers | 20.2 | 29.7 | 23.9 | 21.3 |
| Employment-related expenditure | 0.6 | 4.3 | 2.5 | 1.8 |
| Consumption | 21.6 | 23.3 | 21.4 | 20.3 |
| Investment | 2.1 | 2.4 | 2.2 | 2.1 |
| Other expenditure | 8.3 | 15.0 | 8.1 | 6.0 |
| Interest payments | 1.4 | 4.9 | 4.8 | 3.3 |
| Total | 53.7 | 75.4 | 60.5 | 52.9 |

ing position. If the economy grows as forecast over the next few years and there is no significant slippage on the expenditure side, it is unlikely that developments in general government finances will be weaker than foreseen in the stability programme. The main uncertainty in this regard concerns corporate tax receipts, which are the most cyclically sensitive component of tax revenue and difficult to forecast. Moreover, if pay settlements in the public sector turn out to be substantially higher than forecast, keeping expenditure within ceilings may require additional spending cuts or a deterioration in public sector employment.

## Public sector back at its pre-recession level

As a result of determined fiscal consolidation efforts, the size of the public sector has been reduced to close to the level that prevailed prior to the recession in the early 1990s. A comparison with the pre-recession period nevertheless reveals that in recent years corporate tax receipts have become far more important for the finances of the central government and particularly the local government sector than was the case at the beginning of the decade (Table 1). The main factors behind the growth of corporate tax receipts are the tax reform implemented in 1993 and the huge improvement in corporate profitability in the post-recession period. Another reason is that firms now distribute a larger proportion of their profits than before in the form of dividends, partly because of increased foreign ownership. With this change in the composition of tax receipts, central and local government revenue is more difficult to forecast than before because a substantial proportion of revenue is now directly dependent on highly variable developments in corporate profits. By contrast, wage and salary earnings tend to change far more slowly.

During the recession years there was a clear shift of emphasis in public expenditure towards government transfers. As a consequence of increased employment-related outlays and steadily growing pension expenditure, the ratio of transfers to GDP peaked at almost 30 per cent in 1994. With the subsequent rapid growth of the economy and minor reductions in pension benefits, the ratio has decreased and is expected to return to close to its pre-recession level by the end of the forecast period. The ratio of government consumption expenditure to GDP has remained in the region of 20 per cent throughout the 1990s and similarly the GDP share of public investment has hardly changed at all. Only the GDP shares of interest payments and employment-related expenditure are still higher than they were at the beginning of the 1990s.

The share of public expenditure in GDP peaked at about 75 per cent in 1994. It is forecast to fall to about 50 per cent of GDP by 2001, ie back to the same level it was at the beginning of the decade and close to the average level for euro area countries.

## Structural measures are a move in the right direction – total tax burden is still high

Besides economic growth, fiscal policy decisions have been a major factor behind the strengthening in public finances. Is this improvement built on a sustainable basis and have the measures taken been sufficient and correctly targeted? The answers to these questions depend to a large extent on how much the improvement in the general government fiscal position is due to structural measures and how much sim-

**Table 2. Cyclically adjusted public revenue, expenditure and structural primary balance**

| | 1995 | 1998 | 1999 | 2000 | 2001 | Change 1998/1995 | Change 2001/1998 |
|---|---|---|---|---|---|---|---|
| **Structural primary balance** | **5.4** | **6.0** | **7.1** | **7.7** | **7.2** | **0.6** | **1.2** |
| **Primary balance** | **–0.3** | **5.2** | **6.7** | **7.7** | **7.7** | **5.4** | **2.5** |
| **Revenue, % of GDP** | | | | | | | |
| Household taxes | 15.9 | 14.6 | 14.7 | 14.3 | 13.7 | –1.4 | –0.9 |
| Corporate taxes | 2.6 | 4.1 | 3.9 | 4.0 | 4.0 | 1.5 | –0.1 |
| Indirect taxes | 13.8 | 14.1 | 14.1 | 14.1 | 13.9 | 0.3 | –0.2 |
| Social security contributions | 15.9 | 13.2 | 13.4 | 13.1 | 12.8 | –2.7 | –0.4 |
| Other revenue | 11.9 | 10.4 | 10.0 | 10.2 | 9.9 | –1.5 | –0.5 |
| *Total* | *60.1* | *56.4* | *56.2* | *55.6* | *54.3* | *–3.6* | *–2.2* |
| **Expenditure, % of GDP** | | | | | | | |
| Transfers | 26.1 | 23.6 | 22.9 | 22.1 | 21.4 | –2.5 | –2.2 |
| Investment | 2.8 | 2.9 | 2.6 | 2.6 | 2.6 | 0.1 | –0.3 |
| Wages and salaries | 15.4 | 14.0 | 13.9 | 13.7 | 13.6 | –1.4 | –0.4 |
| Other expenditure | 10.4 | 9.9 | 9.7 | 9.5 | 9.5 | –0.5 | –0.5 |
| *Total primary expenditure* | *54.7* | *50.4* | *49.1* | *47.9* | *47.1* | *–4.3* | *–3.4* |
| Interest payments | 4.1 | 3.8 | 3.3 | 2.9 | 2.5 | –0.3 | –1.2 |

ply to movements in the business cycle. Furthermore, the nature of structural measures has implications for the sustainability of the improved budget balance.

Between 1995 and 1998 the ratio of the general government primary balance (balance excluding interest payments) to GDP improved by 5.4 percentage points (Table 2). The major part – 4.8 percentage points – of the improvement was due to favourable cyclical developments and only 0.6 percentage point to structural measures. Rather less than half – 1.2 percentage points – of the forecast increase in the primary balance for 1998–2001 is structural. Although the improvement in the primary balance since 1995 is largely attributable to cyclical factors, structural measures have made an important contribution and have been targeted at both the revenue and expenditure sides of the budget.

Many countries have attempted to rectify the structural imbalance in public finances mainly by tightening taxation. However, the positive impact of higher taxes on the general government fiscal position is often shortlived. A number of studies[1] suggest that it is essential for a lasting correction of the financial imbalance that measures be focused on the expenditure side of the budget, because in most cases it is increased spending that has generated the structural imbalance and led to larger deficits. Therefore establishing public finances on a sustainable basis calls for measures that impinge on transfers, social security and payroll costs and employment in the public sector. Research results show that, in the countries that have been most successful in consolidating public finances, the household tax burden has been tightened only very slightly or has actually been eased.[2]

Since 1995 the structural imbalance in general government finances in Finland has been remedied by cutting expenditure. As a result of these budgetary savings, cyclically adjusted primary expenditure

[1] See eg Alesina, A, and Perotti, R (1997), 'Fiscal adjustments in OECD countries: composition and macroeconomic effects', *IMF Staff Papers*, Vol 44, No 2, June and Perotti, R, Strauch, R, and von Hagen, J (1997), 'Sustainability of public finances', *CEPR Discussion Papers*, No 1781.

[2] These findings are largely explained by the fact that, almost without exception, the imbalance in public finances is due to rapid growth of welfare services and income transfers. It is estimated that about 70 per cent of the increase in structural deficits is due to increased expenditure and only 30 per cent to a decline in revenue. Therefore a lasting improvement in the fiscal position of the public sector can only be achieved by measures that target the budget items which are the root cause of structural deficits.

decreased by an estimated 4.3 percentage points in relation to GDP in the years 1995–1998 and is forecast to decrease by a further 3.4 percentage points in the years 1999–2001. Structural reforms have also been implemented on the revenue side. Income tax and social security contributions were cut in the years 1995–1998. By contrast, corporate taxation was tightened over the same period.

Despite the cuts in income tax in recent years, the household tax burden is still higher than before the recession. According to various calculations, income taxation was tightened by between 5 and 8 percentage points in the period from the beginning of the decade to1995. In 1999–2001 structural measures seem likely to have a notably more modest impact on taxation. Therefore the total tax ratio will hardly fall at all, especially as tax receipts will be boosted by continuing robust economic growth. If the overall tax burden is to be brought down to its pre-recession level, taxation will have to be eased by more than envisaged in the Government's programme. Such measures are, however, difficult to justify on countercyclical policy grounds, unless they are accompanied by fiscal tightening in other areas.

Another factor contributing to the strengthening of the structural balance in Finland has been the shift towards fiscal planning over a longer time horizon than before and the adoption of medium-term spending ceilings. There were no major spending overruns during the term of the previous Government. In the future a more consistent approach to the coordination of decision-making and policy setting at central and local government level would help to further adjustment to the requirements imposed by the single monetary policy and domestic economic conditions. As the stance of fiscal policy is the outcome of decisions taken at different levels in the public sector, it is important to ensure that these decisions support each other in an appropriate way.

The drawing up and application of expenditure ceilings may entail risks that ultimately weaken the ability of fiscal policy to react effectively. The setting of rigid spending ceilings for ministries and administrative sectors for several years ahead may reduce the flexibility with which fiscal policy responds to economic disturbances and inhibit discussion of the prioritization of tasks in the public sector. If economic growth turns out to be stronger than forecast, fiscal policy geared to spending ceilings may only serve to increase the amplitude of cyclical fluctuations. Therefore, when drawing up spending ceilings, provision also needs to be made for situations where economic growth and the actual course of development differ significantly from their assumed paths. The existence of explicit rules in this regard would increase the transparency and credibility of fiscal policy, especially in situations where it becomes necessary to depart temporarily from a stated policy.

## Role and tasks of the public sector

The medium-term outlook for public finances is encouraging in many respects. In less than ten years the public sector has undergone a period of intense adjustment, as a result of which central government finances have been secured on a sound footing and debt has started to decline quickly. If public finances develop as forecast by the Bank of Finland, public debt will no longer pose such a major constraint in the future or be a determining factor in the formulation of fiscal policy. The challenges and adjustment pressures facing the public sector do not end here, however. Given a rapidly changing economic environment and social structures, the role, tasks and priorities of the public sector inevitably face change as well. To avert a situation where the authorities have to respond to changes without prior preparation or under force of necessity, a wide debate is needed on a range of issues, including the division of labour between the public and private sectors and between central and local government, incentive systems in the public sector and the level and structure of taxation.

25 October 1999

Key words: fiscal policy, stability programme, structural balance

# Management of liquidity in payment systems: new challenges

by **Harry Leinonen**, Adviser to the Board
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The start of monetary union and the acceleration of funds transfers present new challenges to banks in the area of liquidity management. Banks should seek to optimize their use of liquidity so as to ensure its availability when and where needed and to accomplish this in a cost-effective manner. Cost and efficiency concerns will eventually lead to the concentration of payments and settlements in large, jointly operated systems that span the whole euro area and possibly the globe.

## Payment system liquidity and liquidity management

Narrowly defined, payment system liquidity refers to transferable funds held at central banks or other settlement banks. A payment system links banks together in a network that enables the transfer of funds in an efficient and (nowadays) fully computerized manner. Customers continually make payments, reallocate investment funds, and engage in other transactions that require interbank funds transfers. Banks must be able to meet their obligations arising out of such transactions, ie to settle their obligations in payment systems. Settlement requires liquidity, ie transferable funds. In practice, final settlements are effected by transfers of central bank funds across settlement accounts in central banks.

The challenge that banks face is to optimize their liquidity usage, ie to ensure that liquidity is available when and where needed while keeping costs at a minimum. A bank's overall liquidity needs are affected not only by its payment requirements but also eg by its till money requirements, long-term credit agreements with the central bank, and exchange transactions. Most items affecting a bank's overall position are known in advance or easy to anticipate, but transactions on behalf of customers are difficult to estimate in terms of size, volume and timing. Banks have established internal liquidity management systems that facilitate collection of data on all factors known to affect liquidity, forecasting of customer transfers, and planning of procedures that ensure that sufficient liquidity is on hand. Liquidity plans are usually prepared for both near-term (a few days) and longer-term (1–3 months) needs.

## Central banks' liquidity services

One of the key functions of a central bank is to provide facilities for risk-free interbank settlement transfers. To this end, the central banks of EU member states have set up real-time gross settlement (RTGS) systems. In these systems, interbank payments and settlements are executed transaction-by-transaction. The Bank of Finland's real-time electronic settlement system is called BoF-RTGS.

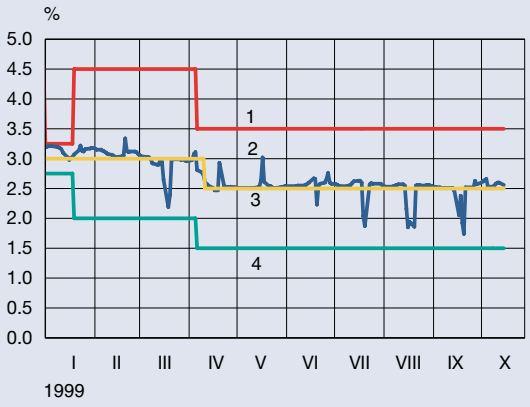
At the start of monetary union, the BoF-RTGS was connected to the TARGET system, which links RTGS systems of EU member states' central banks.[1] In TARGET, euro-denominated liquidity can be transferred rapidly and efficiently among more than 5,000 participating banks in the EU area. TARGET provides the framework for liquidity management within the euro area. With the onset of monetary union and TARGET, the number of market participants transacting with Finnish banks has increased manifold.

Central banks play an essential role in providing liquidity for payment transfers. Central banks affect both the amount and cost of liquidity. The Eurosystem

[1] The BoF-RTGS and TARGET are described in an account of experiences in early 1999 in an article by Marianne Palva, Kristina Rantalainen and Hannu Wiksten, *Payments between EU central banks: structure and experiences in early 1999*, in the Bank of Finland Bulletin 3/1999.

**Chart 1.**

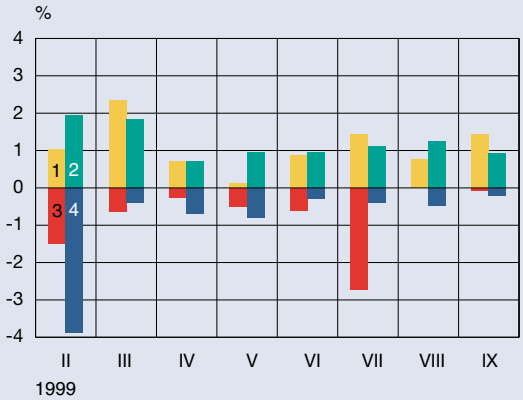
**Eonia and Eurosystem interest rates, 1 January – 18 October 1999**




1. Marginal lending rate
2. Eonia
3. Main refinancing rate/interest rate on required reserves
4. Overnight deposit rate

**Chart 2.**

**Stock of marginal lending and excess reserves in Finland and the euro area, 1 January – 23 September 1999, per cent of total reserves**




1. Excess reserves, Finland
2. Excess reserves, euro area
3. Marginal lending, Finland
4. Marginal lending, euro area

(ECB and euro area central banks) facilitates banks' liquidity management by providing the following services: a minimum reserve system based on averaging provisions, automatic marginal lending, an overnight deposit facility, and interest-free (fully collateralized) intraday credit.[2] Assets that are eligible for use as collateral are publicly listed.[3] These include a wide range of securities that banks can convert into fully liquid central bank money, which reduces banks' costs of obtaining intraday liquidity.

Holdings of reserve balances to meet monthly average requirements constitute a liquidity cushion for banks, since these holdings can be used for settlement purposes during the day. The averaging provision also allows for considerable fluctuations in end-of-day balances stemming from shifts in payment flows.[4] Funds held to meet reserve requirements for banks operating in Finland – about EUR 1.6 billion – can also be used to cover payments. Holdings of required reserves are remunerated by central banks at the interest rate applied in the ECB's main refinancing operations, which has closely tracked the banks' overnight market rate, Eonia, during the early phases of monetary union (Chart 1).

In case a bank's minimum reserves are insufficient to cover all payments and funds transfers on a given day, it can access the overnight marginal lending facility. Any intraday credit that a bank has at the end of the day is automatically converted into overnight credit.[5] Recourse to the marginal lending facil-

[2] Eurosystem monetary policy instruments are described in detail in the ECB publication *The single monetary policy in Stage Three: General documentation on ESCB monetary policy instruments and procedures* (September 1998). Generally speaking, monetary policy instruments include the minimum reserve system, the marginal lending facility, and the overnight deposit facility. Together with intraday credit, these provide for payment system liquidity.

[3] See Internet address (www.ecb.int).

[4] Banks' compliance with reserve requirements is determined on the basis of the average balances on their accounts over a one-month maintenance period, from the 24th day of one calendar month through the 23rd day of the following month. Reserve requirements are determined according to credit institutions' customer deposits and other accepted funds.

[5] Banks can also be granted credit on separate application under the marginal lending facility to fulfil their reserve requirements when their balance on the settlement account is positive. In this case the credit is related to overall liquidity needs rather than funds transfer needs.

ity is costly to banks, as the interest rate paid is higher than the rate received on required reserve deposits (Chart 1). If a bank is forced to use the marginal lending facility frequently during a maintenance period, this indicates a weakness in its liquidity management, probably due to difficulties in forecasting payment flows. Banks with small minimum reserve holdings relative to volume of funds transfers will have greater difficulty in managing liquidity in exceptional situations, eg when there are delays in receipt of anticipated incoming payments. Banks operating in Finland have used the marginal lending facility two or three times a month on average in 1999. July was the only month in which these banks used the facility considerably more than banks in the euro area as a whole (Chart 2).

Toward the end of a maintenance period, a bank's minimum reserve requirements may have been completely or nearly fulfilled. If it has surplus funds, it can deposit them overnight at the central bank.[6] The interest rate on these deposits is below the market rate and below the rate on required reserve holdings (Chart 1). During the final days of a maintenance period, banks often purposely hold excess reserves in order to avoid noncompliance in the event of unforeseen problems and liquidity needs. Banks operating in Finland have held excess reserves almost pro rata to banks in the euro area as a whole (Chart 2). In May Finnish banks held exceptionally small amounts of excess reserves.

In an efficient market, banks are able to even out their liquidity positions, so that banks with payment surpluses make loans to deficit banks, thus avoiding a situation where some banks must use the marginal lending facility while others deposit their surplus funds. Banks that are best able to calibrate their liquidity levels and forecast their liquidity needs have the least need for relatively expensive central bank services, ie the marginal lending and deposit facilities. Forecasting of payment flows is critical because of a scarcity of actual data available beforehand.

## European liquidity markets

The launch of monetary union also created common European money and liquidity markets. Prior to this, banks needed liquidity denominated in all of the euro area currencies. These funds were usually held in foreign settlement banks. In the monetary union environment, banks have largely terminated their correspondent relationships within the euro area and are now centralizing their liquidity management in TARGET, especially in respect of large payments. Correspondent banking is still used a great deal in connection with normal customer payments. The final opening hour of TARGET (in Finland, 6–7 pm) is reserved for interbank transfers of covering funds and liquidity. Repayment of interbank overnight credit usually takes place before noon of the following day. The breakdown of the daily transactions of the BoF-RTGS system shows that Finnish banks operate actively in the European markets (Charts 3 and 4). The volume of cross-border transactions (incoming and outgoing TARGET payments) clearly exceeds that of domestic transactions (payments between Finnish counterparties). Cross-border transactions are concentrated in the morning and the final opening hours of TARGET.

## End-of-day and intraday liquidity

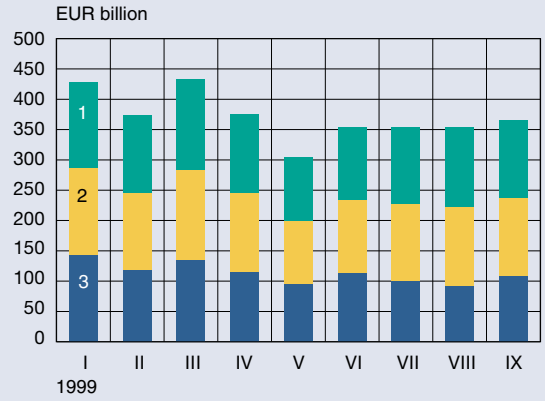
Previously, when the transferring of funds was a much slower operation,[7] a bank was interested in its liquidity position only at the end of the day. Generally, all of the day's settlements were executed at the end of the day, at the central bank. With the advent of continuous real-time processing, banks need sufficient liquidity throughout the day. If liquidity is insufficient or a bank is unwilling to use its available liquidity, payments are held until covering funds become available, via incoming payments or other sources of liquidity (eg an increase in intraday credit).

[6] All end-of-day excess reserves in BoF-RTGS participants' settlement accounts at the Bank of Finland are automatically treated as overnight deposits. In other euro area central banks, overnight deposits must be made separately, which means that settlement accounts may sometimes include excess reserves that do not earn interest. In Finland, the automatic conversion of excess reserves into overnight deposits occurs only after the reserve requirement for the current maintenance period has been fulfilled (on the basis of the average balance).

[7] Finland was one of the first countries to introduce real-time processing in banks and the central bank. The real-time version of BoF-RTGS was introduced in 1991.

**Chart 3.**

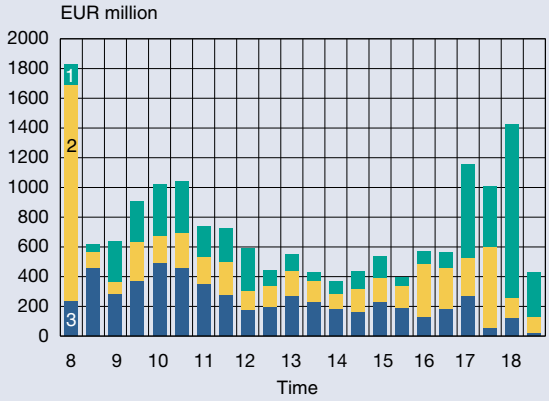
**Domestic and TARGET payment flows, BoF-RTGS, January – September 1999**




1. Incoming TARGET payments
2. Outgoing TARGET payments
3. Total domestic payments

**Chart 4.**

**Average payment flows at 30 minute intervals, BoF-RTGS, September 1999**




1. Incoming TARGET payments
2. Outgoing TARGET payments
3. Domestic RTGS payments

Changes in banks' daily liquidity needs are measured as daily changes in their aggregate position vs the central bank. In Finland these daily changes have amounted to some EUR 0.7 billion on average. Since reserve deposits have totalled about EUR 1.6 billion on average, some EUR 0.9 billion (123 per cent above average daily need) is available as a liquidity cushion (Chart 5).

A bank's intraday liquidity need can be measured by the maximum intraday change in its settlement account balance. Finnish banks' aggregate intraday liquidity usage is about EUR 4.2 billion on average. Since banks' aggregate liquidity available for funds transfer purposes (reserve deposits plus intraday credit limits) is approximately EUR 6.5 billion on average, they have a surplus of EUR 2.3 billion (55 per cent of average need), which is available for unexpected intraday needs. In Finland intraday fluctuations are six times as wide as fluctuations in end-of-day balances (Chart 5). Daily fluctuations have remained relatively constant, and Finnish banks have always had sufficient liquidity.

The Finnish payment system is characterized by relatively abundant usage of intraday liquidity. Whereas in large international systems, 5 to 10 per cent of transaction volume is usually sufficient, in Finland intraday liquidity usage amounts to about 24 per cent and interday usage to about 4 per cent of the transaction volume for settlement accounts. Many factors contribute to this. Because Finland's operating environment is small, fluctuations are more extreme and economies of scale remain out of reach. Finnish system participants are of varying sizes and specialities. Niche banks' transactions are exceptionally large relative to bank size. For example, foreign banks operating in Finland generally specialize in corporate banking and investment services. Finland is a source of intraday liquidity especially to non-euro area EU countries, which cannot separately create liquidity, and Finnish banks also invest their surplus liquidity in European markets.

Intraday liquidity needs are reflected in the use of intraday overdrafts on settlement accounts. The average aggregate amount of limits on central bank intraday credit for banks operating in Finland is approximately EUR 4.9 billion. Credit usage fluctuates considerably during the day, but the maximum usage of limits per bank is only 31 per cent on average. Thus banks are well prepared for large exceptional

needs. Large surplus credit limits also reflect advantageous liquidity facilities provided by central banks. In the Eurosystem collateralized intraday credit is interest-free, and the range of eligible collateral is wide. A bank does not incur significant costs when it uses surplus collateral to extend its overdraft facility.

It is in the central bank's interest to provide advantageous intraday credit, since this promotes fast and efficient payment transfers while reducing associated settlement risks. When settlement is executed immediately with central bank money, banks do not incur counterparty risk. In an RTGS system, having sufficient liquidity available results in immediate payment executions, with little need to queue payments. Although the BoF-RTGS has a versatile queuing facility, it is seldom operative, owing to the abundance of bank liquidity.

## Collateral usage

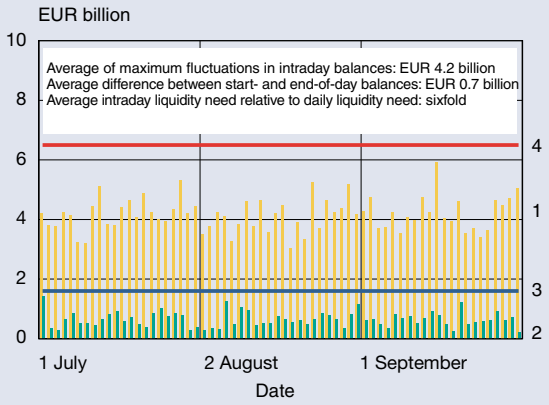
By granting collateralized intraday credit, a central bank facilitates payment system participants' access to liquidity. Banks can temporarily convert various investments into central bank money. The automatic collateral management system implemented jointly by the Bank of Finland and the central securities depository, Suomen Arvopaperikeskus Oy (APK), enables flexible substitution of collateral during the day.

Since the onset of monetary union, Finnish banks have been able to use euro-denominated European securities as collateral for central bank credit. The range of eligible collateral was widened in August when securities issued in non-euro area EU member states were approved as collateral for intraday credit. EU central banks developed the Correspondent Central Banking Model (CCBM) to facilitate cross-border use of collateral. With the CCBM, certain assets can be used as collateral throughout the euro area. Central banks have also approved 47 links between securities settlement systems for use in the transfer of collateral.[8]

Finnish banks have gradually increased their use of foreign collateral (Chart 6). At the same time, the use of Finnish government issues as collateral has

**Chart 5.**

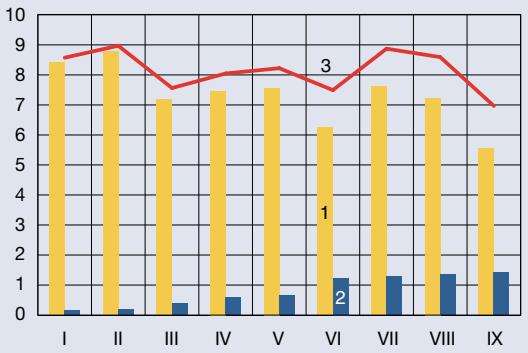
**Intraday and daily fluctuations in Finnish banks' liquidity, BoF-RTGS, July – September 1999**




1. Total maximum fluctuations in intraday balances on settlement account
2. Total difference between start- and end-of-day balances on settlement account
3. Average reserve requirement
4. Average intraday credit limit + reserve requirement

**Chart 6.**

**Finnish banks' collateral postings at the Bank of Finland, 1 January – 30 September 1999**




1. Domestic collateral
2. Foreign collateral
3. Total collateral

[8] A public list of approved links is posted on the Internet (www.ecb.int/press/pr991007_2.htm).

declined in relative terms. This clear trend initiated by monetary union will probably continue. Foreign collateral has so far been transferred using the CCBM. However, it is likely that in the future a significant share of collateral transfers will be effected via links between the APK and the German Deutsche Börse Clearing system and the French Sicovam system.

Euro area banks are obliged to report their balance sheet amounts of securities that are eligible as collateral for central bank credit. Finnish banks held about EUR 8 billion of such securities at end-August 1999, of which 53 per cent was posted at the Bank of Finland.

## European payment and settlement systems

Banks' liquidity needs are also affected by the structure of payment and settlement systems. If the banks participate in several different systems, their liquidity will be dispersed, which means that they will need more liquidity than with a single system. Maintaining parallel systems is also inefficient. European systems are thus faced with a likely trend toward centralization.

The most important large-value payment system operating parallel to TARGET is Euro 1, which was set up by the Euro Banking Association (EBA). Participants include approximately 70 large European banks, of which two are Finnish (Leonia and Merita) and five are foreign banks operating in Finland.[9] The market share of Euro 1 is clearly increasing to the detriment of the other private systems.

Another significant international payment transfer initiative is the provision of continuous linked settlement for foreign exchange transactions by the US-based CLSBank. It is anticipated that in the future this system will handle a significant share of foreign exchange settlements. The CLSBank is scheduled to commence operations in late 2000 and will open an account at the ECB for settling foreign exchange transactions in euro.

The international settlement of securities in Europe has concentrated in the Luxembourg Cedel Bank and Belgian Euroclear. Cedel Bank has agreed on a merger with the German Deutsche Börse Clearing settlement system. In November 1999, Euroclear and the French Sicovam announced their intention to form a strategic alliance. This will mean a significant concentration of securities settlement in the future as well as a reduced role for domestic securities settlement systems. An alternative solution is being established under the aegis of the European Central Securities Depositories Association (ECSDA), which entails the interlinking of European securities settlement systems.

Parallel payment systems compete not only for transaction volume but also for liquidity and collateral. To minimize risks, a private system needs collateral to cover counterparty risks. A private system's central bank liquidity needs are determined by its internal settlement procedures. Parallel systems also increase the workload of banks' IT and personnel resources, and hence increase overall costs.

## Efficient use of payment system liquidity

In the future, efficient use of payment system liquidity will require coordination of usage by different systems. Liquidity costs are mainly opportunity costs in that assets that are held for liquidity purposes could be deployed more profitably elsewhere. In the euro area this means inter alia that banks need to invest in eligible collateral, a practice that may be at odds with a bank's overall investment strategy. Liquidity needs can be reduced by evening out payment flows. Since excessively large transactions can often tie up liquidity, one way of evening out liquidity needs is to set a maximum size on transactions and then splitting those that exceed the limit. Liquidity can also be evened out by queuing, ie holding outgoing payments until incoming payments provide sufficient coverage. Queued transactions can also be netted using various procedures. Queuing and the associated netting procedures reduce liquidity needs but also slow down the payment executions. For all queuing and netting options, there is a tradeoff between delays in payment/settlement and liquidity costs. If liquidity is available in ample amounts and at low cost, the payment system can process payments immediately and avoid queuing. Central banks' provision of liquidity

[9] Citybank (U.K.), Den Danske Bank, Skandinaviska Enskilda Banken, Svenska Handelsbanken and Unibank.

thus plays a significant role in the operating principles of a payment system and in the smoothing of daily operations.

## Future developments

New challenges for liquidity management will probably be met by centralizing payment transfers and securities settlements. This will probably lead to a situation wherein some existing systems expand so as to encompass the whole euro area, or that entirely new systems emerge. The number of parallel systems will decrease considerably. Free movement of capital will probably lead to the emergence of global systems as well. Payment transfers between customers of the same large international bank will be effected in real-time without external liquidity. Accelerating the funds transfer process will increase the importance of intraday liquidity, and payment system liquidity needs are becoming more difficult to forecast. More effective evening out of liquidity in the markets will probably require that participants implement more efficient communications solutions for continually assessing their liquidity needs. Methods for managing liquidity more efficiently may become necessary if liquidity costs rise. One possible solution would be to have intraday (hourly) markets for evening out intraday liquidity. Other key factors that will affect future developments are interest rate levels and central bank operations and services.

25 November 1999

Key words: payment system liquidity, liquidity management, payment system, settlement system, RTGS

# European securities market infrastructure: trends and prospects

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The common feature of major trends in securities markets is that they facilitate cross-border competition among financial institutions and markets. These trends include dismantlement of regulation in financial markets, technological developments that increase network externalities, and the introduction of the single currency in Europe. The single currency has had the greatest impact on short-term developments in Europe. All these fundamental changes enhance financial institutions' opportunities to arrange their operations so as to take advantage of economies of scale. This means that location will gradually lose some of its importance for marketplaces and that competition between financial centres, exchanges and settlement systems will intensify.

## Regulatory framework

From the regulatory standpoint, current European financial market legislation provides for good, albeit not perfect, competition between stock exchanges and between derivative exchanges as well as between the different investment service providers in Europe. Barriers between European securities markets have been largely removed or overcome with the implementation of OECD codes on free movement of capital by the end of the 1980s and the Investment Services Directive by the mid-1990s.

The Investment Services Directive has notably intensified competition between exchanges. First, the ISD allowed securities market participants to establish remote access to foreign stock and derivatives exchanges. In addition, the stock exchanges were allowed to set up terminals abroad enabling free entry by local participants. The primary effects of the ISD on market infrastructure can be seen in equity and derivatives markets, where the role of exchanges has been dominant or significant. In the money and bond markets, trades have been executed primarily on an OTC basis. Thus the secondary market now functions within a reasonably competitive regulatory structure that has reduced the importance of physical location of a market and has enabled provision of services via electronic networks.

Regulation of securities settlement systems is based on international initiatives and user requirements. The Bank for International Settlements (BIS) has published numerous reports on securities settlement systems. The so-called Lamfalussy criteria offer guidance for the operation and supervision of netting systems. Moreover, at the start of 1997 the BIS and International Organization of Securities Commissions published results from an enquiry on securities settlement systems, titled 'Disclosure framework for securities settlement systems'. Its purpose was to increase market participants' awareness of risk exposures. These initiatives have helped to unify procedures applied in different settlement systems.

The ECB's predecessor, the European Monetary Institute, published nine standards for the use of securities settlement systems in ESCB credit operations. These standards provide guidance to settlement systems as regards legal, custodial, operational, and risk management and disclosure matters. The standards also deal with finality of settlement, operating times, regulation, and the use of central bank money in settlement. In the longer run, the standards may promote the convergence of settlement system operations.

The ECB has supported the plan of the European Central Securities Depository Association (ECSDA) to set up a pan-European network integrating national securities settlement systems. The ECB attempts to ensure efficient cross-border use of collateral in its credit operations. According to ECSDA plans, direct bilateral links will be established between national

central securities depositories in Europe so as to allow cross-border transfers and settlement of securities. At the outset, the ECSDA links would generally be used only for the transfer of securities. It is anticipated that later on the links would operate on a DVP basis so as to enable efficient cross-border settlement of private transactions in securities markets.

The ECB has also implemented a genuine pan-European payment system, TARGET, which enables real-time transfers of large-value euro payments between EU countries. Along with the development of TARGET, there has been an acceleration of the evolution of other Europe-wide payment systems. Developmental trends in payment systems are supportive of cross-border trading and settlement in securities markets, as payment execution becomes more efficient and more reliable.

The remaining major deviations from a level playing field include differences in regulations concerning bankruptcy, accounting and ownership registration.

## Network externalities and economies of scale

Technological developments have been a major catalyst for structural changes that have taken place in securities markets in recent decades. These have created a foundation for the modern electronic trading, clearing and settlement systems used in securities markets.

Economic analysis suggests that a single market will come into being if there are no regulatory barriers to prevent it and the requisite advanced telecommunication technologies exist, ie if the market is not dependent on physical location. This may imply a single stock exchange if there are significant economies of scale in stock exchange operations, as noted by Pirrong (1999). Malkamäki (1999a) finds a clear presence of economies of scale in stock exchange trading systems. The existence of multiple exchanges may, however, be motivated in the future if the handling of complex information requires face-to-face contact.

Both of the authors argue that the rapid advance in communications technology has served to minimize the fragmenting effect of physical distance on exchange formation. Domowitz and Steil (1998) note that an exchange or trading system is analogous to a communication network, as the benefit to a given trader transacting on a given trading system increases when another trader chooses to transact there as well. Such effects are called network effects or network externalities.

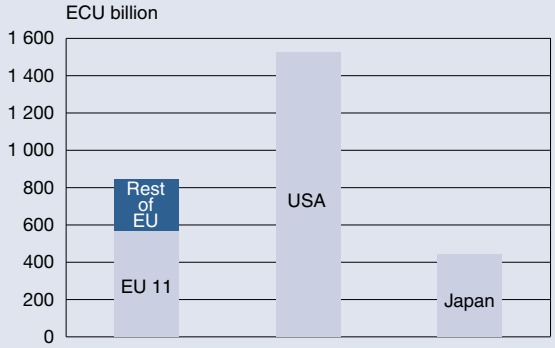
Network externalities imply clear scale economies in electronic trading systems, as these systems may be accessed from a number of locations. Shapiro and Varian (1999) argue that this is now possible because computer hardware and network technology are powerful and inexpensive. Under these circumstances growth is imperative, not just to achieve the usual production-side economies of scale but also the demand-side economies of scale generated by network externalities. The key challenge is to gain critical mass in terms of customer base. Thereafter, the market will grow endogenously because of network effects. Gaining critical mass may require penetration pricing, ie pricing below production costs, in order to set off the positive feedback mechanism.

The theoretical and empirical analyses both suggest that scale economies are a major source of competitive pressure in a market if it satisfies the conditions for a contestable market. Moreover, new technology provides additional means for development of the infrastructure. In particular, trading platforms of stock exchanges meet increasing competition from less organized marketplaces. In the United States, the appearance of off-exchange trading institutions that use the Internet as an essential transmission channel (eg Arizona Exchange, Instinet and Posit) has already brought formidable challenges to existing stock exchanges. The value of the Internet lies in its capacity to provide immediate access to information at very modest costs.

Registration of holdings and clearance and settlement of securities have also developed dramatically as a result of technological progress. Increasingly widespread use of electronic book-entry systems embodying advanced technology will further shorten settlement lags. These systems also facilitate cross-border transfers and cross-border settlement of securities. That securities settlement systems and depository functions are subject to economies of scale, à la equity trading systems, has been shown recently in an empirical study by Malkamäki (1999b).

**Chart 1.**

**Stock of money market instruments, end-1997**

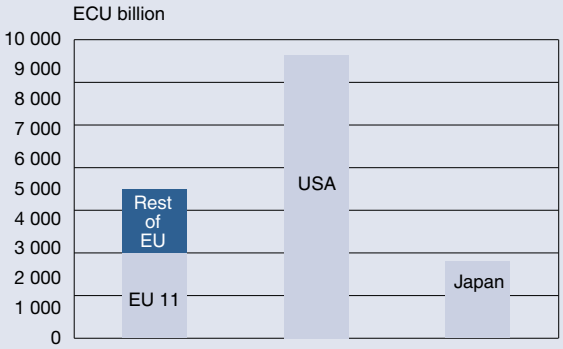



EU 11 excl. Luxembourg. Greek data: end-1996.

Source: Publications of central banks and the IMF.

**Chart 2.**

**Stock of domestic bonds, nominal value, end-1997**




EU countries excl. Portugal, Greece, Luxembourg.

Source: Merrill Lynch.

## The euro has changed the global landscape

The introduction of euro has perhaps been the most significant reform of the international monetary system since the breakdown of the Bretton Woods system in the early 1970s. No segment of the financial markets has remained untouched by the changeover to the European Economic and Monetary Union. The single currency has, above all, had a direct impact on certain market segments, as currency risk was eliminated within the euro area. This section describes how the global structure of securities markets has been thoroughly revamped as a result of the single currency.

In addition to launching the single currency in Europe, the ECB influences securities markets by setting rules for its monetary policy operations, standards for settlement systems (in its capacity as user of market infrastructure), and eligibility criteria for both counterparties and collateral. Moreover, the ECB has issued recommendations concerning the development of market infrastructure in the euro area. The ECB will also contribute to the development of pan-European payment systems. European central banks in particular have developed the TARGET system for large-value payment systems, which has also stimulated developments in other international payment systems in Europe (eg EBA Clearing, EAF).

The combined euro securities market became the second largest market in the world, surpassing the Japanese market as second in rank to the US market. However, relative to the size of the underlying economy, the market for euro-denominated securities is much smaller than the US securities market. Securitization is likely to proceed in Europe because of the increased size and liquidity of the euro securities market compared with the former national securities markets. (For a more thorough discussion, see Malkamäki and Topi 1999)

The euro money market has also become the second largest in the world (Chart 1). Benefits from economies of scale are large in the money markets, and this has resulted in rapid concentration in money market trading in the euro area. The bulk of liquidity management now takes place in the cross-border Euribor-based money market of the euro area. The volumes of local money market trading are modest

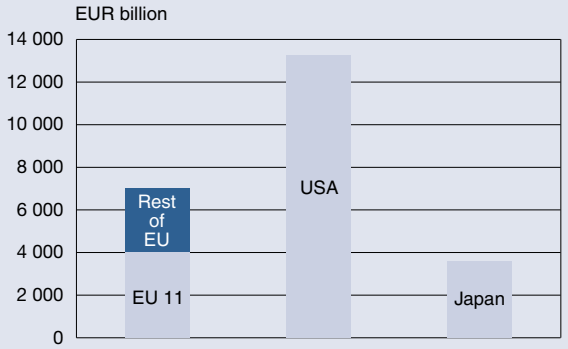
in the peripheral markets, and trading in national FRAs has been discontinued in most of the countries. Deposit-based instruments, repo agreements and swaps have increased in importance in the European interbank market. The disintermediation process is expected to accelerate. Accordingly, the role of Treasury bills and commercial paper is likely to be stressed throughout the single currency area. The structure of the money markets is however still quite fragmented, for example, from the viewpoint of securities settlement infrastructure, and it is possible that money market activity is not highly correlated with the outstanding stock of money market instruments. A notable share of money market trading in Europe takes place in outs-countries, especially in London.

The market for domestic bonds issued in the euro area clearly exceeds that in Japan but continues to trail the US market (Chart 2). In terms of market capitalization, the bulk of these domestic bonds is issued by euro area countries. Market liquidity has increased markedly, as indicated by increased volumes in exchange-traded bond futures. Enhanced liquidity improves the mechanisms for pricing credit and liquidity risks in the European bond markets. These developments facilitate an increase in the size of corporate and municipal bond markets, which makes the bond markets more versatile throughout Europe. The European corporate bond markets are also strengthened by the ESCB decision to include private-sector securities among those eligible as collateral for central bank operations.

The weight of the US stock market in the MSCI world index is currently over 50 per cent. The US market is thus by far the largest stock market in the world (Chart 3). The European market is clearly number two. In Europe the non-euro equity market is about the same size as the euro-denominated equity market. Investors are increasingly diversifying their portfolios within the euro area. In particular, the adoption of the single currency in Europe resulted in the lifting, to large extent, of prevailing restrictions on currency positions of certain institutional investors. Rapidly expanding cross-border portfolio investments are increasing the need for an efficient euro area or even pan-European trading and settlement infrastructure. According to a recent press release issued by the group of eight European stock exchanges, these exchanges intend to establish an integrated and electronic cross-border market for European blue chip stocks. This will reduce the need for companies to list their shares in several marketplaces in Europe and will further increase the volume of cross-border transactions.

**Chart 3.**

**Market capitalization of domestic companies, end-September 1999**




Sources: European data: FESE; US and Japanese data: FIBV.

FESE = Federation of European Stock Exchanges
FIBV = International Federation of Stock Exchanges

Some of the leading derivatives exchanges are located in Europe (Table). The significance of derivative products in European money markets has increased sharply in the past few years. Owing to the single currency, the volatility of short-term interest rates has converged across national money markets in the euro area. This quickly initiated a process of concentration of trade in Euribor-based money market derivatives, which is now heavily concentrated in the Liffe in London.

In the bond derivative markets, the trend seems to be parallel to money market developments. The dominant instruments in the euro area are based on the most liquid government bonds, ie German Bunds. The Eurex in Frankfurt was able last year to capture the bulk of Bund futures from the Liffe. Other derivatives exchanges lost the bulk of their turnover in long-term interest rate futures and options already last year. The remaining liquidity premiums on government bonds issued by different governments may

**Table. Top derivative contracts ranked by number of contracts and value**

| Rank by contracts | Rank by value | Contract | Exchange | Jan–Jun 99 contracts | Jan–Jun 99 value in USD m | Jan–Jun 98 contracts |
|---|---|---|---|---|---|---|
| 1 | 4 | Euro Bund (f) | Eurex | 72,940,574 | 7,500,000 | 37,780,613 |
| 2 | 5 | US T-bond (f) | CBoT | 51,598,829 | 5,200,000 | 56,506,813 |
| 3 | 1 | Eurodollar (f) | CME | 49,817,275 | 49,817,275 | 52,651,798 |
| 4 | 8 | Kospi 200 (o) | KSE | 36,066,415 | 2,150,000 | 6,062,336 |
| 5 | 15 | CAC40 long term (o) | Monep | 32,404,070 | 150,000 | 1,197,237 |
| 6 | 7 | Euro Bobl (f) | Eurex | 22,090,252 | 2,400,000 | 14,914,776 |
| 7 | 9 | US T-bond (o) | CBoT | 20,781,589 | 2,100,000 | 19,089,114 |
| 8 | 14 | Crude oil (f) | Nymex | 18,138,905 | 300,000 | 15,713,593 |
| 9 | 10 | 10-yr T-notes (f) | CBoT | 17,642,607 | 1,800,000 | 15,679,582 |
| 10 | 3 | Sterling (f) | Liffe | 16,768,925 | 13,300,000 | 15,740,152 |
| 11 | 2 | Euro Euribor (f) | Liffe | 16,370,037 | 21,500,000 | n/a |
| 12 | 13 | Dax (o) | Eurex | 14,841,733 | 410,000 | 13,662,374 |
| 13 | 6 | S&P 500 (f) | CME | 13,879,796 | 4,600,000 | 15,191,451 |
| 14 | 12 | S&P 100 (o) | CBOE | 13,616,149 | 900,000 | 16,386,169 |
| 15 | 11 | Euro Bund (o) | Eurex | 11,632,834 | 1,300,000 | 1,122,020 |

Source: Futures & Options World, 8/1999.

however sustain the need for derivative instruments in these government bonds as well. Trading in these instruments will most likely be modest.

Trading in equity derivative instruments is also concentrating in the Eurex and Liffe but only gradually. National derivatives exchanges are doing better in this regard because they can provide for the possible delivery of national contracts. The introduction of the Dow Jones Euro-Stoxx 50 at the Eurex and the FTSE Eurotop at the Liffe will tend to shift some of the equity derivative volumes to these marketplaces.

## Offsets to economies of scale

While the driving forces of global integration and increasing cross-border activities in the securities market industry are evident, there are also several factors that will almost inevitably slow these developments in the long run.

Theoretical arguments have been raised as to why one should not take for granted the complete concentration of the securities market. Gehrig (1998) provides a recent survey of the literature on location of financial activities. He argues that financial activities are geographically dispersed because financial markets are not frictionless, in contrast to the usual assumption in the finance literature. He divides factors underlying the development of financial centres into centripetal and centrifugal forces, as suggested earlier by Kindleberger (1974). Economies of scale are the major centripetal force, according to these authors. They argue that scale economies are found in payment and settlement systems as well as in currency trading systems. Other centripetal forces are informational spillovers, market liquidity and thick market externalities, such as liquid labour markets. The centrifugal forces arise from market access costs and localization of information.

Gaspar and Glaeser (1996) model cities as a means of reducing the fixed cost involved in face-to-face interactions. They argue that straightforward information can easily be transferred via electronic networks. However, in the case of complex information, instructions may easily be misunderstood, so that face-to-face communication may be necessary. Their empirical work shows that telecommunications may in fact be a complement, or at least not a strong substitute, vis-à-vis financial centres. Their analysis directly contradicts a commonly raised argument that telecommunications will eliminate the significance of location.

Changes in the structure of European securities markets are also being delayed by the lack of obvious alternatives for the current marketplaces. At the moment, even blue chip companies still lack a com-

mon pan-European stock exchange or common trading platform. The slow progress that the alliance of eight European stock exchanges has made to date in establishing an electronic market for European blue chip companies does not bode well for prospects in this regard. For small and medium-sized enterprises, it seems that the only possibility for equities trading is via national stock exchanges. In this respect, there seems to be no clear solution in the offing, notwithstanding the growth of Easdaq, a marketplace for growth companies, and the EURO.NM, which is an alliance of several national markets for growth companies.

## Future prospects for market design

The common developments so far as regards stock and derivatives exchanges and securities settlement systems are (1) an increase in cross-border investment activities and enhanced competition between marketplaces and providers of financial services, and (2) a tendency toward a more integrated trading and settlement infrastructure via mergers, alliances, links, agreements and other forms of cooperation.

The increase in cross-border activities and competition is based on both the global diversification needs of customers and the abolishment of various barriers to competition in securities markets. Both investors and issuers prefer liquid and transparent securities markets with low transaction costs, which enable them to minimize direct and indirect costs associated with the reallocation of portfolios. The technology of electronic trading systems has advanced to the point where these systems enhance market efficiency and liquidity. This introduces a totally new scenario by which economies of scale and network effects enable new trading systems to challenge existing exchanges and settlement systems.

### Governance of exchanges

Hart and Moore (1996) argued that in cooperative exchanges members may be reluctant to accept changes that would affect their own business, even if those changes would be in their own interests in the longer run. Many cooperative exchanges have already separated ownership from membership and operate as joint-stock companies. Those cooperative exchanges that rank among the largest exchanges have in many cases lagged behind in taking advantage of the new technologies. One would expect that they will need to increase their nimbleness in the future if they are to maintain their relative importance in the business. One natural way to do this is to separate ownership from membership, and so this trend is likely to continue. One should note however that even joint-stock companies need to collaborate with brokerage firms and other customers in order to be successful.

### Electronic trading systems and anonymous limit order books

It has also been shown that the rapid advance in communications technology has reduced the fragmenting effect of geographic distance on exchange formation and trading services. An exchange or trading system is analogous to a communication network, as the benefit to one trader transacting on a given trading system increases when another trader chooses to transact in the same system. Clearly, such network externalities imply economies of scale for an electronic trading system that can be accessed from a number of locations.

Therefore, one would expect that the biggest US derivatives exchanges, which are still more or less floor-based, will make use of the electronic trading systems of their European alliance partners. The trading systems of Liffe and Eurex offer a full range of European derivative products, and the same wide range of US products could be offered via these systems in the US markets as well. This could mean that the traditional scope of business of US derivatives exchanges will expand and that US exchanges will start to compete with each other.

In these circumstances, growth is imperative, not just to achieve the usual production-side economies of scale but also demand-side economies of scale generated by network externalities. The key challenge is to gain the critical mass in terms of customer base. The race to be first to gain the critical mass may lead to heated competition between US derivatives exchanges seeking to gain positive feedback from the markets.

The Nasdaq trading system is already electronic but is based on market making. However, it has been announced that they will soon introduce a trading system with a limit order book. It is likely that the Nasdaq will be able to win back trade volumes from

alternative trading systems once their new system is implemented because of an increase in network externalities. The market making arrangement may be hard put to survive, at least in its present form. Even the New York Stock Exchange has recently announced that it will introduce an electronic limit order book for trades that are currently matched by specialists. One would thus anticipate that trading networks will come to be more or less similar. Besides these systems, some exchanges may start to act as a counterparty to investors.

Economides (1993) discusses another issue that is relevant for interpreting the analysis provided above. He argues that equilibrium price information from a financial exchange network is another externality, in addition to market liquidity. As the validity of the market price established in a network X is an increasing function of the size of the network, it may be better for a small network Y to use the price information provided by X instead of engaging itself in price discovery. As more customers switch to network Y, the validity of the market price in network X diminishes. This raises the question of who owns market information and how it can or should be priced. We expect that cream-skimming of off-exchange trading systems will force exchanges to provide first-class electronic services at competitive prices. The network externalities and economies of scale will speak for the exchanges in the United States and in Europe, even though off-exchange systems will be able to free-ride to some extent.

European stock exchange alliances in respect of trading systems will in general improve efficiency. However, even more cost efficient means may be found. On the other hand, it seems clear that national exchanges will exist in Europe for the foreseeable future. They will not necessarily be nationally owned but they will continue to operate and to provide a means by which issuer-specific responsibilities can be fulfilled. But there is no reason why every unit should have his own trading and/or settlement technology. Joint use of software and hardware is technically an easy way to exploit economies of scale. However, the slowness of negotiations is giving alternative electronic systems and US exchanges an opportunity to gain trading volumes in European shares.

## Internet and alternative trading systems

Volume growth of Internet-routed equity and derivatives trades has already begun to impact European brokerages. It has been claimed that many traditional brokerages could find it difficult to survive as this process goes forward. It is likely that US equity brokerages using off-exchange matching networks and electronic trading systems in the US will compete in Europe as well. However, it will be more difficult for them to succeed here because European trading systems are actually very similar to US electronic crossing networks (ECNs) and alternative trading systems (ATSs).

Nonetheless, the service ranges of brokerages and exchanges are following converging paths, which poses a big challenge for the management of exchanges. Exchanges need to collaborate with their major clients in a constructive way just when these clients are becoming their competitors. At the same time, the largest institutional investors are building up their own trading desks and are set to start trading actively. Should they be granted access to the trading systems of exchanges? Institutional membership has actually been possible in the United States for a long time and also for awhile in some European exchanges. One might argue that the more contestable the market, the more likely the free development of market structures.

## Securities settlement

The settlement infrastructure is the most integrated in the US securities markets. The latest step in the consolidation process in the United States was the integration of operations of the Depository Trust Company (DTC) and the National Securities Clearing Corporation (NSCC) under a common holding company, the Depository Trust & Clearing Corporation (DTCC). Together, these companies and their affiliates clear and settle virtually all securities transactions in the US market, while the DTC continues to be the world's largest securities depository.

Recently, the ECSDA produced a model for integrating settlement infrastructure via bilateral links between individual securities settlement systems or depositories. So far, the links constructed between European national CSDs have been free-of-payment links, ie the payment leg of the security transaction has not been processed through the link. The number of the links between European CSDs has been con-

tinually increasing, and most links have been approved for cross-border use of collateral in ESCB credit operations. However, it would be extremely expensive to build N(N–1)/2 links between European CSDs. Although more efficient structures may evolve, sweeping changes in system infrastructure are not possible in the near term.

The market model of the group of eight European exchanges implies that the home market principle is being applied to trading and possibly to settlement as well. The existence of several systems will probably mean manifold settlement software and hardware solutions. Hence the settlement structure will likely be highly fragmented in Europe over the next few years, regardless of any structural ties between settlement companies. This in turn would imply that settlement costs will remain at a high level in Europe. At this point in time, it seems that it would be economically advantageous that the consolidation process continue in one way or another.

28 October 1999

Key words: exchanges, settlement systems, network externalities and economies of scale

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# Item

## Commemorative coins to honour Jean Sibelius

On 22 September 1999 the Ministry of Finance decided on the striking of two commemorative coins in honour of Jean Sibelius and music composition. The coins, a FIM 1000 gold coin and a FIM 100 silver coin, are part of the current commemorative coin programme for the years 1996–2000.

The coins' reverses were designed by Juhani Pallasmaa and the obverses by Jukka Veistola. On the right-hand side of the reverse of both coins there is a stylized portrait of Sibelius, and on the left-hand side a motif depicting the sun. Inscribed in curvature form at the top is the name SIBELIUS and at the bottom FINLANDIA. At the top of the obverse of the gold coin is the text 1000 MK, and the silver coin has the text 100 MK. At the bottom of both coins is the year designation 1999 and in the middle the opening notes of Sibelius's composition, Finlandia.

The nominal value of a silver coin is FIM 100. It weighs 22 g and is 35 mm in diameter. Some of the coins struck are proof coins, with gloss finished background and matt finished motif. The nominal value of the gold coin is FIM 1000, and it weighs 8.6 g and is 22 mm in diameter.

The silver coins were issued on 23 November 1999. The price of a regular silver coin is FIM 158, and a proof coin costs FIM 268. Advance sales of the gold coin, which is priced at FIM 1600, began on 5 October 1999. In the first phase, the Ministry of Finance has ordered 30,000 silver coins and 5,000 gold coins from the Mint of Finland. The maximum number of silver coins to be struck is 37,000 and gold coins 25,000. The pictures below depict the two sides of the FIM 1000 gold commemorative coin.


# The Eurosystem's monetary policy instruments 15 November 1999

## Key interest rates

The main refinancing operations are the principal monetary policy instrument used by the Eurosystem[1]. Changes in the interest rate applied in the main refinancing operations signal the stance of the Eurosystem's monetary policy and have a major impact on the shortest money market rates. Pursuant to the decision taken by the Governing Council of the ECB on 4 November 1999, the interest rate applied to the main refinancing operations is 3.00 per cent, effective 10 November 1999.

The Eurosystem uses the rates on its standing facilities to bound overnight market interest rates. The interest rates on the marginal lending facility and the deposit facility are set separately by the Eurosystem. Effective 5 November 1999, the interest rate on the Eurosystem's marginal lending facility is 4.00 per cent and the overnight interest rate on the deposit facility 2.00 per cent.

## Open market operations

Open market operations play an important role in the monetary policy of the Eurosystem. They are used for the purposes of steering interest rates, managing the liquidity situation in the market and signalling the stance of monetary policy. Open market operations are normally executed by the national central banks on the initiative of the ECB. Open market operations can be divided into four categories:

1) The *main refinancing operations* are weekly liquidity-providing operations executed by the national central banks through standard tenders and with a maturity of two weeks[2]. They play a pivotal role in pursuing the purposes of the Eurosystem's open market operations and provide the bulk of refinancing to the financial sector.

2) The *longer-term refinancing operations* are liquidity-providing standard tender operations with a monthly frequency and a maturity of three months. These operations aim to provide counterparties with additional longer-term refinancing. In these operations, the Eurosystem does not intend to send signals to the market and therefore the operations are normally executed on the basis of variable-rate tenders.

3) *Fine-tuning operations* are executed on an ad hoc basis in order to smooth interest rate movements caused by unexpected changes in market liquidity. Fine-tuning operations are executed by the national central banks primarily as reverse transactions, but they can also take the form of outright transactions, foreign exchange swaps and the collection of fixed-term deposits. Fine-tuning operations are executed through quick tenders or bilateral procedures. Under exceptional circumstances and by decision of the Governing Council of the ECB, the ECB may execute fine-tuning operations in a decentralized manner.

4) *Structural operations* are executed with the aim of adjusting the structural position of the Eurosystem vis-à-vis the financial sector. Structural operations can be executed through reverse transactions, outright transactions or the issuance of ECB debt certificates.

## Standing facilities

The standing facilities are intended to limit excessive momevents in overnight interest rates by providing or absorbing overnight liquidity and to signal the general stance of monetary policy. Two standing facilities are available: the marginal lending facility and the deposit facility. Counterparties can use the marginal lending facility to obtain overnight liquidity from the national central banks against eligible assets. The interest rate on the marginal lending facility provides a ceiling for

[1] The European System of Central Banks (ESCB) comprises the European Central Bank (ECB) and the national central banks of the EU member states. The Eurosystem is composed of the ECB and the national central banks of the member states participating in Stage Three of Economic and Monetary Union. The Eurosystem's supreme decision-making body is the Governing Council of the ECB, which comprises the six members of the Executive Board of the ECB and the governors of the eleven national central banks forming the Eurosystem.

[2] On 23 Sebtember 1999 the Governing Council of the ECB decided that the maturity of the main refinancing operation of 21 December 1999 would be lengthened exceptionally to three weeks so that no main refinancing operation would mature in the first week of the year 2000. To avoid two main refinancing operations maturing on the same day, the maturity of the operation of 30 December 1999 was also lengthened to three weeks.

the overnight market interest rate. Counterparties can use the deposit facility to make overnight deposits with the national central banks. The interest rate on the deposit facility provides a floor for the overnight market interest rate. Under normal circumstances, there are no quantitative limits on access to the standing facilities.

## Minimum reserve system

The Eurosystem's minimum reserve system applies to credit institutions in the euro area and primarily pursues the aims of stabilizing money market interest rates and creating (or enlarging) a structural liquidity shortage. The reserve base of each credit institution is defined in relation to liability items on its balance sheet. The reserve base includes deposits, debt securities issued and money market paper. However, liabilities vis-à-vis other institutions subject to the minimum reserve system are not included in the reserve base. Liabilities included in the reserve base are subject to either a 2 per cent reserve ratio or to a zero reserve ratio. Liabilities included in the reserve base and to which a zero reserve ratio is applied comprise deposits with an agreed maturity of over two years, repos and debt securities issued with an agreed maturity of over two years.

In order to pursue the aim of stabilizing interest rates, the Eurosystem's minimum reserve system enables institutions to make use of averaging provisions. Compliance with the reserve requirement is determined on the basis of the institution's average daily reserve holdings over a one-month maintenance period. Institutions' holdings of required reserves are remunerated at the interest rate of the main refinancing operations. The Eurosystem's minimum reserve requirement is applicable to the following credit institutions that engage in banking business in Finland:

Aktia Savings Bank plc
Bank of Åland plc
Citibank International plc, Finland Branch
Crédit Agricole Indosuez, Helsinki Branch
Den Danske Bank, Helsinki Branch
Gyllenberg Private Bank Ltd
Leonia Bank plc
Mandatum Bank Plc
Merita Bank Plc
Okopankki Oyj
OP-Kotipankki Oyj
OKOBANK Osuuspankkien Keskuspankki Oyj
Skopbank
Svenska Enskilda Banken AB (publ), Helsinki Branch
Svenska Handelsbanken AB (publ),
Branch Operation in Finland
Trevise Bank AB (publ), Helsinki Branch
Unibank A/S, Helsinki Branch
Other cooperative and savings banks

## Counterparties to monetary policy operations

Credit institutions subject to the Eurosystem's minimum reserve system may, in general, access the Eurosystem's standing facilities and participate in the Eurosystem's main refinancing operations and longer-term refinancing operations. The Eurosystem has, however, limited the number of counterparties for fine-tuning operations and structural operations to counterparties that are active players in the money market. For outright transactions, no restrictions are placed on the range of counterparties. For foreign exchange swaps, the counterparties must be counterparties for foreign exchange intervention operations who are active players in the foreign exchange market.

## Assets eligible for monetary policy operations

Under the ESCB/ECB Statute, all the Eurosystem's credit operations must be based on adequate collateral. The Eurosystem accepts a wide range of securities, issued by both public sector and private sector entities, as underlying assets for its operations. For purposes internal to the Eurosystem, eligible assets are divided into two categories. 'Tier one' consists of marketable debt instruments fulfilling uniform euro area-wide eligibility criteria specified by the ECB. 'Tier two' consists of assets, both marketable and non-marketable, that are of particular importance for national financial markets and banking systems and for which eligibility criteria are established by the national central banks and approved by the ECB. Both tier one and tier two assets may be used as collateral for Eurosystem monetary policy operations. A list of eligible assets is available on the ECB's website (https://mfi-assets.ecb.int). More detailed information on the Eurosystem's monetary policy instruments is posted on the Bank of Finland's website (http://www.bof.fi/rhindex.htm).

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# Abstracts

## Discussion Papers

**Divergences in the Euro Area: a Cause for Concern?**
Nils Björkstén – Miika Syrjänen
11/99

Evidence suggests that after a period of convergence in the early and mid-1990s, the euro area economies may have started diverging. As a consequence, the common monetary policy could become ill-suited for a number of countries. This paper studies the extent and severity of the recent divergences, and discusses the capacity of exposed countries to compensate for nationally suboptimal monetary conditions through other policy channels. As a step towards developing an analytical framework for monitoring intra-euro area developments, we present a 'convergence barometer' to monitor divergences and a Taylor rule based 'monetary thermometer' to compare the common monetary policy with benchmark optimal policy for individual countries. A main conclusion is that policymakers at euro area level should be concerned about divergences, since automatic sta-

bilizers alone may not be enough to restore a healthy equilibrium to potential 'outlier' countries.

■ Key words: euro, EMU, divergence, Taylor rule

**Anticipated Monetary Policy and the Dynamic Behaviour of the Term Structure of Interest Rates**
Jarkko Jääskelä – Jouko Vilmunen
12/99

This paper investigates the measurement of anticipated interest rate policy and the effects of these expectations on the term structure of nominal interest rates. It is shown that, under the expectations hypothesis, the level of long-term interest rates depends on three factors: the level of the monetary policy interest rate, ie the steering rate; the spread between the market interest rate and the steering rate; and market expectations of the next steering rate change. The theoretical model builds on the assumption that market participants have only imperfect knowledge of the mechanism whereby changes in the steering rate are determined. As a consequence, expectations formation, although realistic, need not be entirely rational. Steering rate changes take the form of discrete jumps and occur infrequently on a daily scale. Given these assumptions, discussion of the determination of the term structure is related to the literature on uncertainty about monetary policy regimes and small samples, ie 'peso' problems.

Empirical analysis based on Nelson–Siegel estimates of the daily yield curves in Finland in the period 1 January 1993 to 31 October 1997 complements the theoretical discussion. The observed differences between estimated market expectations and actual tender rate changes are quite large in the sample, particularly for the longer maturities. The approach applied in this study is promising, not only in the sense of potentially providing estimates of market expectations concerning future discrete changes in monetary policy interest rates but also in the sense of its apparent potential in accounting for the often reported poor empirical performance of the expectations hypothesis.

■ Key words: term structure of interest rates, expectations, target changes, peso problems

**Bank Relationships and Small-Business Closures during the Finnish Recession of the 1990s**
Helvi Kinnunen – Vesa Vihriälä
13/99

The paper examines the role of bank relationships in business closures during the Finnish economic crisis of the early 1990s. We utilize a unique panel data set of 474 small and medium-sized firms, for which we have standard accounting information and for which we can in addition identify whether the firm had a lending relationship with the most troubled part of the banking system, namely the Savings Bank of Finland and Skopbank. By estimating a logit model we find that, even accounting for the effects of liquidity, profitability, indebtedness, age and size, firms that had a lending relationship with the savings banks concerned were more likely to close in 1992 than other firms that year or the same firms in other years. Thus being a loan customer of these banks entailed greater risk for firms than having a lending relationship with other intermediaries only in 1992, which was the year the banking sector crisis came to a head. The result lends support to the hypothesis that financial factors affect real outcomes not only through firm and household balance sheets but also through bank behaviour.

■ Key words: financial factors, credit crunch, banking crisis

**The Effects of Transmission Uncertainty on the Flexibility-Credibility Tradeoff in Monetary Policy**
Marc-Alexandre Sénégas – Jouko Vilmunen
14/99

This paper adresses the issue of how parameter uncertainty affects the optimal degree of central bank conservatism. The analysis is conducted in the standard macroeconomic model of a monetary policy game embedding an expectational Phillips-curve. Multiplicative 'Brainard' uncertainty is added to the model. This means that the central bank's policy instrument has a stochastic impact on inflation. This type of uncertainty is particularly interesting, since it affects

the credibility-flexibility tradeoff in monetary policymaking.

We show that if the flexibility problem dominates, an increase in uncertainty reduces optimal conservatism. However, increases in uncertainty can also require increases in the optimal degree of conservatism. This happens when the central bank has a sufficiently large credibility problem. This is particularly clear in the case of the introduction of uncertainty at the margin. Furthermore, the coefficient of variation of inflation appears to contain useful information about the relative size of the credibility problem and, hence, about how incipient uncertainty can affect optimal conservatism in actual economies.

■ Key words: credibility, flexibility, monetary policy, conservatism, uncertainty

**Rahapolitiikan säännöt: Katsaus kirjallisuuteen (Monetary Policy Rules: A Survey of the Literature)**
Tapio Peura
15/99

Nowadays, a monetary policy rule generally refers to policy regime where the central bank announces in advance how its monetary policy instrument will be adjusted in response to changes in the state of the economy. The research on monetary policy rules has attempted first of all to determine whether monetary policy conducted by different countries can really be described by a rule and what kinds of rules best describe such policy. Secondly, model simulations have been used to try to find optimal policy rules that minimize variation in output and inflation within the framework of the model and rule applied, as well as rules that perform well in several different kinds of models. Underlying this research is the assumption that the use of a rule in policymaking could lead to more balanced economic development than in the case of discretion-based policy. This paper reviews the findings of recent research on monetary policy rules.

According to the research findings, the monetary policy conducted by many countries over the last ten years or so has been systematic to such an extent that it can be described fairly well by a simple Taylor interest rate rule in which determination of the short-term nominal interest rate is influenced by deviations of inflation and output from stated targets. In some cases, the performance of the simple rule has been improved by the addition of a variable describing the gradual adjustment of the interest rate or a term that takes into account developments in the exchange rate. The findings show that simple Taylor-type rules containing a few variables also perform well compared with optimal rules. Tests carried out using Finnish data show that the monetary policy conducted in Finland since the liberalization of financial markets cannot be described by a simple Taylor rule. This applies particularly to the period of deep recession, currency crisis and exchange rate targeting in the early 1990s.

■ Key words: monetary policy, monetary policy rules, Taylor rule

**Optimizing Liquidity Usage and Settlement Speed in Payment Systems**
Harry Leinonen – Kimmo Soramäki
16/99

The operating speed of a payment system depends on the stage of technology of the system's communication and information processing environment. Frequent intraday processing cycles and real-time processing have introduced new means of speeding up the processing and settlement of payments. In a real-time environment banks face new challenges in liquidity management. They need to plan for intraday as well as interday fluctuations in liquidity. By employing various types of hybrid settlement structures, banks may be able to even out intraday fluctuations in liquidity demand. The aim of this study is to develop a framework for analysing fluctuations in liquidity demand and assessing the efficiency of different settlement systems in terms of speed and liquidity needs.

In this study we quantify the relationship between liquidity usage and settlement delay in net settlement systems, real-time gross settlement systems and hy-

brid systems, as well as the combined costs of liquidity and delay in these systems. We analyse ways of reducing costs via optimization features such as netting of queues, offsetting of payments and splitting of payments. We employ a payment system simulator developed at the Bank of Finland, which enables us to evaluate the impact of changes in system parameters and thus to compare the effects of alternative settlement schemes with given payment flows. The data used covers 100 days of actual payments processed in the Finnish BoF-RTGS system.

Our major findings relate to risk reduction via real-time settlement, effects of optimization routines in hybrid systems, and the effects of liquidity costs on banks' choice of settlement speed. A system where settlement takes place continuously in real-time and with queuing features is more efficient from the perspective of liquidity and risks than a net settlement system with batch processing. Real-time processing enables a reduction in payment delay and risks without necessarily increasing liquidity needs. Participants will operate under immediate payment/settlement if liquidity costs are low enough relative to delay costs and if the liquidity arrangements are sufficiently flexible. The central bank can therefore support risk reduction and payment speed objectives by providing low cost intraday liquidity as well as more flexible ways for participants to add or withdraw liquidity from the system. Optimizing and gridlock solving features were found to be effective at very low levels of liquidity. The efficiency of the different optimization methods for settlement systems are affected by the actual flow of payments processed. Gains from netting schemes with multiple daily netting cycles were found to be somewhat more limited.

■ Key words: payment systems, clearing/ settlement, liquidity, efficiency, gridlock

## BOFIT Discussion Papers

**Azerbaijan: Recent Economic Developments and Policy Issues in Sustainability of Growth**
Rupinder Singh – Juhani Laurila
5/99

The macro economic stabilization in Azerbaijan has been successful. Following cessation of conflict with Armenia, and decline of GDP by 60 per cent from 1990 to 1995, the government in effect implemented a big-bang reform process in 1995. The inflation rate has now declined to the lowest rate of any transition country and important reforms in the monetary-fiscal mix have been undertaken. The second plank of first generation reforms, liberalization, has also been successfully implemented with liberalization of prices, the trade and foreign exchange regimes and virtual completion of small-scale privatization, although the onset of the Russian crisis in 1998 has impacted negatively both internal and external balances. The paper presents the current economic picture for Azerbaijan and then assesses economic policy issues facing the country.

Azerbaijan is well endowed with natural resources, particularly oil but also gas. The second part of the paper considers the question by focussing on policy issues related to the potential flow of oil-based monies into Azerbaijan. The possibility of the 'Dutch Disease' syndrome impacting Azerbaijan through a rising real exchange rate on the non-oil sector is not considered to be a problem at present but is expected to become a policy concern in the medium to long term. Structural reforms in public finance to deal with expected surpluses are lagging and are necessary in the next phase of the transition of Azerbaijan. Moreover, significant reforms are required in banking – privatization, improvement in regulation and supervision and in the implementation of supporting legal rights, given the current lack of financial intermediation.

■ Key words: Azerbaijan, economic development, oil, Dutch Disease, transition economies

# Finland in brief

## Land, climate and population

Finland covers an area of more than 338 000 square kilometres. The total area is slowly increasing because of the steady uplift of the land since the last glacial era. The country shares frontiers with Sweden in the west, Norway in the north and Russia in the east and has a coastline bordered by the Baltic Sea in the south and west. Agricultural land accounts for 6 % of the total area, forest and other wooded land for 68 % and inland waters for 10 %. Located between latitudes 60° and 70° north, Finland has warm summers and cold winters. Helsinki on the south coast has an average maximum temperature of 21° C (70° F) in July and –3° C (25° F) in February.

Finland has a population of 5 159 646 (31 December 1998) and an average population density of 17 per square kilometre. The largest towns are Helsinki (Helsingfors), the capital, with 546 317 inhabitants, Espoo (Esbo) 204 962, Tampere (Tammerfors) 191 254, Vantaa (Vanda) 173 860 and Turku (Åbo) 170 931.

There are two official languages: 93 % of the population speaks Finnish as its mother tongue and 5.7 % Swedish. There is a small Lapp population in the north. Finnish is a member of the small Finno-Ugrian group of languages, which also includes Estonian and Hungarian.

## Form of government

Finland is a parliamentary democracy with a republican constitution. From the twelfth century to 1809 Finland was part of the Kingdom of Sweden. In 1809 Finland was annexed to Russia as an autonomous Grand Duchy with the Tsar as Grand Duke. On 6 December 1917 Finland declared her independence. The republican constitution adopted in 1919 remains essentially unchanged today.

The legislative power of the country is exercised by Parliament and the President of the Republic. The supreme executive power is vested in the President, who is elected for a period of six years. The President for the current term, 1 March 1994 to 1 March 2000, is Mr Martti Ahtisaari.

Parliament, comprising 200 members, is elected by universal suffrage for a period of four years. Following the parliamentary elections of 1999, the seats of the various parties in Parliament are distributed as follows:

Social Democratic Party 51; Center Party 48; National Coalition Party 46; Left Alliance 20; Swedish People's Party 12; Green League 11; Christian League 10; True Finns 1; and Reform Group 1.

Of the 18 ministerial posts in the present Government appointed in April 1999, 6 are held by the Social Democratic Party, 6 by the National Coalition Party, 2 by the Left Wing Alliance, 2 by the Swedish People's Party, 1 by the Green League and 1 by an expert with no party affiliation. The Prime Minister is Mr Paavo Lipponen of the Social Democratic Party.

Finland is divided into 452 self-governing municipalities. Members of the municipal council are elected by universal suffrage for a period of four years.

## International relations

Finland became a member of the BIS in 1930, the IMF in 1948, the IBRD in 1948, GATT in 1950, the UN in 1955, the Nordic Council in 1955, the IFC in 1956, IDA in 1960, EFTA in 1961, the ADB in 1966, the OECD in 1969, the IDB in 1977, the AfDB in 1982, the MIGA in 1988, the Council of Europe in 1989, the EBRD in 1991 and the EU in 1995.

Citizens of the five Nordic countries, Denmark, Finland, Iceland, Norway and Sweden, have enjoyed a common labour market, a passport union and reciprocal social security benefits since the mid-1950s.

Having abolished most quantitative restrictions on foreign trade in 1957, Finland first took part in European free trade arrangements under the auspices of EFTA in 1961. Finland's free trade agreement with the EEC entered into force in 1974 and agreements for the removal of trade barriers were concluded with several eastern European countries as well. The agreement on the European Economic Area (EEA) between the member countries of EFTA and the European Union came into effect at the beginning of 1994. Finland became a member of the European Union on 1 January 1995. Finland and ten other EU countries entered to Stage Three of EMU in 1999.

## The economy

**Output and employment.** Of the gross domestic product of FIM 592 (EUR 100) billion in basic values in 1998, 1.3 % was generated in agriculture, hunting and fishing, 2.5 % in forestry, 28.2 % in industry, 5.0 % in construction, 12.2 % in trade, restaurants and hotels, 9.2 % in transport and communications, 4.1 % in finance and insurance, 16.7 % in other private services and 20.8 % by producers of government services. Of total employment of 2.2 million persons in 1998, 6.6 % were engaged in primary production, 28.0 % in industry and construction and 65.4 % in services.

In 1998, expenditure on the gross domestic product in purchasers' values amounted to FIM 687 (EUR 116) billion and was distributed as follows: net exports 8.9 % (exports 39.0%, imports –30.1%), gross fixed capital formation 18.6 %, private consumption 50.3 % and government consumption 21.7 %. Finland's tax ratio (gross taxes including compulsory employment pension contributions relative to GDP) was 46.2 per

cent, which is somewhat below the average for the Nordic countries.

Average annual (compounded) growth of real GDP was 4.7 % in the period 1950–59, 5.0 % in 1960–69, 3.7 % in 1970–79, 3.6 % in 1980–89 and 1.4 % in 1990–98. Finland's GDP per capita in 1998 was USD 24 938.

**Foreign trade.** EU countries absorb the bulk of Finnish merchandise exports. In 1994–1998 their average share was 53.5%. Over the same period, Finland's exports to other European countries (including Russia) accounted for 20.6 % and to the rest of the world for 25.9 %. The regional distribution of Finland's merchandise imports in the same period has been quite similar to that of exports: EU countries accounted for 56.4 %, other European countries for 19.6 % and the rest of the world for 24.0 %.

In 1998, the share of forest industry products in total merchandise exports was 30.5 %, the share of metal and engineering products 45.8 % and the share of other goods 23.7 %. Raw materials and intermediate goods (incl. crude oil) accounted for 56.3 % of merchandise imports, fuels for 2.7 %, investment goods for 16.7% and consumption and other goods for 24.3%.

**Forest resources.** Finland has abundant forest resources but only limited amounts of other raw materials. The growing stock comprises 1 927 million cubic metres, of which 46 % is pine, 36 % spruce, 15 % birch and 3 % other broad-leaved species.

According to the National Forest Inventory for 1992–1998, the annual volume increment was about 76 million cubic metres. Over the same period the average annual drain was about 59 million cubic metres.

## Finance and banking

**Currency.** Finland had its own monetary system from 1865 to 1998. The currency unit was the markka (plural markkaa), which was divided into 100 penniä (singular penni). During the last decades of this period the objective of foreign exchange policy was to maintain a fixed exchange rate in relation to a given currency basket. On 8 September 1992 the markka was allowed to float. On 14 October 1996 the markka joined the Exchange Rate Mechanism of the European Monetary System. Since the beginning of 1999 Finland has participated in the single currency area, in accordance with the Treaty establishing the European Community. The conversion rate for the markka, as confirmed by the Council of the European Union on 31 December 1998, is 5.94573. With effect from the beginning of 1999 the currency unit used in Finland is the euro, which is divided into 100 cent. The markka will, however, remain as the national denomination of the euro until the year 2002, and during this time notes and coins denominated in markkaa will continue to be used.

**The Central Bank.** The two new laws adopted in 1997 and 1998 make Finnish legislation compatible with the requirements of the Treaty establishing the European Community and the Statute of the European System of Central Banks and the European Central Bank. The latter law, the new Act on the Bank of Finland, integrates the Bank of Finland into the ESCB. In performing the tasks of the ESCB, the Bank of Finland acts in accord with guidelines and instructions issued by the ECB. Under the Treaty, the primary objective of the Bank of Finland is to maintain price stability. The new Act did not change the division of responsibilities between the Parliamentary Supervisory Council and the Board. The tasks of the Council are connected with supervision of the Bank's administration and operations, administrative decisions and certain other responsibilities. The Board of the Bank of Finland comprises the Chairman (Governor) and a maximum of five (currently three) other members, all of whom are appointed by the President of the Republic upon a proposal from the Council. The Chairman of the Board is appointed for a seven-year term and the other members of the Board each for a five-year term. The Bank of Finland has a head office in Helsinki and four branch offices in other towns.

**Other banks** ( 31 Dec 1998). Finland has three major groups of deposit banks with a total of about 1 600 offices. There are two big commercial banks with national branch networks and seven smaller ones. The commercial banks have a total of 13 foreign branches, subsidiaries and associate banks and 17 representative offices abroad. There are 40 savings banks and 294 cooperative banks, both with extensive branch networks. In addition, 6 foreign banks have branches and 6 foreign banks have representative offices in Finland.

**Financial markets.** The total stock of domestic credit amounted to FIM 736.5 (EUR 123.9) billion at end-June 1999 and was broken down by lender group as follows: deposit banks 52 %; insurance companies 6 %; pension insurance institutions 23 %; other credit institutions 9 %; central and local authorities and social security funds 10 %.

In the money market, the total value of instruments outstanding was about FIM 107.6 (EUR 18.1) billion at end-Sep 1999; bank certificates of deposit accounted for 77 % of the total and Treasury bills, commercial paper and local authority paper for the rest.

At end-December 1998 there were 91 companies on the Main List, 40 on the Investors' List and one company on the Prelist of the HEX, Helsinki Exchanges. At end-Sep 1999 total market capitalization was FIM 1 120.7 (EUR 188.5) billion for the Main List, FIM 14.7 (EUR 2.5) billion for the Investors' List and FIM 1.6 (EUR 0.3) billion for the NM List. Domestic bonds and debentures in circulation at end-Sep 1999 amounted to FIM 318.6 (EUR 53.6) billion; government bonds accounted for 82 % of the total. Share turnover on the HEX, Helsinki Exchanges amounted to FIM 323.0 (EUR 54.3) billion in 1998. In January–Sep 1999 share turnover amounted to FIM 369.7 (EUR 62.2) billion.

# VISITING SCHOLARS PROGRAMME

## BANK OF FINLAND

***The Bank of Finland**, the national central bank, has 750 employees, some 30 of whom are involved in research. The Bank is located in Helsinki.*

The Bank of Finland welcomes applications from foreign and Finnish scholars for a post under the Bank's Visiting Scholars Programme at the Research Department. Scholarships for six months are available for faculty or post-doctoral level research projects in two main research areas:

(1) The modelling of monetary policy
(2) The future of the financial services sector.

In the area of monetary policy modelling, we are especially interested in incorporating the analysis of credibility and policy uncertainty in applied models that could be used to analyze monetary policy in practice. The second area aims at illuminating the ongoing structural transformation of the global financial services industry, as driven by electronification and increased competition in particular. This area includes stability and other public policy aspects of the transformation.

A visiting scholar will be expected to conduct research based on a mutually agreed research plan. Articles stemming from the research are expected to be included in the Bank's Discussion Papers and may be published elsewhere as well. A visiting scholar should normally also give a lecture at the Bank to an audience of economists on his or her research topic as well as interact with other researchers engaged in projects in the same area.

Remuneration for visiting scholars will be commensurate with their research experience.

Persons interested in applying are invited to send

– a brief research proposal concerning either of the two areas

– a CV specifying the applicant's academic and research background, with the names of two or three referees

to: Research Department
Bank of Finland
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Helsinki, Finland
Fax: +358 9 183 2560
Email: Kaisa-Liisa.Nordman@bof.fi

Inquiries: Juha Tarkka, Head of Research Department,
phone +358 9 183 2581, email Juha.Tarkka@bof.fi
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phone +358 9 183 2594, email Jouko.Vilmunen@bof.fi

SUOMEN PANKKI • FINLANDS BANK

# Balance sheet of the Bank of Finland, million EUR

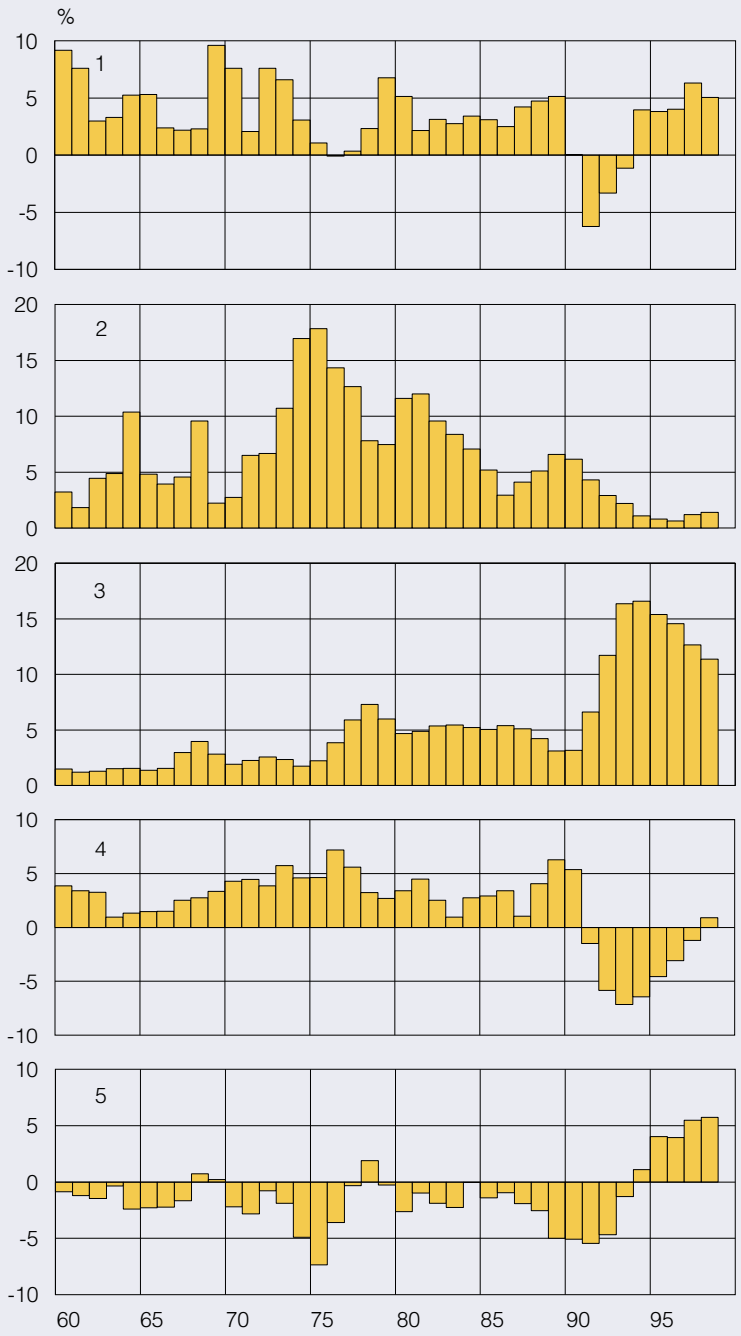
| | | 1999 | | | |
|---|---|---|---|---|---|
| | | 27.8. | 24.9. | 29.10. | 26.11. |
| Assets | | | | | |
| **1** | **Gold and gold receivables** | 397 | 397 | 449 | 449 |
| **2** | **Claims on non-euro area residents denominated in foreign currency** | 7 572 | 7 485 | 7 495 | 7 546 |
| 2.1 | Receivables from the IMF | 887 | 770 | 812 | 798 |
| 2.2 | Balances with banks and security investments, external loans and other external assets | 6 685 | 6 714 | 6 683 | 6 748 |
| **3** | **Claims on euro area residents denominated in foreign currency** | 523 | 633 | 622 | 676 |
| **4** | **Claims on non-euro area residents denominated in euro** | 94 | 757 | 4 297 | 219 |
| 4.1 | Balances with banks, security investments and loans | 94 | 757 | 4 297 | 219 |
| 4.2 | Claims arising from the credit facility under the ERM II | 0 | 0 | 0 | 0 |
| **5** | **Lending to financial sector counterparties of euro area** | 535 | 274 | 1 146 | 257 |
| 5.1 | Main refinancing operations | 393 | 132 | 960 | 25 |
| 5.2 | Longer-term refinancing operations | 140 | 140 | 183 | 230 |
| 5.3 | Fine-tuning reverse operations | 0 | 0 | 0 | 0 |
| 5.4 | Structural reverse operations | 0 | 0 | 0 | 0 |
| 5.5 | Marginal lending facility | 0 | 0 | 0 | 0 |
| 5.6 | Credits related to margin calls | 0 | 0 | 0 | 0 |
| 5.7 | Other lending | 2 | 2 | 2 | 2 |
| **6** | **Securities of euro area residents denominated in euro** | 0 | 0 | 0 | 0 |
| **7** | **General government debt denominated in euro** | 0 | 0 | 0 | 0 |
| **8** | **Intra-Eurosystem claims** | 1 549 | 2 795 | 768 | 1 544 |
| 8.1 | Participating interest in ECB | 70 | 70 | 70 | 70 |
| 8.2 | Claims equivalent to the transfer of foreign currency reserves | 699 | 699 | 699 | 699 |
| 8.3 | Claims related to the issuance of ECB debt certificates | 0 | 0 | 0 | 0 |
| 8.4 | Other claims within the Eurosystem (net) | 780 | 2 027 | 0 | 776 |
| **9** | **Other assets** | 661 | 734 | 742 | 686 |
| **Total assets** | | 11 331 | 13 075 | 15 519 | 11 377 |

Totals/sub-totals may not add up because of rounding.

| | | 1999 | | | |
|---|---|---|---|---|---|
| | | 27.8. | 24.9. | 29.10. | 26.11. |
| Liabilities | | | | | |
| **1** | **Banknotes in circulation** | 2 604 | 2 595 | 2 602 | 2 634 |
| **2** | **Liabilities to euro area financial sector counterparties denominated in euro** | 1 736 | 1 510 | 2 022 | 1 419 |
| 2.1 | Current accounts (covering the minimum reserve system) | 1 736 | 1 510 | 2 022 | 1 419 |
| 2.2 | Deposit facility | 0 | 0 | 0 | 0 |
| 2.3 | Fixed-term deposits | 0 | 0 | 0 | 0 |
| 2.4 | Fine-tuning reverse operations | 0 | 0 | 0 | 0 |
| 2.5 | Deposits related to margin calls | 0 | 0 | 0 | 0 |
| **3** | **Liabilities to other euro area residents denominated in euro** | 1 | 2 | 1 | 1 |
| 3.1 | General government | 0 | 0 | 0 | 0 |
| 3.2 | Other liabilities | 1 | 2 | 1 | 1 |
| **4** | **Liabilities to non-euro area residents denominated in euro** | 2 506 | 4 399 | 3 758 | 2 642 |
| **5** | **Liabilities to euro area residents denominated in foreign currency** | 0 | 0 | 0 | 0 |
| **6** | **Liabilities to non-euro area residents denominated in foreign currency** | 60 | 109 | 67 | 96 |
| 6.1 | Deposits, balances and other liabilities | 60 | 109 | 67 | 96 |
| 6.2 | Liabilities arising from the credit facility under the ERM II | 0 | 0 | 0 | 0 |
| **7** | **Counterpart of special drawing rights allocated by the IMF** | 185 | 185 | 187 | 187 |
| **8** | **Intra-Eurosystem liabilities** | 0 | 0 | 2 530 | 0 |
| 8.1 | Liabilities related to promissory notes backing the issuance of ECB debt certificates | 0 | 0 | 0 | 0 |
| 8.2 | Other liabilities within the Eurosystem (net) | 0 | 0 | 2 530 | 0 |
| **9** | **Other liabilities** | 206 | 241 | 235 | 277 |
| **10** | **Revaluation account** | 917 | 917 | 1 004 | 1 004 |
| **11** | **Capital and reserves** | 3 116 | 3 116 | 3 116 | 3 116 |
| **Total liabilities** | | 11 331 | 13 075 | 15 519 | 11 377 |

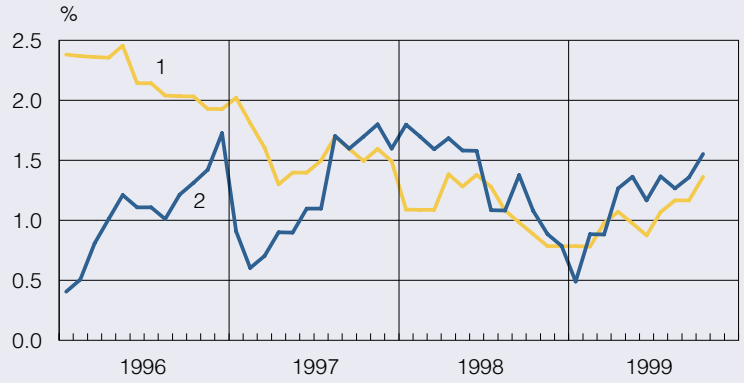
## Charts

## 1. Finland: key economic indicators




1. GDP, volume change from previous year
2. Consumer prices, change from previous year
3. Unemployment rate
4. General government fiscal position, % of GDP
5. Current account, % of GDP

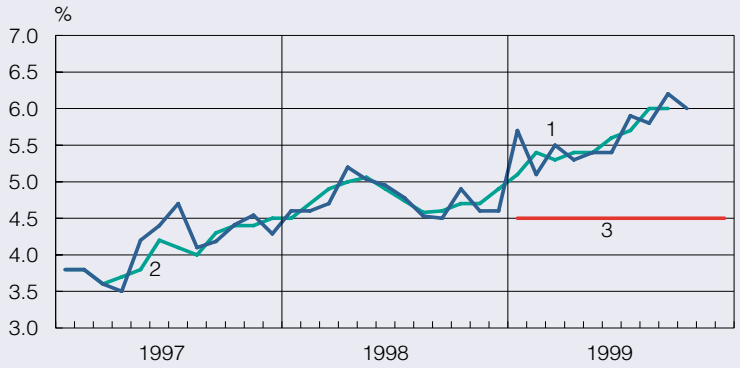
## 2. Price stability in the euro area and Finland




Harmonized Index of Consumer Prices, 12-month percentage change

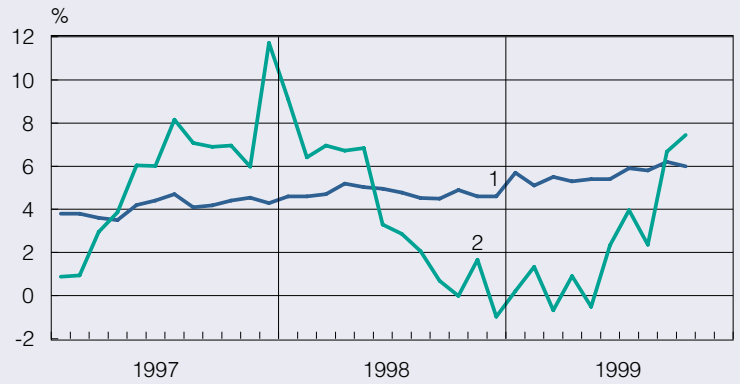
1. Euro area countries
2. Finland

## 3. Monetary aggregates for the euro area




1. M3, 12-month percentage change
2. M3, 12-month percentage change, smoothed by means of a 3-month moving average
3. Eurosystem's reference value for the growth of M3

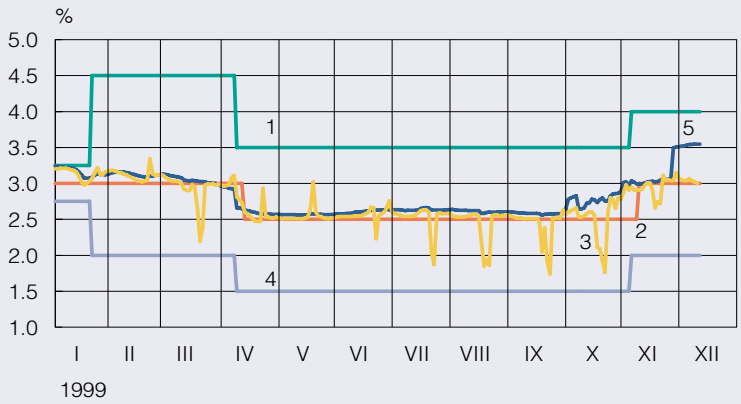
## 4. Growth of the money stock in the euro area and Finland




12-month percentage change

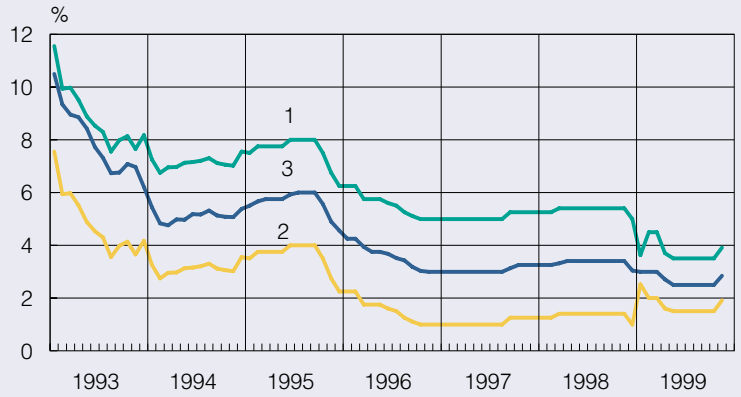
1. M3 for the euro area
2. Deposits and other liabilities of Finnish monetary financial institutions included in M3

## 5. Eurosystem interest rates and money market rates




1. Marginal lending rate
2. Main refinancing rate
3. Eonia rate
4. Deposit rate
5. 1-month Euribor

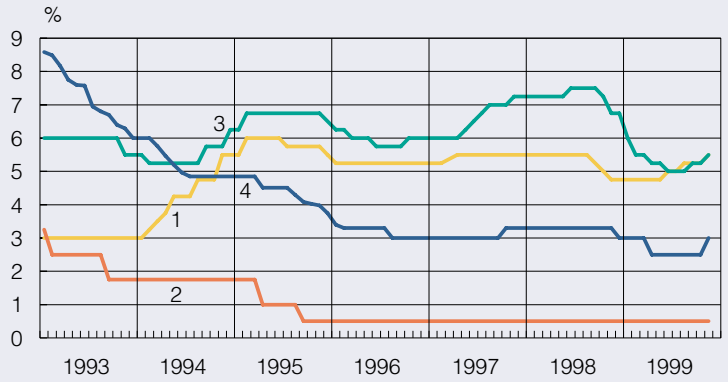
## 6. Eurosystem (Bank of Finland) interest rates




Bank of Finland interest rates until end-1998

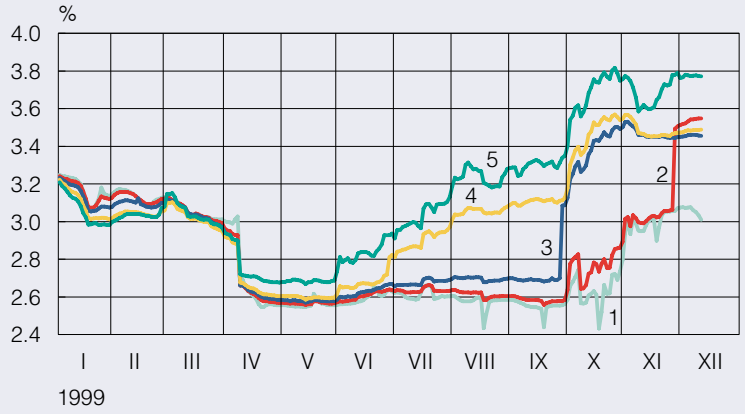
1. Marginal lending rate (liquidity credit rate until end-1998)
2. Deposit rate (excess-reserve rate until end-1998)
3. Main refinancing rate (tender rate until end-1998)

## 7. Official interest rates



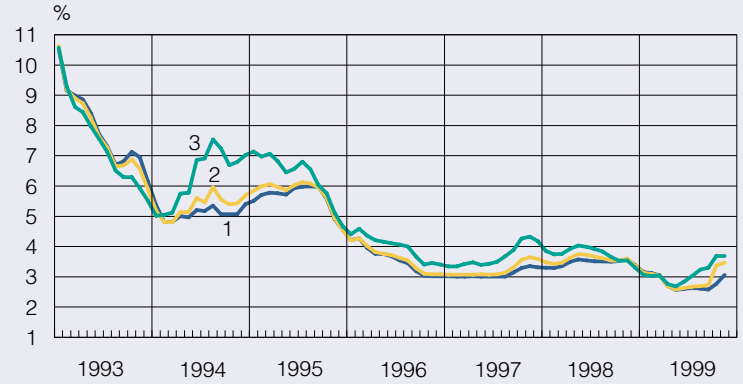

1. USA: fed funds target rate
2. Japan: discount rate
3. United Kingdom: base rate
4. Eurosystem: main refinancing rate (German repo rate until end-1998)

## 8. Euribor rates, daily values



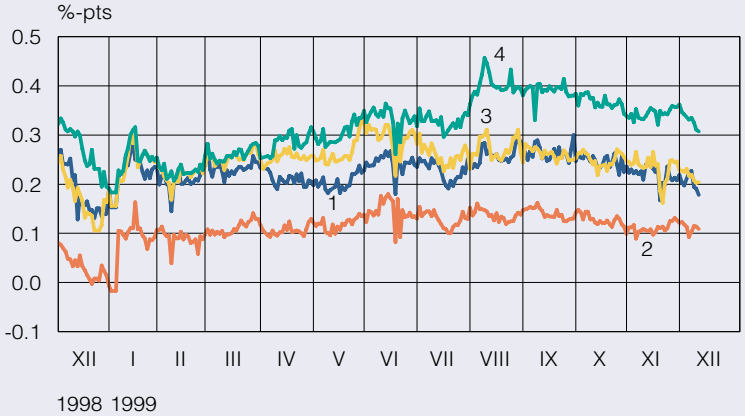

1. 1-week
2. 1-month
3. 3-month
4. 6-month
5. 12-month

## 9. Euribor rates, monthly values



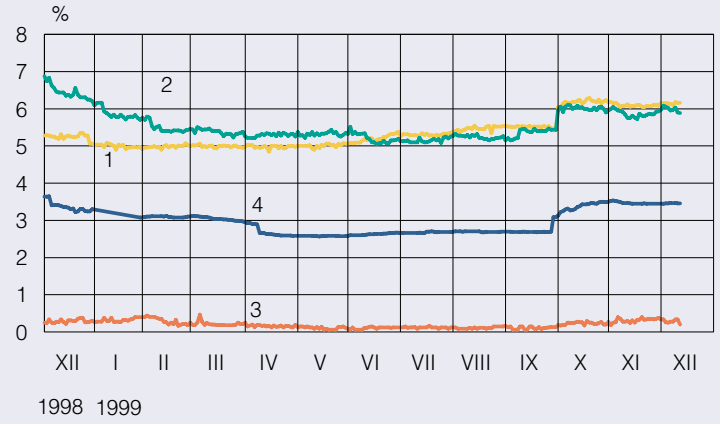

Helibor rates until end-1998
1. 1-month
2. 3-month
3. 12-month

## 10. Differentials between ten-year yields for Germany and selected euro area countries



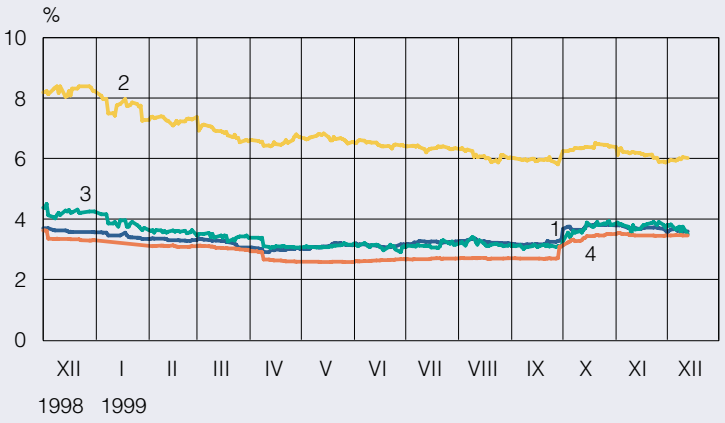

1. Finland
2. France
3. Italy
4. Largest differential

## 11. International three-month interest rates, daily values



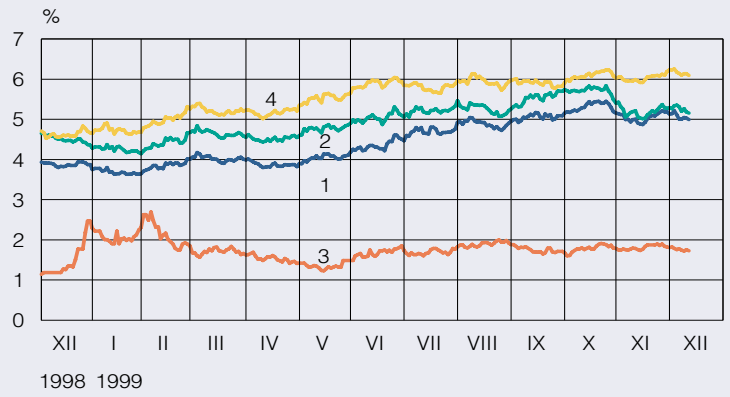

Interbank rates
1. United States
2. United Kingdom
3. Japan
4. Euro area
   (Germany until end-1998)

## 12. Three-month interest rates in the Nordic countries, daily values



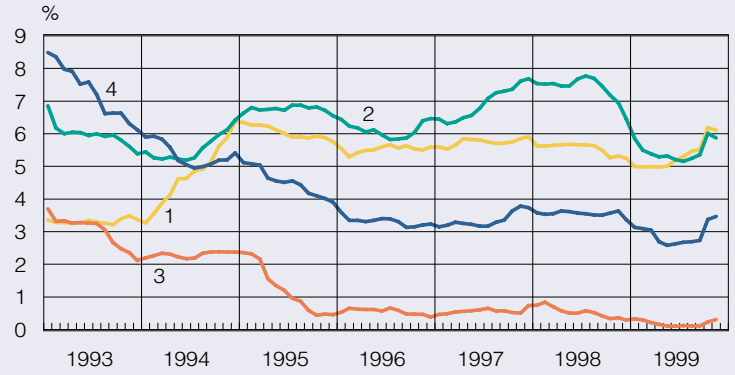

Interbank rates
1. Sweden (Stibor)
2. Norway
3. Denmark
4. Finland (Euribor; Helibor until
   end-1998)

## 13. International long-term interest rates, daily values




Yields on ten-year
government bonds
1. Germany
2. United Kingdom
3. Japan
4. United States

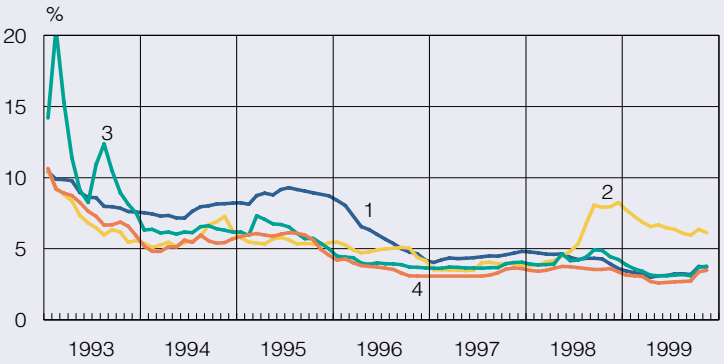
## 14. International three-month interest rates, monthly values




Interbank rates

1. United States
2. United Kingdom
3. Japan
4. Euro area
   (Germany until end-1998)

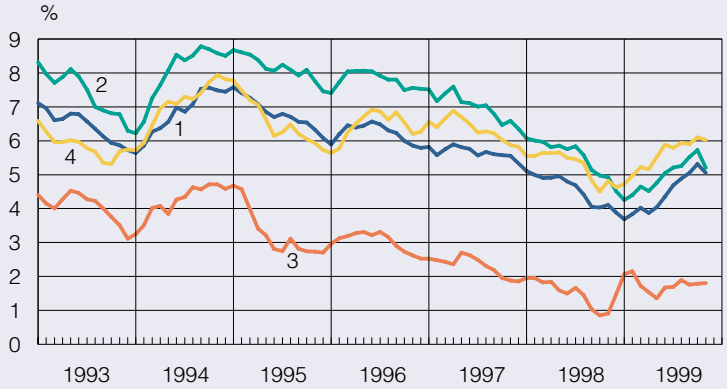
## 15. Three-month interest rates in the Nordic countries, monthly values




Interbank rates

1. Sweden (Stibor)
2. Norway
3. Denmark
4. Finland (Euribor; Helibor until end-1998)

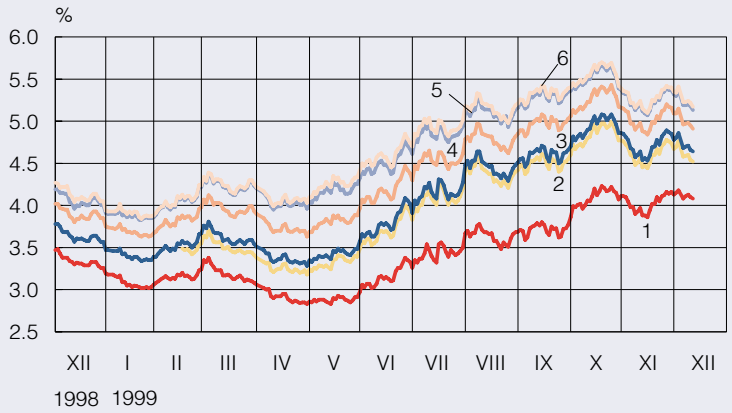
## 16. International long-term interest rates, monthly values




Yields on ten-year government bonds

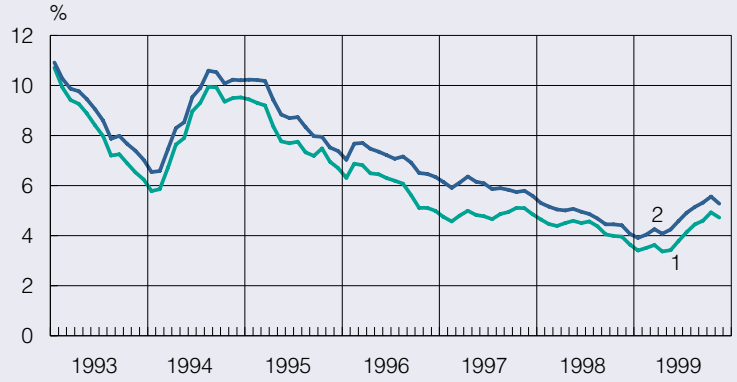
1. Germany
2. United Kingdom
3. Japan
4. United States

## 17. Yields on Finnish benchmark government bonds



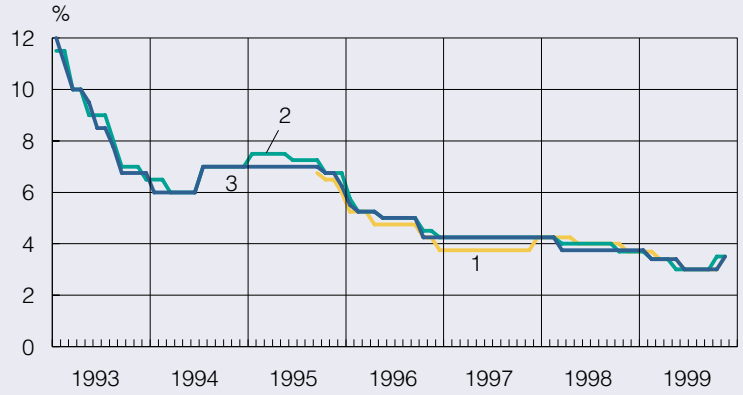

1. Bond maturing on 15 September 2001, 10 %
2. Bond maturing on 12 November 2003, 3.75 %
3. Bond maturing on 15 March 2004, 9.5 %
4. Bond maturing on 18 April 2006, 7.25 %
5. Bond maturing on 25 April 2008, 6 %
6. Bond maturing on 25 April 2009, 5 %

## 18. Yields on five and ten-year Finnish government bonds



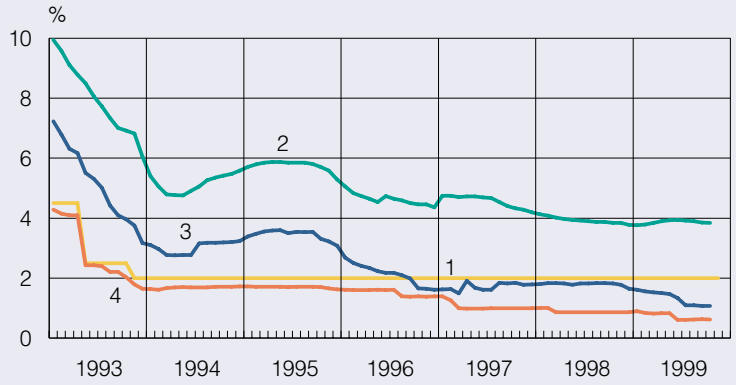

1. 5 years
2. 10 years

## 19. Bank reference rates in Finland



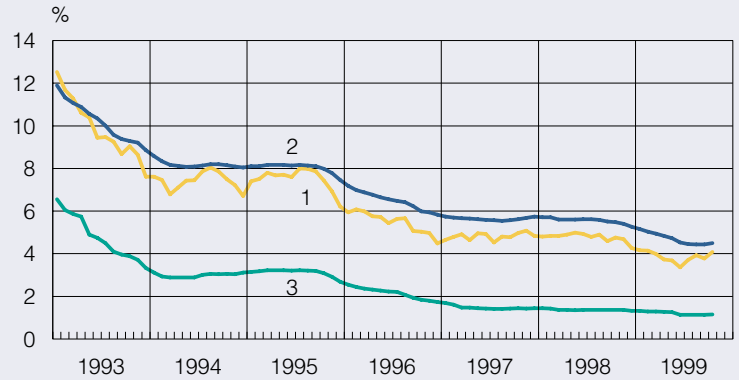

1. Merita prime
2. Leonia prime
3. OKOBANK group prime

## 20. Bank deposit rates in Finland



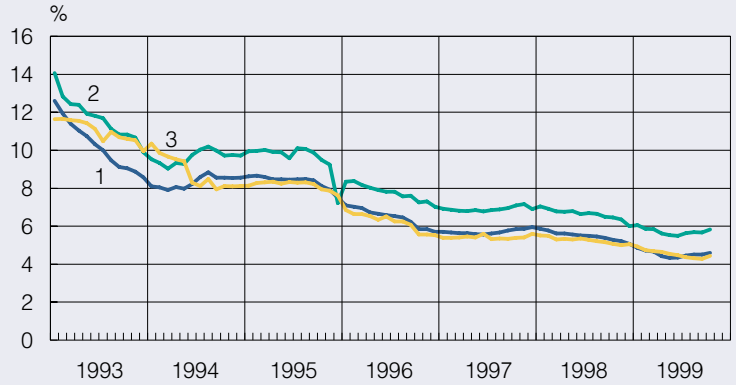

1. Rate on tax-exempt transaction accounts (upper limit)
2. Average rate on fixed-term deposits subject to withholding tax
3. Average rate on cheque and transaction accounts subject to withholding tax
4. Average rate on tax-exempt cheque and transaction accounts

## 21. Bank lending and deposit rates in Finland



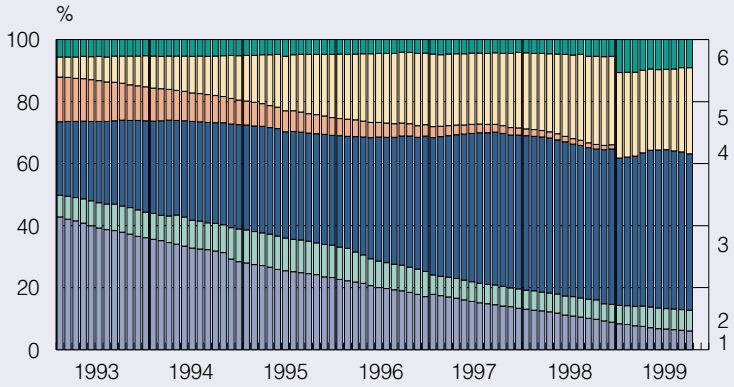

1. Rate on new lending
2. Average lending rate
3. Average deposit rate

## 22. Interest rates charged by Finnish banks on new lending to households




1. New housing loans
2. New consumer credits
3. New study loans

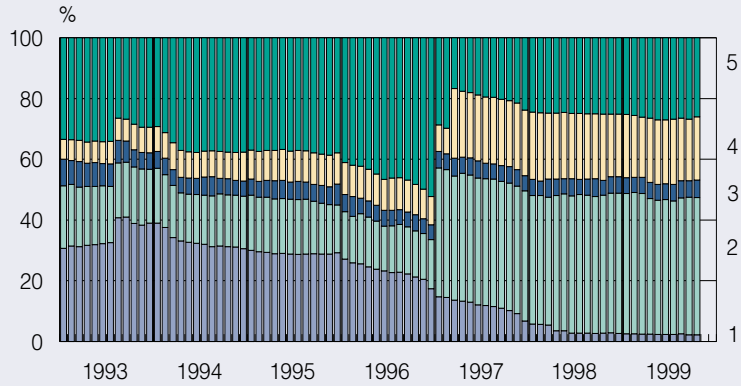
## 23. Stock of bank lending in Finland




Interest rate linkages, percentages

1. Linked to base rate
2. Fixed-rate
3. Linked to Euribor (Helibor until end-1998)
4. Linked to 3 and 5-year reference rates
5. Linked to reference rates of individual banks (prime rates etc)
6. Other

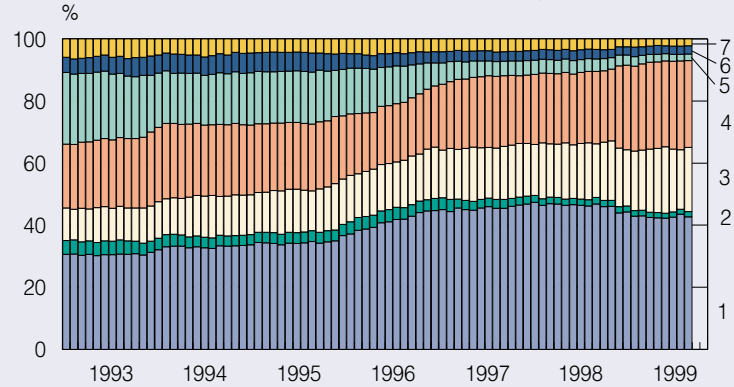
## 24. Stock of bank deposits in Finland by interest rate linkage




Interest rate linkages, percentages

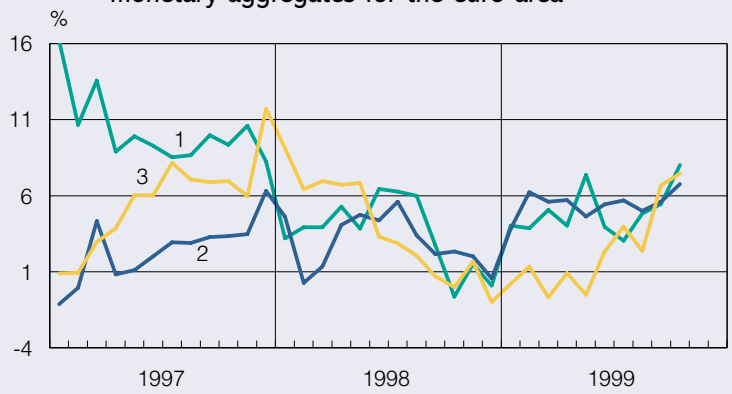
1. Linked to base rate
2. Fixed-rate
3. Linked to Euribor (Helibor until end-1998)
4. Linked to reference rates of individual banks (prime rates etc)
5. Other

## 25. Stock of bank deposits in Finland by tax treatment




1. Tax-exempt cheque and transaction accounts
2. Cheque and transaction accounts subject to withholding tax
3. Other taxable cheque and transaction accounts
4. Tax-exempt fixed-term accounts and other accounts
5. Fixed-term accounts and other accounts subject to withholding tax
6. Other taxable accounts
7. Foreign currency accounts

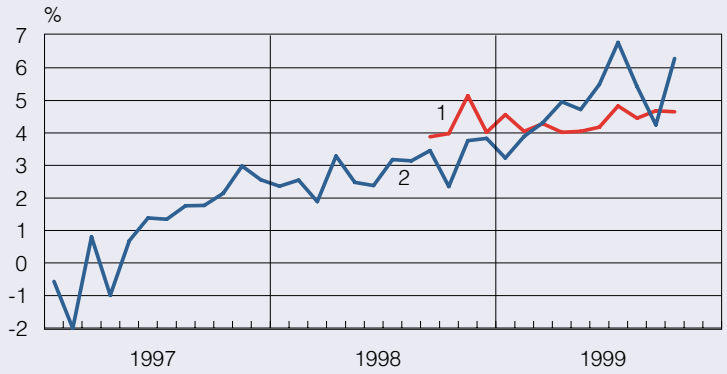
## 26. Liabilities of Finnish monetary financial institutions included in monetary aggregates for the euro area




12-month percentage change

1. Items included in M1: transaction accounts (=overnight deposits)
2. Items included in M2: all deposits except fixed-term deposits of over 2 years
3. Items included in M3: M2 deposits plus certain securities and other items

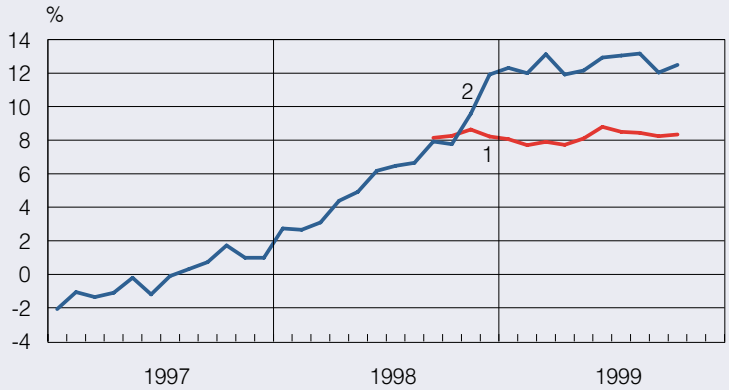
## 27. Euro area and Finnish banks: growth of deposits




12-month percentage change

1. Deposits of euro area residents with euro area banks
2. Deposits of Finnish residents with Finnish banks

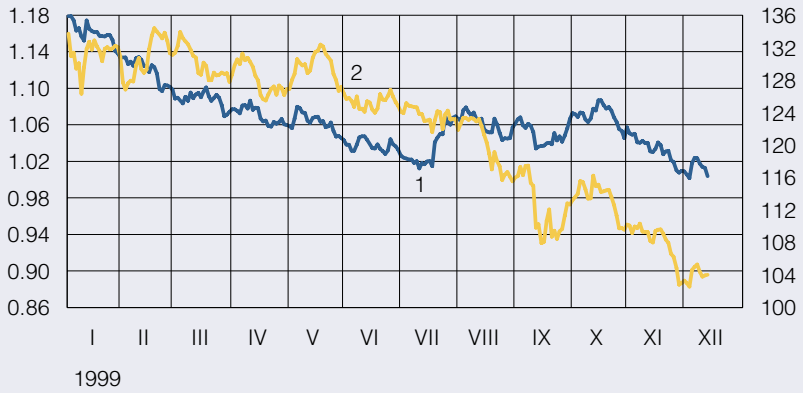
## 28. Euro area and Finnish banks: growth of lending




12-month percentage change

1. Lending by euro area banks to euro area residents
2. Lending by Finnish banks to Finnish residents

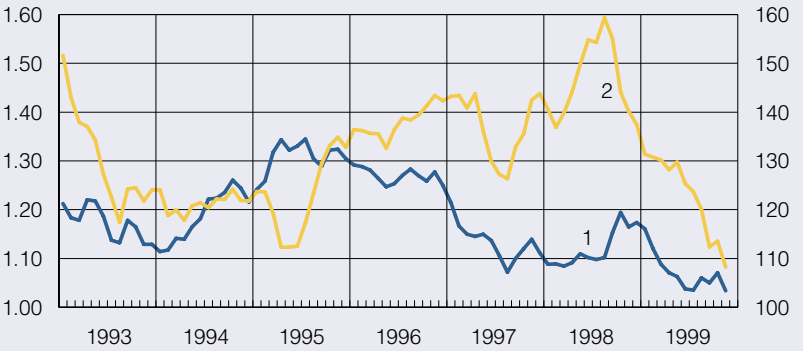
## 29. Euro exchange rates against the US dollar and the yen, daily values




Rising curve indicates appreciation of euro

1. Value of one euro in US dollars (left-hand scale)
2. Value of one euro in Japanese yen (right-hand scale)

## 30. Euro exchange rates against the US dollar and the yen, monthly values

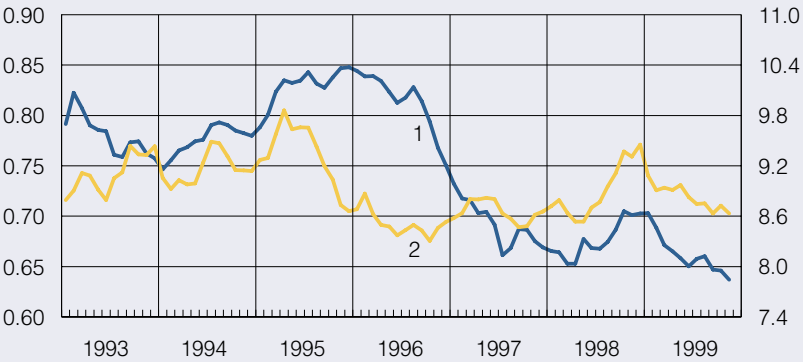



(ecu exchange rate until end-1998)

Rising curve indicates appreciation of euro

1. Value of one euro in US dollars (left-hand scale)
2. Value of one euro in Japanese yen (right-hand scale)

## 31. Euro exchange rates against the pound sterling and Swedish krona

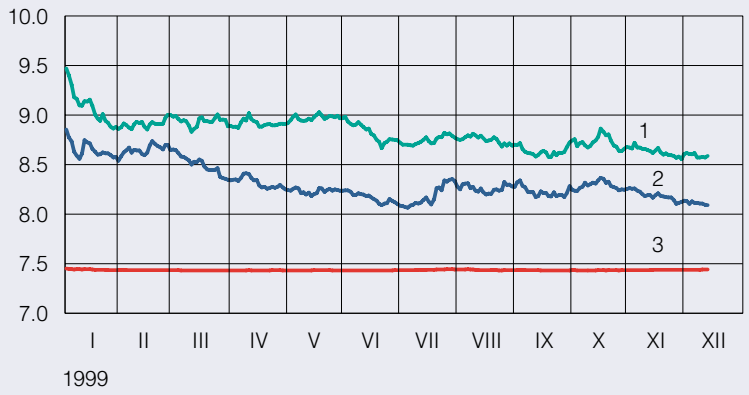



(ecu exchange rate until end-1998)

Rising curve indicates appreciation of euro

1. Value of one euro in pounds sterling (left-hand scale)
2. Value of one euro in Swedish kronor (right-hand scale)

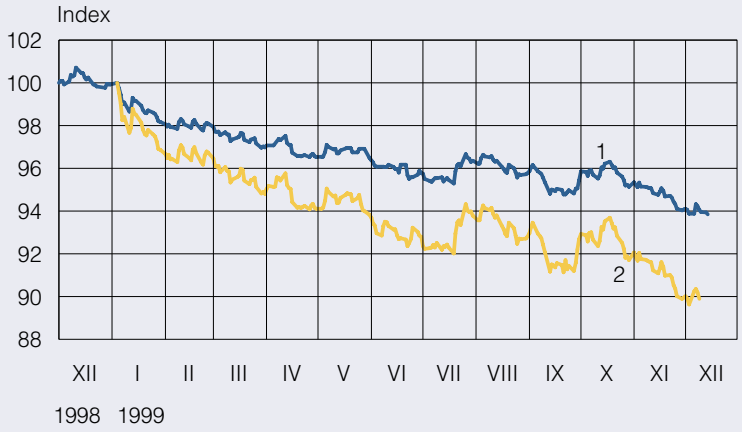
## 32. Euro exchange rates against the Scandinavian currencies




Rising curve indicates appreciation of euro

1. Value of one euro in Swedish kronor
2. Value of one euro in Norwegian kroner
3. Value of one euro in Danish kroner

## 33. Finland's trade-weighted indicator of competitiveness, daily values



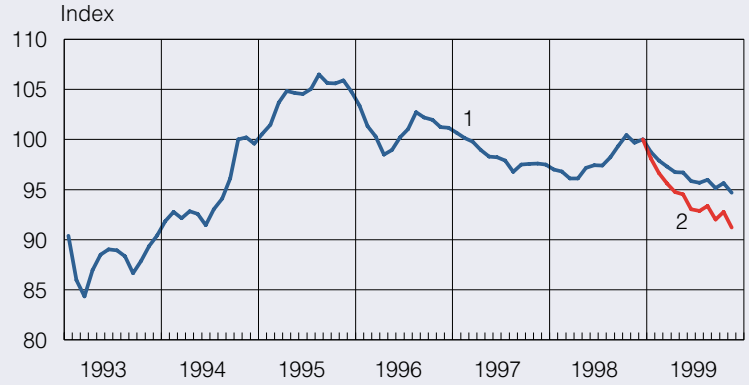

4 January 1999 = 100

Rising curve indicates decrease in Finland's price competitiveness

Former Bank of Finland currency index

1. In relation to all countries (incl. euro area)
2. In relation to countries outside the euro area

## 34. Finland's trade-weighted indicator of competitiveness, monthly values



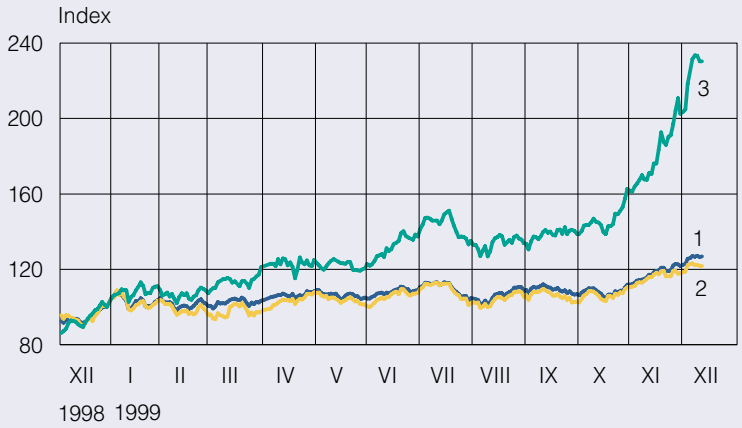

December 1998 = 100

Rising curve indicates decrease in Finland's price competitiveness

Former Bank of Finland currency index

1. In relation to all countries (incl. euro area)
2. In relation to countries outside the euro area

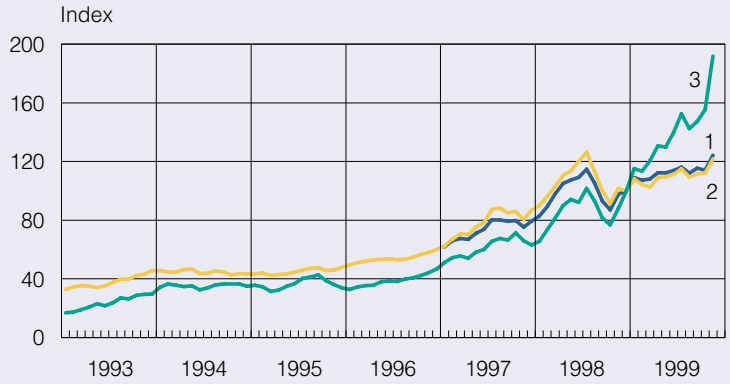
## 35. Selected stock price indices in the euro area, daily values




30 December 1998 = 100

1. Euro area: Dow Jones Euro Stoxx index
2. Germany: DAX index
3. Finland: HEX all-share index

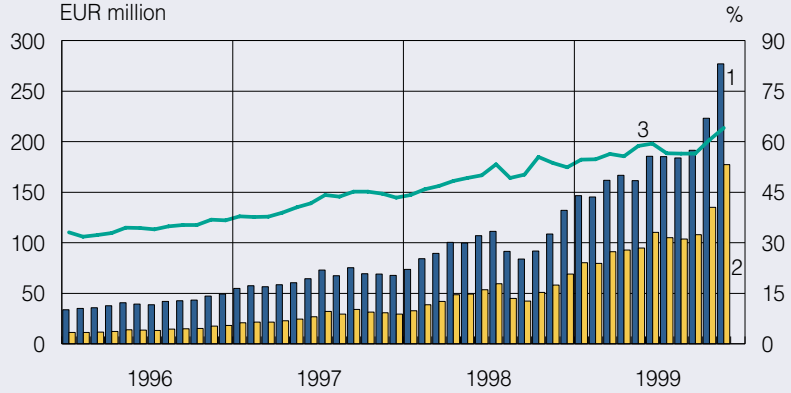
## 36. Selected stock price indices in the euro area, monthly values




30 December 1998 = 100

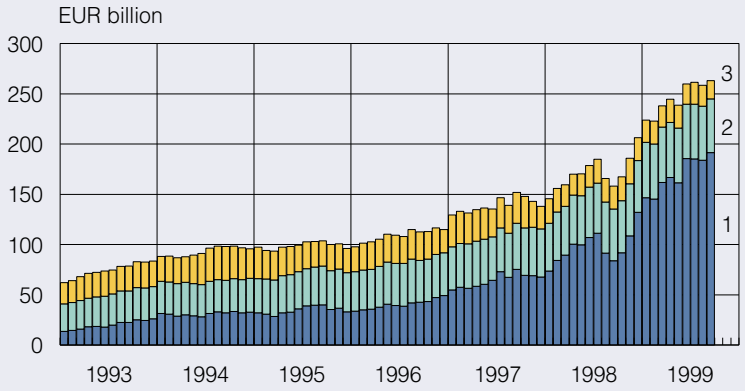
1. Total euro area: Dow Jones Euro Stoxx index
2. Germany: DAX index
3. Finland: HEX all-share index

## 37. Listed shares in Finland: total market capitalization and non-residents' holdings




1. Market capitalization of all listed shares (left-hand scale)
2. Market capitalization of non-residents' holdings (left-hand scale)
3. Market capitalization of non-residents' holdings as a percentage of total market capitalization (right-hand scale)

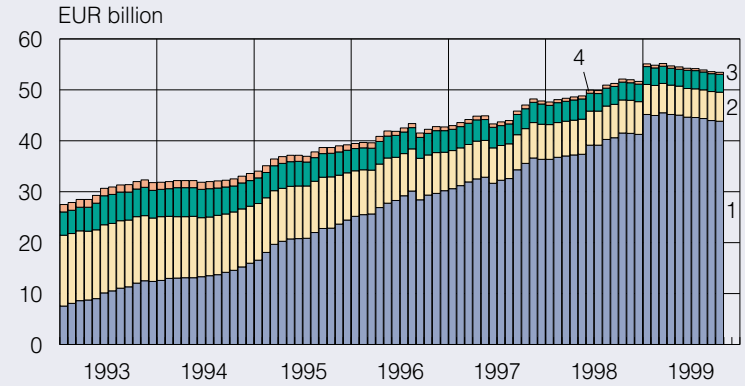
## 38. Securities issued in Finland




End-month stock

1. Market capitalization of shares
2. Stock of bonds, nominal value
3. Outstanding money market instruments

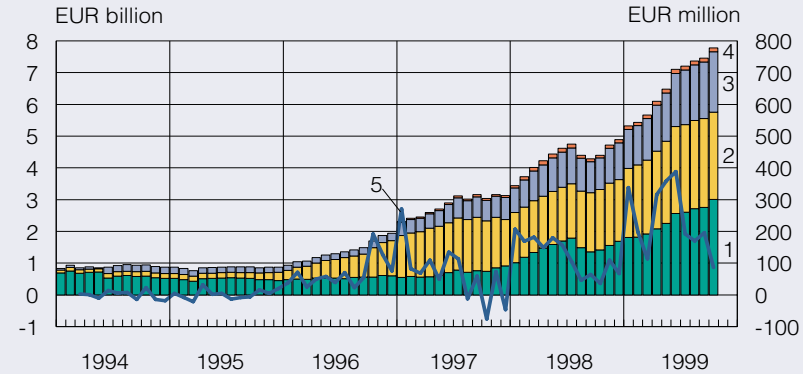
## 39. Bonds issued in Finland




End-month stock

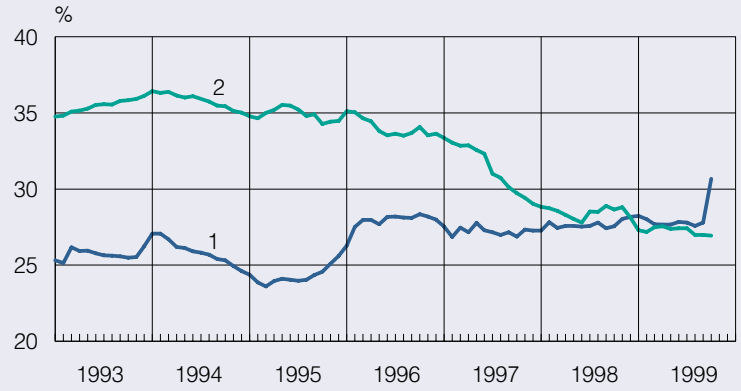
1. Central government
2. Financial institutions
3. Companies
4. Other

## 40. Mutual funds registered in Finland




1. Equity funds (left-hand scale)
2. Fixed income funds (left-hand scale)
3. Balanced funds (left-hand scale)
4. Risk funds (left-hand scale)
5. All funds: net subscriptions (right-hand scale)

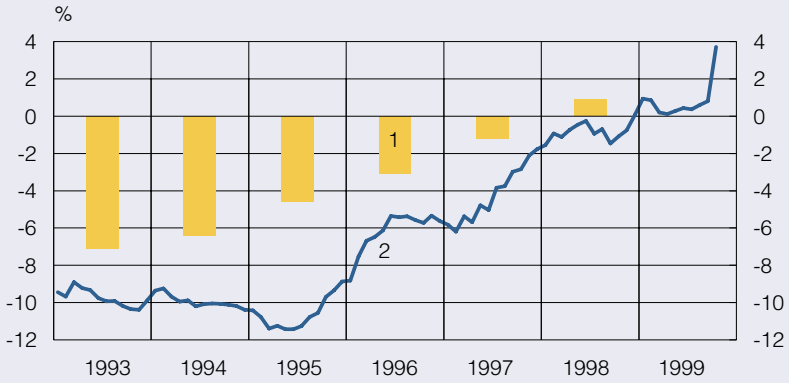
## 41. Central government revenue and expenditure in Finland




Excluding financial transactions
12-month moving totals, % of GDP

1. Revenue
2. Expenditure

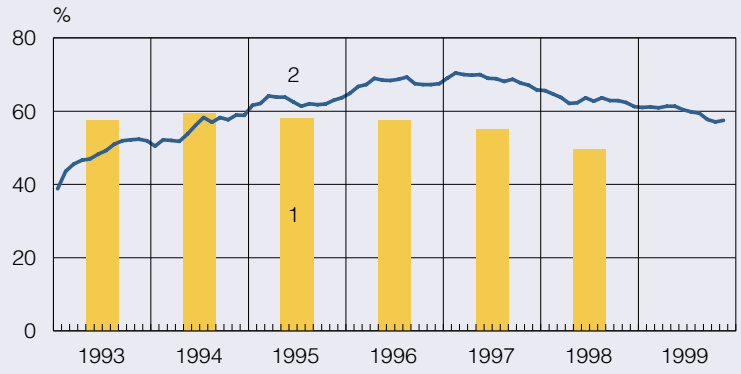
## 42. Public sector balances in Finland




% of GDP

1. General government fiscal position
2. Central government revenue surplus
   12-month moving total

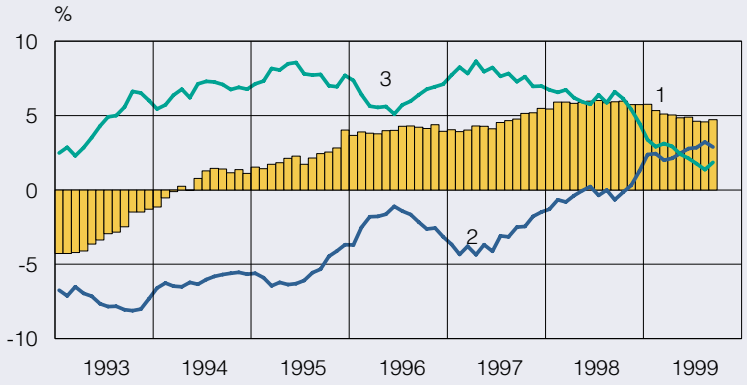
## 43. Public debt in Finland




% of GDP

1. General government debt
2. Central government debt

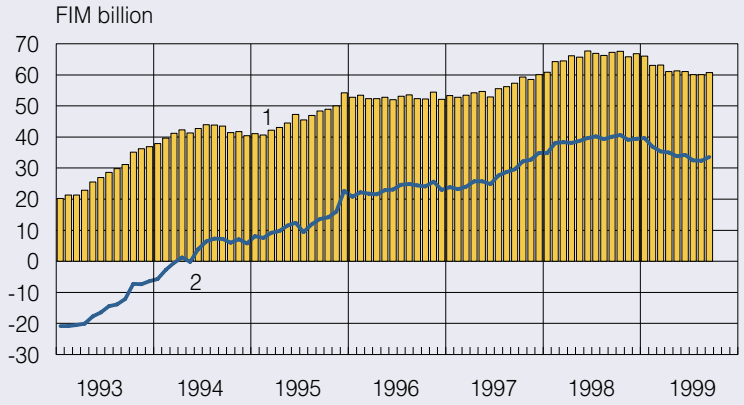
## 44. Net lending in Finland by sector




Main sectoral financial balances, 12-month moving total, % of GDP

1. Current account
2. General government sector
3. Private sector

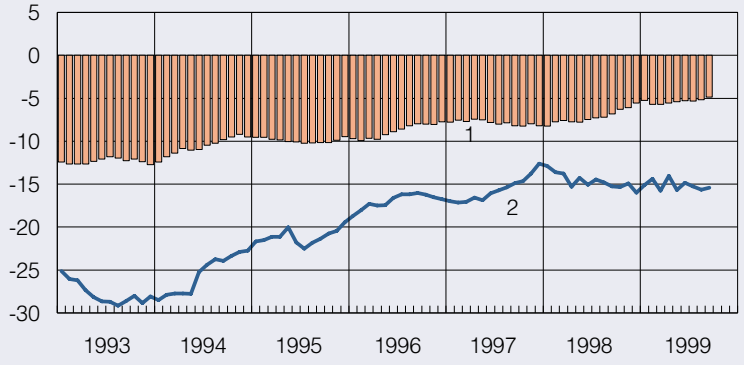
## 45. Finland: goods account and current account




12-month moving totals

1. Goods account, fob
2. Current account

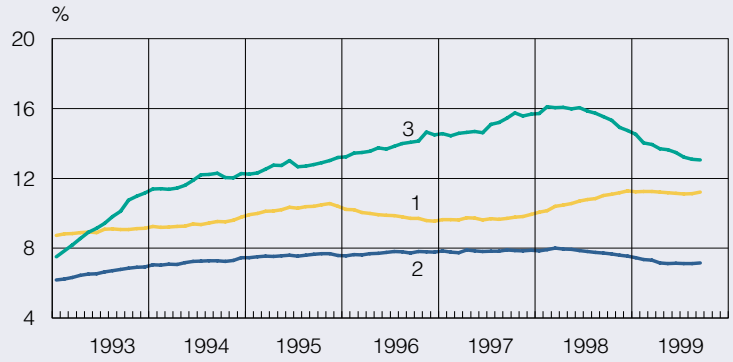
## 46. Finland: services account and income account




12-month moving totals

1. Services account (trade in goods, fob)
2. Income account

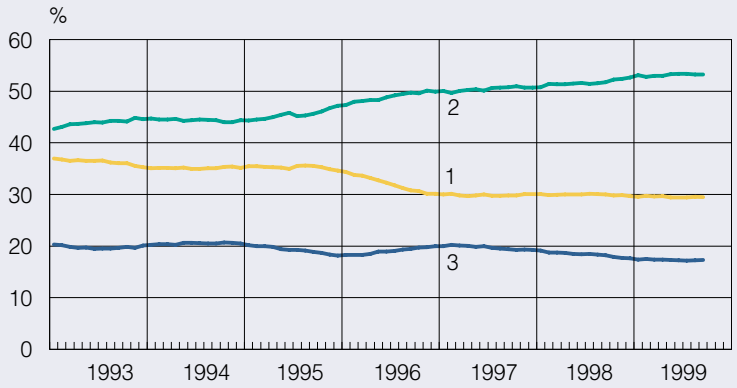
## 47. Regional distribution of Finnish exports




12-month moving totals, % of GDP

1. Euro area
2. Other EU member states
3. Rest of world

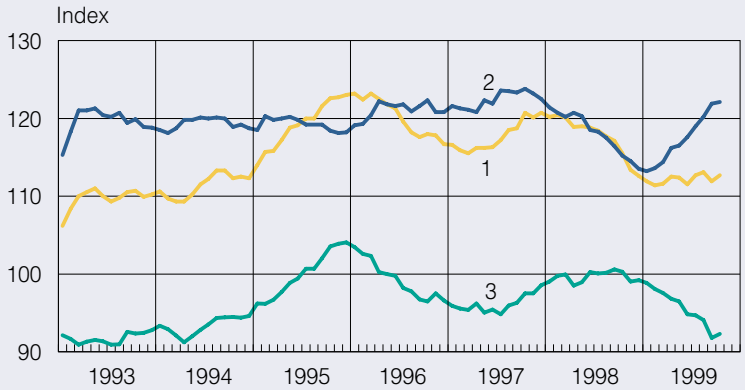
## 48. Finnish exports by industry




12-month moving totals, percentage of total exports

1. Forest industries
2. Metal and engineering industries (incl. electronics)
3. Other industry

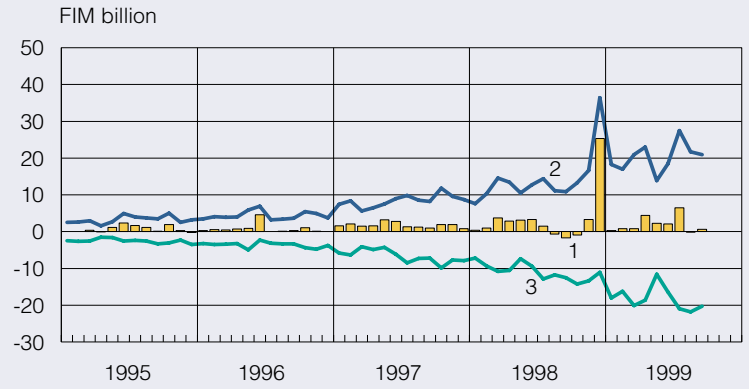
## 49. Finland's foreign trade: export prices, import prices and terms of trade




1990 = 100

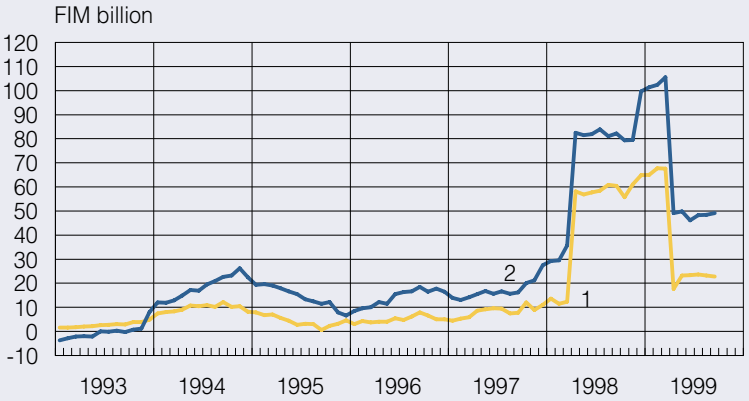
1. Export prices
2. Import prices
3. Terms of trade

## 50. Non-residents' portfolio investment in Finnish shares




1. Net sales
2. Sales to non-residents
3. Repurchases from non-residents

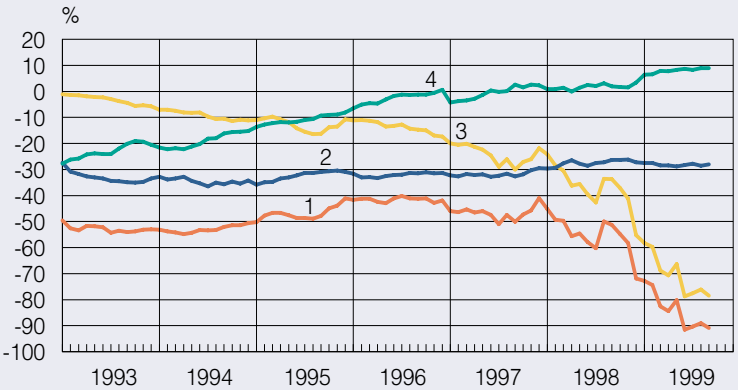
## 51. Finland: direct investment




12-month moving totals

1. In Finland
2. Abroad

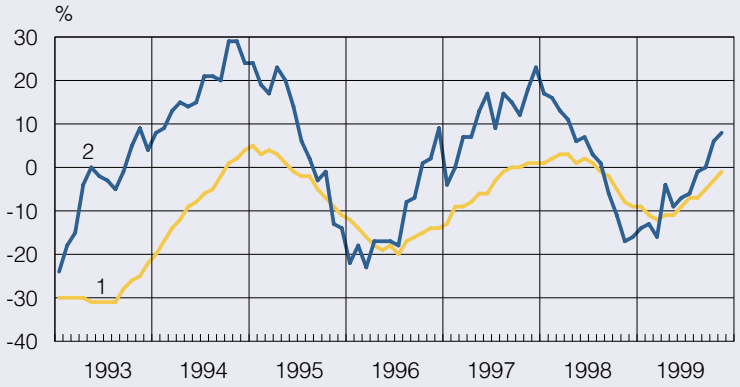
## 52. Finland's net international investment position




% of GDP

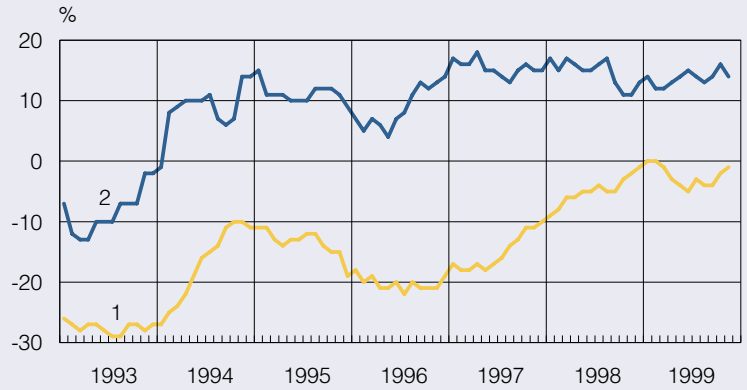
1. Net international investment position
2. Net international investment position of central government
3. Listed shares
4. Other items (excl. reserve assets)

## 53. Industrial confidence indicator in the euro area and Finland



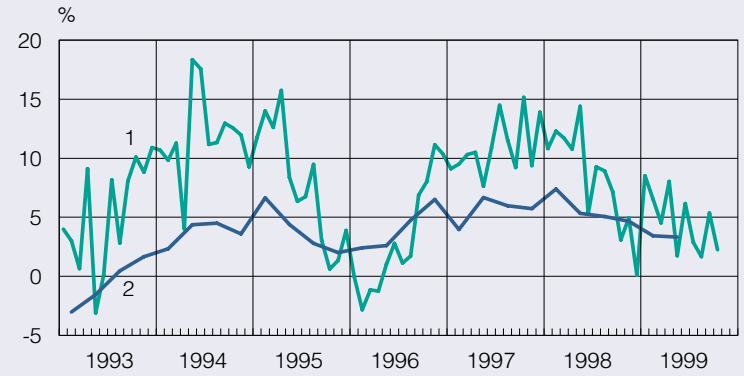

1. Euro area countries
2. Finland

## 54. Consumer confidence indicator in the euro area and Finland




1. Euro area countries
2. Finland

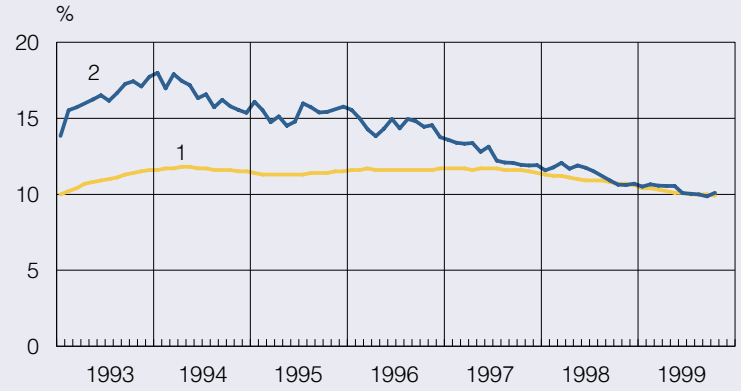
## 55. Finland: GDP and industrial production




Percentage change from previous year

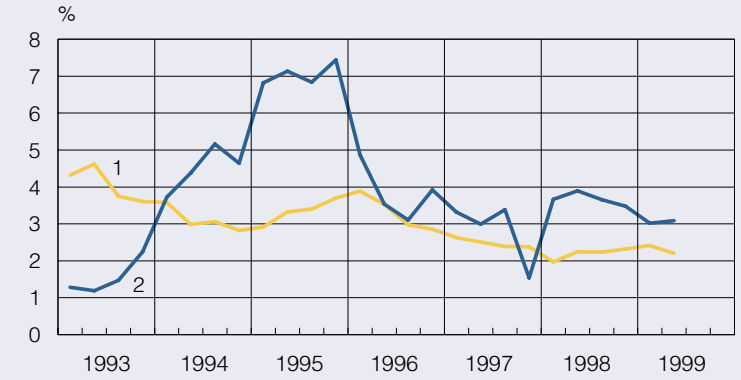
1. Industrial production
2. Gross domestic product

## 56. Unemployment rate in the euro area and Finland




1. Euro area countries
2. Finland

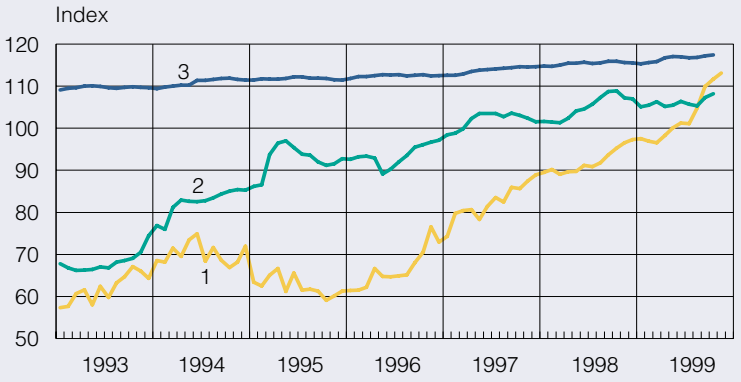
## 57. Level of industrial earnings in the euro area and Finland




Percentage change from previous year

1. Euro area countries
2. Finland

## 58. Selected asset prices in Finland




January 1990 = 100

1. Housing prices (old two-room flats; debt-free price per $m^2$)
2. Stumpage prices
3. Consumer prices

# Bank of Finland Bulletin Index to Vol. 73, 1999

## Articles and Items

# The Organization of the Bank of Finland

16 November 1999

## The Parliamentary Supervisory Council

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**Olavi Ala-Nissilä, Ben Zyskowicz, Antero Kekkonen, Anneli Jäätteenmäki,**
**Martti Tiuri, Kari Uotila, Mauri Pekkarinen**

Anton Mäkelä, Secretary to the Parliamentary Supervisory Council

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Governor

**Esko Ollila**
Deputy Governor

**Matti Louekoski**
Member of the Board

**Matti Korhonen**
Member of the Board

Heikki T. Hämäläinen, Secretary to the Board

**Pentti Koivikko**, Director

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Kari Puumanen*
Antti Suvanto*

**Markus Fogelholm**
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**Antti Juusela**
Communications

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**Antero Arimo**
Publication and Language Services

**Pekka Sutela**
Institute for Economies in Transition

* Adviser to the Board
** In addition to own duties

Branch offices: Kuopio, Oulu, Tampere, Turku

The Financial Supervision Authority functions as an independent body in connection with the Bank of Finland; the Director General is K. Jännäri.

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