



BANK OF FINLAND

BULLETIN

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- Monetary policy and economic outlook
 - The electronic equipment industry and Finland's transformation into a high-tech economy
 - Structural inflation differences in an enlarged euro area
 - Retail payments in Finland: changes in the 1990s
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Monetary policy and economic outlook

The world economy has continued to grow at a robust pace. In the United States, real GDP grew more strongly than expected in the first part of the year. In the euro area, the rate of economic growth has picked up noticeably. Furthermore, several of the Asian economies have continued their rapid recovery from the economic crisis of a few years ago. The strong growth of the world economy, coupled with the rise in the oil price, has, however, increased upward pressure on prices in many countries. In the euro area, the depreciation of the euro has, in addition, pushed up import prices. As a result, there has been a general tightening of monetary policy. The European Central Bank also has raised its official interest rates on a number of occasions this year in response to mounting inflationary pressures and the risk they pose to price stability.

The Finnish economy also continued to grow strongly in the first part of the year and the prospects for a continuation of robust growth are good. For several years now the Finnish economy has been growing at a distinctly faster pace than the euro area economies on average. As a result of the rise in import prices, especially the oil price, but also because of domestic factors, Finland's rate of inflation has accelerated markedly and is higher than the euro area average. The monetary policy stance in the euro area is still too lax with regard to Finland's cyclical position.

Given the fiscal stance implied by the Government's budget proposal for 2001, the overall macroeconomic policy stance in Finland is becoming markedly loose with respect to the cyclical outlook. Implementation of tax cuts without any reduction in spending to offset their effects on demand could exacerbate the prevailing boom conditions.

The tax cuts contained in the budget proposal will provide incentives to increase labour supply in the economy, and they can therefore be considered a step in the right direction from the standpoint of struc-

tural and employment policy. Achievement of significant employment effects will require a further easing in the taxation of labour income in the years ahead. The tax cuts need to be accompanied by other measures designed to improve the functioning of the labour market.

World economic outlook remains positive

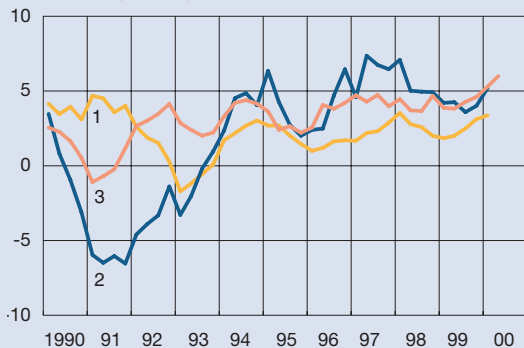
The growth prospects for the world economy remain favourable, despite the tightening of monetary policy and the high oil price. According to the IMF's spring forecast, the world economy will grow at an annual rate of about 4% in both 2000 and 2001. In the light of recent developments, even faster growth is possible. The main risks to world economic growth are related to the low rate of household saving and large current account deficit in the United States and the deterioration in public finances and growing unemployment in Japan. In the early part of the year technology stock prices generally declined somewhat from their previously high levels. This partial downward adjustment has reduced the probability of a sharp fall in stock market values. Stock markets have nevertheless remained very nervous.

The US economy has been expanding at a rapid pace for more than eight years now (Chart 1). According to preliminary data, GDP grew at an annual rate of over 5% in the first six months of the year and at the same time productivity growth remained strong. The fact that inflation has remained low despite robust economic growth is largely due to the rise in productivity. In the late spring and early summer, however, the first signs began to appear that economic activity was slowing. Contributing to this development has been the tightening of monetary policy that has occurred thus far.

Chart 1.

Real GDP growth

Percentage change on the same quarter a year earlier



- 1. Euro area
- 2. Finland
- 3. United States

Sources: Eurostat and Statistics Finland.

A recovery in the Japanese economy has been expected for a long time. Recently, signs of recovery have been stronger, but much uncertainty still remains. The Tankan survey of business conditions for June showed a market increase in confidence and investment intentions among large firms compared with March whereas small firms continued to be more pessimistic.

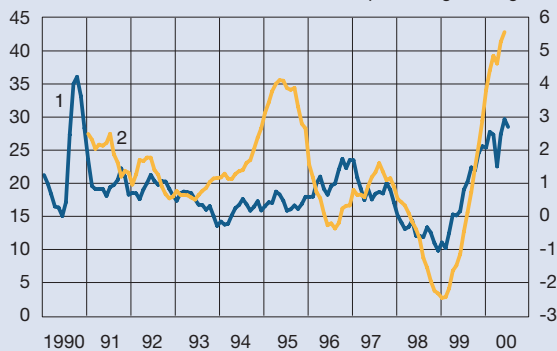
World oil prices have been rising for about eighteen months in dollar terms. During this time the oil price has climbed from around USD 10 per barrel to about USD 30 per barrel (Chart 2). Quotations for crude oil futures indicate that markets do not expect oil prices to fall significantly in the near term, even though OPEC has recently announced production increases. So far, the production increases have been small in relation to the strength of demand in industrial countries and the need to replenish stocks of oil products. As a counterweight to higher oil prices, world market prices of non-energy commodities have fallen slightly on average this year.

Inflation has picked up in the euro area and Finland

Chart 2.

Crude oil price and industrial producer prices in the euro area

USD/barrel 12-month percentage change



- 1. Crude oil (left-hand scale)
- 2. Industrial producer prices in the euro area (right-hand scale)

Sources: Reuters and Eurostat.

The rate of increase in consumer prices in the euro area accelerated in June–July of this year to almost 2½%, as measured by the Harmonized Index of Consumer Prices (HICP; Chart 3). Earlier in the year the annual rate of inflation was 2% and a year ago around 1%. The pick up in the rate of inflation is mainly due to the rise in world oil prices, since prices of energy products in the euro area in the first half of 2000 were about 13% higher than a year ago. The direct impact of the rise in energy prices on consumer price inflation in July was 1.2 percentage points. But when energy and unprocessed food prices are excluded, inflation remained virtually unchanged in the first half of the year at somewhat more than 1%.

The rate of increase in the non-energy industrial goods component of the euro area HICP has remained low in the current year, despite the fact that import prices have risen rapidly as a result of the depreciation of the euro. Industrial producer prices have also risen significantly. The subdued rise in prices of non-energy industrial goods is probably partly due to increased competition and moderate wage developments in many euro area countries.

The direct effect of the rise in energy prices on consumer inflation is likely to diminish over the coming months since the oil price had already reached a high level in the same period a year ago. By contrast, the rate of increase in other components of the HICP could pick up, if the high oil price and weakness of the euro start to pass through into the prices of these goods and services. Moreover, the further improvement in growth prospects for the fast growing euro area economies and rise in capacity utilization levels in these countries could generate inflationary pressures in the near future.

Consumer price inflation in Finland has also picked up in the course of this year (Chart 3). The annual rate of change in HICP inflation increased to 2.9% in July from 2.3% in January. Measured by the national consumer price index, inflation rose to 3.7% in July. Although the pick-up in inflation was mainly due to higher energy prices, the rate of increase in services prices has also risen. An additional factor behind the increase in CPI inflation was a rise in lending rates. By contrast, the rate of increase in non-energy industrial goods has remained fairly muted. Prices of these goods rose by 0.5% in the year to July.

Consumer price inflation in Finland is expected to remain relatively high in the second half of this year, mainly because of the high oil price and weakness of the euro. This means that inflation in 2000 could turn out to be slightly higher than forecast by the Bank of Finland in June. Although the direct effect of the oil price on the inflation rate is likely to gradually diminish, the indirect effects of the rise in the oil price and the depreciation of the euro have increased upward pressure on prices in, for example, the transport sector. There is a danger that, in conditions of strong domestic demand, these price rises could trigger second-round effects and that the rate of increase in prices of other goods and services could also accelerate.

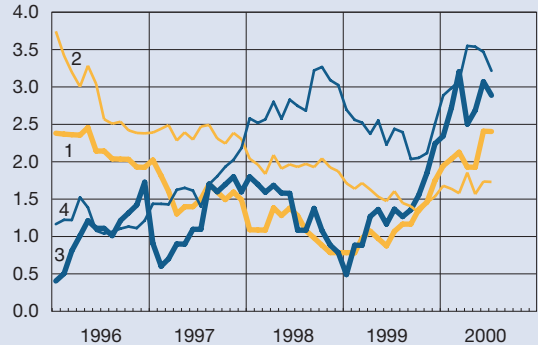
Monetary policy has been tightened in the euro area in a forward-looking fashion

The Governing Council of the ECB has raised the Eurosystem's official interest rates by a total of 1.25 percentage points in the current year (Chart 4). The Governing Council's aim with regard to interest rates

Chart 3.

Harmonized Index of Consumer Prices

12-month percentage change



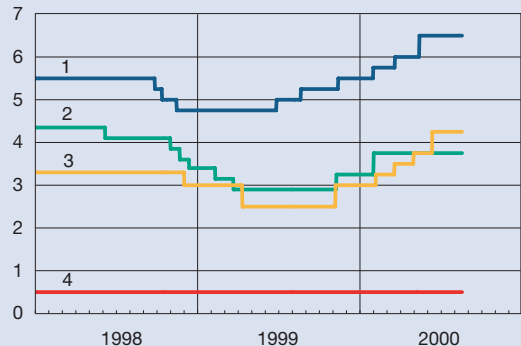
1. Euro area, total index
2. Euro area, services
3. Finland, total index
4. Finland, services

Source: Eurostat.

Chart 4.

Official interest rates

%

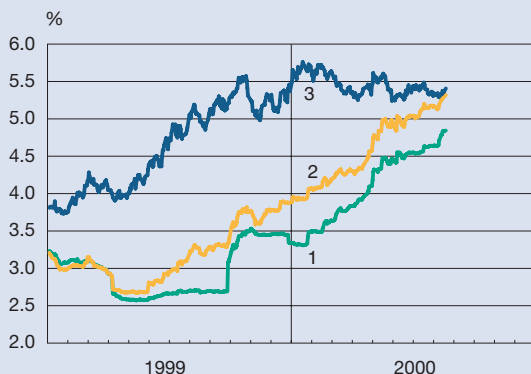


1. USA: fed funds target rate
2. Sweden: repo rate
3. Eurosystem: main refinancing rate/minimum bid rate (German repo rate before 1999)
4. Japan: discount rate

Source: Reuters.

Chart 5.

Interest rates in the euro area



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

Source: Reuters.

has been to operate in a forward-looking fashion in order to ensure that economic growth can continue without running up against rising inflation.

The most recent rate increase was in early June, when the Governing Council raised the ECB's official interest rates by 50 basis points. The Governing Council also decided to switch to variable rate tenders in the conduct of the main refinancing operations, starting from the end of June.¹ Variable rate tenders are conducted by applying the multiple rate auction procedure, in which for each accepted bid the counterparty receives financing at the bid rate. The switch was made in response to the overbidding that had occurred in the context of fixed rate tenders. A minimum bid rate was set for the main refinanc-

¹ For further details, see 'The switch to variable rate tenders in the main refinancing operations' *ECB Monthly Bulletin*, July 2000.

ing operations, which is currently 4.25%. The minimum bid rate signals the monetary policy stance in the same way as the rate applied to fixed rate tenders previously used to do. The announcement of the tender results include, in addition to the total amount allotted, the marginal rate (ie the lowest bid rate at which funds are allotted) and the weighted average rate on accepted bids. The announcement also includes bids accepted at the marginal rate as a percentage of the total amount of bids submitted at this rate.

The Governing Council's decisions to raise interest rates were based on developments in both pillars of the monetary policy strategy. As for the first pillar, monetary and credit aggregates grew strongly throughout 1999 and have continued to do so in the current year, indicating that liquidity is ample. Although the annual rate of increase in the broad monetary aggregate M3 has slowed slightly since May, it still exceeds the reference value. The three-month moving average of annual M3 growth was 6.0% in the period from April to June, compared with 6.4% in the previous three-month period. The growth of loans to the private sector has likewise slowed a little, but it is still high. In June the annual rate of growth of loans to the private sector was 9.2%, a decline of one percentage point from the previous month. As regards the second pillar, it was noted above that there has been upward pressure on consumer prices as a result of rising import prices, which, in turn, reflect the effects of the depreciation of the euro and the higher oil price.

The rate of growth of the Finnish contribution to euro area M3 has fluctuated substantially in the course of this year, mirroring variations in the amount of money market paper outstanding. This development, in turn, is partly due to factors connected with the government's cash management. The three-month moving average of the rate of growth of the Finnish contribution to M3 was 7.4% in the period from April to June. The rate of growth of loans to the private sector in Finland has slowed in recent months and fallen below the corresponding rate for the euro area. The rate of growth in the period from May to June was about 7%, compared with about 10% in the early months of the year. Contributing to this development have been the rise in interest rates and the quieter conditions in the housing market. The stock of bank loans to non-financial corporations has actually de-

creased as compared with the previous year, but this has been offset by increased borrowing abroad and from other financial institutions and insurance companies.

The euro has remained weak

Short-term money market interest rates in the euro area have risen by roughly the same amount as official interest rates this year (Chart 5). Because of strong interest rate expectations, most of the rise in market rates occurred before the hikes in official rates. Bank lending rates have moved hand in hand with market rates. At the present time market expectations are that the Governing Council of the ECB will continue to tighten monetary policy during the autumn.

Official interest rates in the United States have also been raised on several occasions in the current year, most recently in May. US consumer prices have risen as a result of the increase in energy prices and the rate of growth of labour costs has also picked up. Rapid productivity growth has, however, partly offset the effect of wage increases. Recently, signs of a slowdown in US economic activity have strengthened and this has reduced market expectations of interest rate increases.

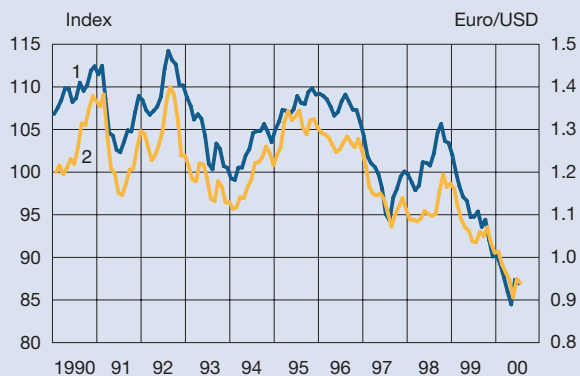
In August the Bank of Japan ended the zero interest rate policy that it had maintained for one and a half years and raised the target for the overnight call rate to 0.25%. The official discount rate was kept unchanged at 0.50% (Chart 4). The decision to raise the call rate was based on the perception that deflationary pressures had receded along with the gradual recovery of the economy.

Like international interest rates, long-term government bond yields in the euro area declined slightly in the early part of the year (Chart 5). Among the factors behind this development were the generally volatile conditions in stock markets and the prospect of changes in the supply of bonds. In the period from April to August the average yield on ten-year bonds in the euro area remained fairly stable at slightly under 5.5%. The differential between US ten-year bond yields and comparable German bond yields has narrowed this year to about 50 basis points.

In foreign exchange markets, the effective exchange rate of the euro weakened by more than 5%

Chart 6.

Euro's effective exchange rate and US dollar – euro exchange rate



1. Index, 1999 Q1 = 100 (left-hand scale) (A)
2. Units of USD per euro (right-hand scale) (B)

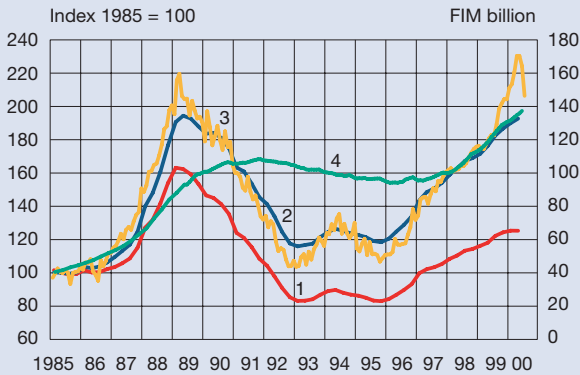
- A. Before 1999 a trade-weighted index of the currencies of the euro area countries. An upward movement in the index represents an appreciation of the euro.
- B. To 31 December 1998, the rate for the ecu.

Source: European Central Bank.

in the first four months of the year (Chart 6). The euro's depreciation was due to a number of factors, including conflicting data on the recovery of the euro area economy and the markets' disappointment at the slow pace of structural reform. The euro strengthened temporarily in May and early June against the major currencies, including the dollar, in response to positive developments in economic growth indicators for the euro area and increased signs that US economic activity was slowing down. Later in the summer the euro fell back against the dollar with the release of better-than-expected growth figures for the US economy. By the end of August the euro had depreciated by more than 15% in effective terms since the beginning of the year while against the dollar it had depreciated by over 20%. The strength and flexibility of the US economy and good earnings prospects of new-technology companies have for a long time now been factors that have attracted investors to dollar-denominated investments.

Chart 7.

Housing prices and growth of housing loans in Finland

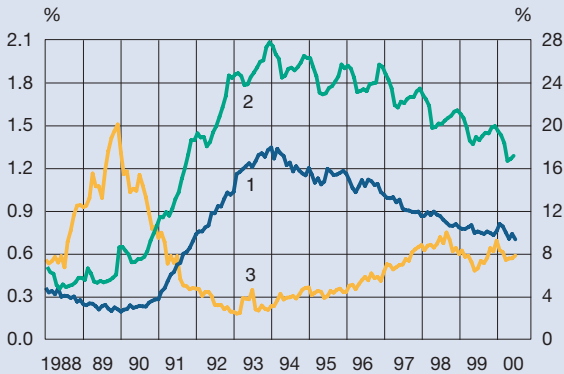


1. Real prices of old dwellings, whole country (left-hand scale)
2. Nominal prices of old dwellings; whole country (left-hand scale)
3. Price of old two-roomed flats in the Greater Helsinki area (left-hand scale)
4. Stock of bank housing loans (right-hand scale)

Sources: Bank of Finland, Huoneistokeskus and Statistics Finland.

Chart 8.

Unemployment and vacancies in Finland



1. Unemployment rate, Statistics Finland measure, seasonally adjusted* (right-hand scale)
2. Unemployment rate, Ministry of Labour measure** (right-hand scale)
3. Number of vacancies as a percentage of the labour force, seasonally adjusted* (left-hand scale)

* Seasonally adjusted by the Bank of Finland.
** Unemployed jobseekers, persons participating in labour market policy programmes and persons receiving unemployment pensions as a percentage of the labour force.

Sources: Statistics Finland and Ministry of Labour.

Strong economic growth in the euro area

Rapid world economic growth, the weakness of the euro and relatively easy monetary conditions have helped to boost economic activity in the euro area. In the first quarter of 2000 real GDP in the euro area grew by about 3.5% compared with the same quarter a year earlier. Industrial production has been growing at robust pace, with year-on-year production growth of more than 6% in the three-month period from March to May. It is noteworthy that industrial production growth has picked up appreciably in the core euro area countries, particularly Germany. Industrial confidence indicators have reached or even surpassed the levels of their previous cyclical peaks, which points to a continuation of strong growth of industrial production in the months ahead.

Private consumption in the euro area was firm in the first quarter of 2000. The consumer confidence indicator for the euro area remains at a high level and close to its all-time high, implying that private consumption is likely to continue growing at a fairly rapid pace. There was also a marked increase in private investment in the first quarter. Export demand was boosted by the rapid growth of the world economy and the weakness of the euro. The contribution of net exports to GDP growth was not particularly large, however, as imports also grew strongly.

The rate of unemployment in the euro area has been declining for nearly three years now. In May the unemployment rate stood at 9.2%, which was lower than in Finland. The largest declines in the unemployment rate this year have occurred in Spain and France. Given the prospect of continuing robust economic growth, the chances of a further reduction in unemployment are good, but could be slowed by structural factors.

Favourable economic conditions in Finland

The Finnish economy grew at an annual rate of about 5% in the first half of 2000, which has been the average rate of output growth in Finland since the mid-1990s. Like the euro area in general, industrial production growth has been exceptionally robust, spurred in particular by strong export demand. Industrial pro-

duction grew by 8.4% in the first six months of the year, compared with the same period a year ago.

The increase in investment activity in the euro area has boosted the exports of the Finnish metal and engineering industries, in particular. Contributing to the good export performance has been the weaker euro, as almost two-thirds of exports go to countries outside the euro area. Moreover, the main sectors have benefited from favourable developments in world market prices this year. Industrial confidence indicators have strengthened further in recent months and cyclical conditions in industry are good on the whole.

As a consequence of the rapid growth of industrial output, capacity utilization rates have risen to high levels, and this is beginning to be an obstacle to continued growth in some sectors. On the other hand, capacity shortages may prompt firms to bring forward planned investment. The survey of investment intentions conducted by the Confederation of Finnish Industry and Employers in the spring points to a marked increase in industrial investment in Finland this year as compared with 1999.

Consumer demand has been robust in the current year. Private consumption expenditure in the first quarter was up by 4.4% from the same quarter a year earlier. Strong growth of retail sales volumes in April and May points to continued robust consumer demand in the second quarter. The business survey conducted by the Finnish Confederation of Commerce and Trade in June showed that retailers were optimistic about the prospects for sales in the second half of this year.

On the basis of the performance of the Finnish economy in the first part of the year, the Bank of Finland's forecast of real GDP growth of about 5% for 2000 still seems to be realistic. However, growth this year has been based more on total domestic demand, notably private consumption, than forecast by the Bank in June.

Housing market activity has remained strong in the current year, although signs of calmer conditions have been discernible since the late spring. Estate agents report that the number of transactions so far this year is down slightly on last year's figures and that properties are taking longer to sell. Prices of old two-roomed flats in the Greater Helsinki area have actually fallen a little (Chart 7). Furthermore, recent evidence from the consumer confidence survey indicates that consumers' house-buying intentions

weakened in the spring. Apart from the perception that dwelling prices are high, the reduced buying interest may reflect the fact that interest rates on new housing loans rose by 1 percentage point in the first six months of the year. Indeed, the rate of growth in the stock of housing loans has slowed this year. Continuing robust economic growth could, however, mean that housing demand will remain strong, particularly in growth centres, regardless of higher interest rates and the high level of prices. Since housing supply responds slowly to changes in demand, rising housing prices in growth centres could become a constraint to growth.

Despite rapid economic growth, employment and unemployment have improved fairly slowly in the current year (Chart 8). According to the labour force survey conducted by Statistics Finland, the seasonally adjusted unemployment rate stood at 9.4% in July, which represents a fall of about half a percentage point from one year earlier. The seasonally adjusted employment rate was slightly higher than in July 1999. Although the number of jobs in industry has risen significantly over the past year, a shortage of skilled labour could impede employment growth in industry in the future. Employment has also increased in the finance and business services sectors. By contrast, there has been only a modest increase in jobs in the trade sector. One feature of recent employment developments has been a reduction in the number of jobs based on fixed-term contracts, particularly among newly employed young people. This reflects both the improved economic situation and a reduction in funds made available for employment subsidies in the public sector.

Increased challenges for economic policy

The Government's budget proposal for 2001 provides for cuts in receipts from state income taxes and social security contributions totalling FIM 6.4 billion a year, equivalent to 0.8% of GDP in comparison with current tax and contribution rates. Income tax revenue is estimated to fall by FIM 5.75 billion, of which FIM 1.35 billion represents an inflation adjustment to tax tables. No changes are proposed in indirect taxation. In the programme drawn up by the Government after the parliamentary elections in spring 1999,

Box. The Bank of Finland's Monetary Conditions Indices

Monetary Conditions Indices (MCIs) can be used to try to assess developments in the stance of monetary policy. As monetary policy affects economic activity and prices mainly through interest rates and the exchange rate, MCIs are normally calculated as the weighted average of a (short-term) interest rate and an exchange rate. The weights reflect the relative impact of the interest rate and the exchange rate on aggregate demand or prices. For large, relatively closed economies the ratio of the weight of the interest rate to the weight of the exchange rate can be as high as 10 while for very open economies ratios typically range from 1 to 3. If, for example, the ratio is 10, then the effect of a one percentage point decrease in the interest rate is equivalent to the effect of a 10% depreciation in the exchange rate.

The Bank of Finland compiles MCIs for Finland and the euro area in both *nominal* and *real* terms. The interest rate used in the *nominal MCIs* is three-month Euribor (prior to 1999 three-month

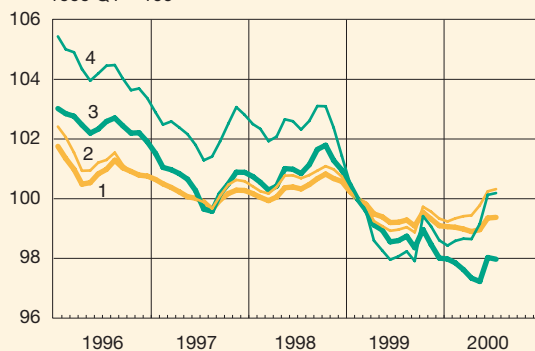
Helibor for Finland and a corresponding weighted money market rate of the euro area countries for the euro area). The exchange rate used for Finland is the narrow plus euro area measure of the national competitiveness indicator² and for the euro area the effective exchange rate of the euro compiled by the European Central Bank. Each MCI is calculated using alternative ratios of the weight of the interest rate to the weight of the exchange rate: 2½ or 5½ in the MCI for Finland and 3 or 10 in the MCI for the euro area. These values can be considered as some kind of extreme values. The deflators used in the *real MCIs* are harmonized indices of consumer prices.

² For details of the competitiveness indicators calculated by the Bank of Finland, see the article 'The new competitiveness indicators compiled by the Bank of Finland', by Lauri Kajanoja in *Bank of Finland Bulletin*, 1/2000.

Chart 9.

Nominal Monetary Conditions Indices

1999 Q1 = 100



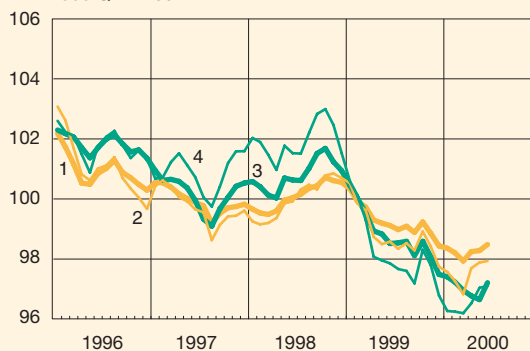
1. Finland, ratio 2.5
2. Finland, ratio 5.5
3. Euro area, ratio 3
4. Euro area, ratio 10

Source: Bank of Finland.

Chart 10.

Real Monetary Conditions Indices

1999 Q1 = 100



1. Finland, ratio 2.5
2. Finland, ratio 5.5
3. Euro area, ratio 3
4. Euro area, ratio 10

Source: Bank of Finland.

Measured in terms of the nominal MCIs, monetary conditions eased in the *euro area countries* on average in the second half of the 1990s (Chart 9). In the period 1996–1998 the easing was mainly due to a marked fall in money market rates in euro area countries, but starting from the beginning of 1999 the depreciation of the euro was also a contributory factor. From mid-1999 onwards the picture of movements in monetary conditions differs slightly according to which MCI – and thus which ratio – is used. Both MCIs nevertheless indicate that monetary conditions were still easier than prior to the onset of Stage Three of EMU.

In the case of Finland, the nominal MCIs show that in recent years monetary conditions have developed in parallel with the euro area on average. Again, it seems to make little difference which ra-

tio is applied. Only in the past few months have movements in the two indices diverged to some extent: the index which gives more weight to movements in the exchange rate indicates that monetary conditions in Finland are still easier than they were in 1998 while the index which gives more weight to changes in the interest rate indicates that there is scarcely any difference anymore.

According to the real MCIs, the easing in monetary conditions in the euro area prior to transition to Stage Three was less pronounced than indicated by the nominal MCIs, reflecting a slowdown in inflation (Chart 10). The real MCIs show that monetary conditions in both the euro area and Finland have eased further since the middle of 1999, despite the rise in interest rates.

the Government undertook to reduce taxes on labour income and social contributions by a total of FIM 10–11 billion during its four-year term. If Parliament approves the budget in its present form, cuts totalling about FIM 8 billion will have been implemented by the end of 2001.

From the standpoint of reducing structural unemployment, the Government's proposed tax cuts are a step in the right direction because the heavy tax burden on labour income is a major factor holding back the growth of the economy and employment. Several international organizations, in addition to most Finnish economic research institutes, have repeatedly drawn attention to the need to increase incentives to work and job creation by lowering taxes. In its review of the Finnish economy published in the summer, the IMF proposed an overall reduction of FIM 20 billion in income taxes and social security contributions over the period 2001–2003. It was further proposed that the tax cuts be complemented by moderate wage settlements and structural measures to increase labour supply. Calculations show that it would be possible to cut taxes and social security contributions on such a scale without jeopardizing the structural surplus in central government finances and the

target set for bringing down the debt-to-GDP ratio. Without complementary measures, tax cuts would increase the risk of economic overheating.

Central government expenditure in the 2001 budget proposal totals FIM 196.6 billion. In its programme the Government set the target of keeping spending unchanged in real terms at the budgeted level for 1999. Last March the Government fixed the medium-term ceilings for the various spending categories. Taking into account these ceilings and the latest inflation forecast, projected central government expenditure in the 2001 budget proposal exceeds the overall spending ceiling by about FIM 2 billion. As the economy has grown faster than expected, the original spending ceilings have become less stringent and the fiscal stance has also eased in this respect in relation to the target laid down in the Government's programme. Since taxes are to be lowered without any offsetting reduction in spending in a situation where the outlook is for continued strong growth, this means that the fiscal stance will ease still further and that the risk of economic overheating will increase. Besides more stringent fiscal policy and moderate wage agreements, ensuring conditions conducive to balanced economic growth calls for structural reforms

aimed at improving the functioning of the labour market and increasing the productive potential of the economy.

Spending discipline is of vital importance since improvement in employment will require new tax cuts in the future. Moreover, developments in other OECD countries are creating pressures for further reductions in the taxation of labour income, in particular. With the general improvement in public finances, easing the tax burden has become a key priority in economic policy in nearly all euro area countries and the United States. In Germany, for example, the Bundesrat, the German upper house, recently approved a major tax-cutting package that will reduce the tax burden of mainly individuals and small and medium-sized enterprises by an amount corresponding to 1.9% of GDP in the period 2001–2005.

A weak euro and interest rates that are calibrated to economic developments in the euro area as a whole have resulted in monetary conditions that for a considerable time now have been lax with regard to the needs of the Finnish economy. When, in addition to this, the fiscal stance in Finland is set to ease in 2001, wage settlements assume even more importance than before. Given the present cyclical outlook, it is not evident that wage settlements alone can bring about or restore conditions necessary for more balanced economic growth.

Regardless of what form settlements take, there should be recognition of the fact that employment developments have not been satisfactory in all areas of the economy. There should be sufficient flexibil-

ity in agreements to allow relative wages to better respond to the labour situation in each sector. This would lead to higher employment and help to keep inflation in check.

Higher-than-expected inflation as a result of the rise in the oil price and a smaller-than-expected rise in real wages during the current agreement period must not lead to compensatory wage increases when the new settlements are negotiated. The high oil price is putting a burden on the profitability of many firms and any compensatory wage increases would only strain it further. A rise in labour costs would lead to faster inflation and in the worst case precipitate a wage-price spiral that would be difficult to control, resulting in weaker-than-expected employment performance. The proposed tax cuts alone will bring about a fairly substantial increase in take-home pay, and this should be borne in mind when negotiating new settlements. There should also be recognition in the labour market of the need for structural labour market reforms aimed at bringing about a significant reduction in unemployment, which remains stubbornly high. Reforms aimed at enhancing the flexibility of the labour market and productive potential of the economy are also essential for maintenance of price stability, especially in the long term.

28 August 2000

■ **Key words: inflation, monetary policy, economic situation**

The electronic equipment industry and Finland's transformation into a high-tech economy

by **Pentti Forsman**, Economist
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The last few years have seen the emergence in Finland of a very strong information and communications technology (ICT) cluster, built largely around the telecommunications giant Nokia.¹ The ICT cluster currently embraces some 3,000 firms. Although the cluster is dominated by the electronic equipment industry, it also includes a number of key service providers, such as telecom operators. The electronic equipment industry, in particular, has brought about major structural changes in several sectors of the economy, one result of which has been diversification of exports. The rise in the economic significance of the cluster is the outcome of heavy investment in research and development. Expenditure on R&D in Finland as a percentage of GDP now ranks with that in the leading industrial countries (Chart 1).² The firms making up the cluster are classified as part of the 'new economy', and they have helped to generate a substantial increase in wealth through higher stock market values. This wealth, in turn, provides a pool of capital that can be used to finance other rising technology firms.

The structural change that has occurred in the Finnish economy is most clearly evident on the Helsinki Stock Exchange, where market capitalization as a percentage of GDP is now one of the highest in the world (Chart 2). The sharp rise in equity prices and partly related increase in housing prices has aroused suspicions that the technology boom poses a risk to the Finnish economy. It nonetheless appears that the danger of economic overheating has receded along with a rise in interest rates.

Often, rapid growth gives rises to expectations that the good times can continue indefinitely, and in these circumstances the potential risks are easily forgotten.

¹ Ali-Yrkkö et al. (2000).

² Malkamäki and Virén (2000).

³ Ericsson is almost as important for the Swedish economy as Nokia is for the Finnish economy.

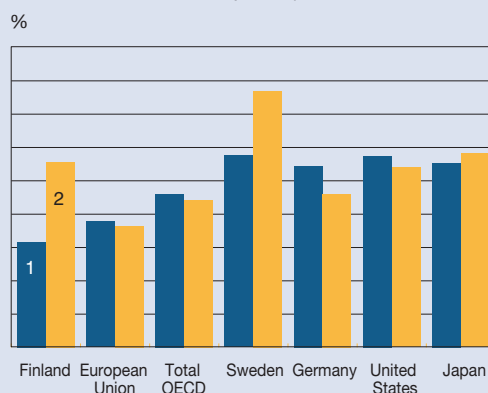
The growth of the Finnish electronic equipment industry has led to a marked increase in tax revenues and provided room for manoeuvre in the public sector. Expansion of the public sector during boom times may, however, have to be followed by renewed fiscal tightening during the next economic downturn.

Factors behind the success of the electronic equipment industry

The ground for the emergence of Finnish and Swedish companies in the 1990s as world leaders in the manufacture of mobile telephones and supply of mobile telephone networks was laid in earlier times.³

Chart 1.

R&D expenditure as a percentage of GDP
(Gross domestic expenditure on research and development)

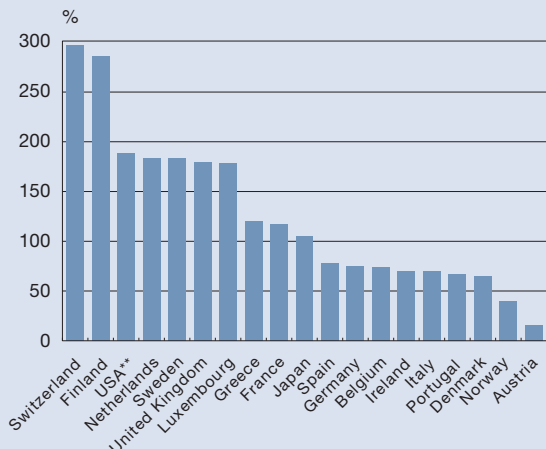


1. 1985
2. 1997

Sources: OECD and Malkamäki and Virén (2000).

Chart 2.

Market capitalization of listed shares as a percentage of GDP, 30 June 2000*



* GDP figures are forecasts.

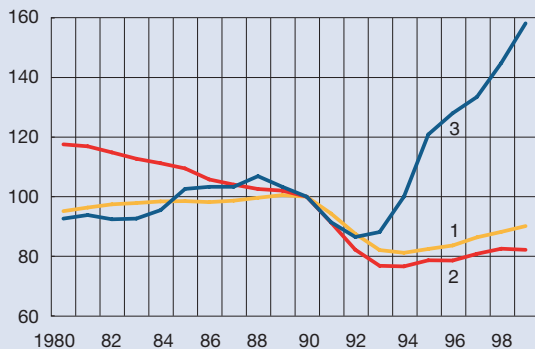
** NYSE and Nasdaq.

Sources: FIBV, Eurostat and Bank of Finland.

Chart 3.

Employment

Index 1990 = 100



1. Whole economy
2. Manufacturing (excl. electrical and optical equipment)
3. Electrical and optical equipment

Sources: Statistics Finland and OECD.

The Nordic countries first discussed a common mobile telephone standard in the 1960s, and these discussions subsequently led to the introduction of the first-generation analogue mobile telephone system NMT (Nordic Mobile Telephony). Technological development was also fostered by the fact that telephone markets in the Nordic countries were competitive to some degree. Although the provision of telephone services was in the hands of monopolies, the market for equipment was open to competition. This made for increased efficiency and responsiveness to the changing needs of consumers. Sales of mobile phones in the Nordic area were already quite considerable in the late 1980s, and large domestic markets made it possible to invest heavily in product development. In the 1980s Nokia was, for a time, the world's largest manufacturer of mobile phones.

GSM (Groupe Speciale Mobile, also known as Global System for Mobile Communications), the second-generation technical standard for digital mobile telephone networks, was introduced in Europe at the end of the 1980s. At this time Finland and Sweden were already well advanced in both the manufacture of digital mobile phones and supply of digital networks. They were therefore in a strong position when the growth of the mobile telephone sector took off in Europe. The world's first GSM call was made in Finland in 1991 and since then the sector has expanded at phenomenal pace.

A key factor contributing to the success of the Finnish ICT cluster is the strategic decision taken by Nokia, the dominant player in the sector, to focus on mobile telephone communications. The popularity of Nokia among foreign investors and the resultant rise in the company's stock market value have also supported Nokia's other lines of business. The severe economic recession experienced by Finland in the early 1990s and the difficulties encountered by traditional industries may also have been conducive to the establishment of the new sector; both highly educated engineers and the labour needed for assembly were readily available at the time.

Growth and profitability of the electronic equipment industry

Initially, the recovery of the Finnish economy from the recession of the early 1990s was very difficult.

Although a sharp fall in the markka boosted exports, growth of output was achieved mainly by raising productivity. In fact, the electronic equipment industry was the only sector where there was a significant increase in the number of employees in the period up to 1998 (Chart 3). In spite of this, productivity growth in the sector was huge, as production grew five-fold after 1992 while the number of employees increased by only one and a half times (Chart 4). With the emergence of labour shortages in the home market, the number of new jobs in the sector is currently growing at faster rate abroad than in Finland.⁴

A feature of the electronic equipment industry that sets it apart from other sectors is its excellent profitability, which also explains the high stock market values of firms in the sector. In 1999 operating surplus accounted for between 55 and 60% of value added in the electronic equipment industry (Chart 5).⁵ Profitability in the sector was already very high in the 1980s in comparison with other manufacturing sectors, despite relatively low levels of capital.⁶ Admittedly, the profitability of other manufacturing sectors did rise in the period 1993–1998 but only to the average level for the 1980s.

The exceptionally high profitability of the electronic equipment industry and the high stock market values of firms in the sector have had no impact on general wage inflation, which right up until very recently has remained moderate. The ease with which firms in the sector can shift production abroad if costs become too high may have increased wage moderation. A relatively small number of workers are actually employed in the manufacture of mobile phones and telephone exchanges in Finland and a considerable proportion of executive and other professional

⁴ Of Nokia's total labour force of 60,000, about 25,000 work in Finland. According to Ali-Yrkkö et al. (2000), a further 14,000 people work for Nokia in Finland in some 300 subcontracting firms.

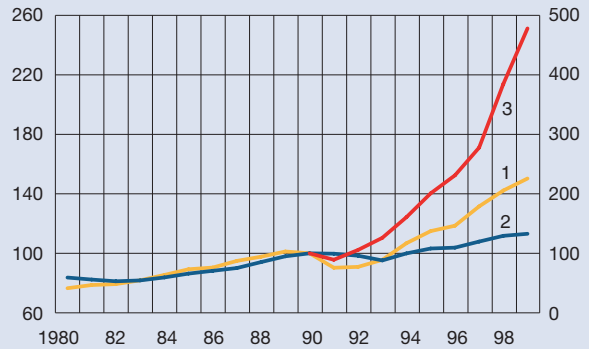
⁵ A firm's value added is obtained by subtracting the value of raw materials and services purchased by the firm from the value of its sales. It consists of wages paid and profits earned by the firm. Broadly speaking, the value added of the whole economy is the sum of all firms' value added.

⁶ The exceptional profitability performance of the sector is most clearly evident in Nokia's results for the first six months of 2000, which show that annualized profit per employee (including those employed outside Finland) was high as EUR 96,000 compared with EUR 74,000 in 1999.

Chart 4.

Volume of industrial production

Volume 1990 = 100

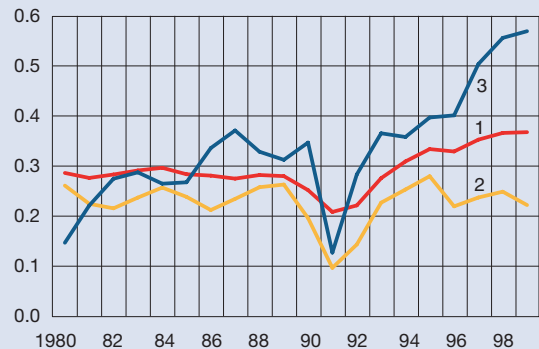


1. Finland, total index (left-hand scale)
2. EU-15, total index (left-hand scale)
3. Finland, manufacture of electrical and optical equipment (right-hand scale)

Sources: Statistics Finland and OECD.

Chart 5.

Operating surplus as a percentage of value added

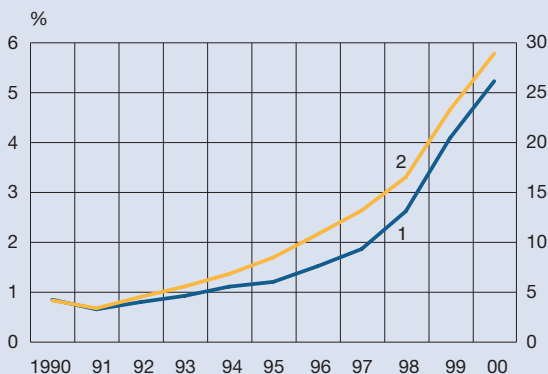


1. Market production
2. Manufacturing (excl. electrical and optical equipment)
3. Electrical and optical equipment

Sources: Statistics Finland and Bank of Finland.

Chart 6.

Nokia's share of GDP and exports



1. GDP (left-hand scale)
2. Exports (right-hand scale)
Source: Ali-Yrkkö et al. (2000).

staff participate in share option schemes of various kinds. Evidently, the shift in income distribution in the economy in favour of capital income has become a lasting phenomenon.

The importance of Nokia and other ICT firms for the Finnish economy

The rise of the ICT cluster has made a major contribution to the growth of the Finnish economy during the past decade. In 1999 Nokia alone accounted for a full 1.2 percentage points of Finnish GDP growth of 4% (Ali-Yrkkö et al., 2000), just under 4% of GDP (Chart 6) and 24% of total exports. The electronic equipment sector as a whole accounted for nearly 30% of total Finnish exports, which is almost as large as the share of the forest industries.

High-tech products make up an increasingly large part of Finnish exports. In 1997 the ratio of high-tech exports to high-tech imports in Finland was one

of the highest in the EU area.⁷ This trend has become even more pronounced with the recent rapid growth of exports by the electronic equipment industry. Similarly, there has been heavy investment in R&D. Malkamäki and Virén (2000) estimate that in 1998 R&D expenditure in Finland as a percentage of GDP rose to close to the level prevailing in the United States, Sweden and Germany. In particular, Nokia's share of total R&D expenditure has increased substantially.⁸

It is quite clear that Finland owes its new found position at the forefront of technological development in the industrialized world to the rise of the electronic equipment industry. This, in turn, has boosted the demand for highly skilled workers and Finland can, with justification, now be said to be a knowledge-based economy. In principle, a highly educated labour force should make the economy less prone to cyclical fluctuations by making it easier for labour to adapt to changes in demand.

In addition to human capital accumulation, the rapid development of the ICT cluster has created new stock market wealth in Finland. True, a substantial portion of this wealth is owned by foreigners. While the bulk of this newly generated wealth has gone to investors, key employees in ICT firms have also received a share. Finns own about 12% of Nokia (equivalent to almost EUR 25 billion). If Nokia's share price fluctuates widely, foreign investors bear most of the risk.

Foreign ownership carries other advantages apart from risk diversification. In international markets the entire electronic equipment industry is evaluated on the basis of the same criteria and the same information. Investors force firms to compete with each other not only for market share but also in terms of the effectiveness of R&D efforts in generating efficiency gains. Foreign ownership has therefore made firms more competitive and given them greater visibility in global markets.

⁷ Ali-Yrkkö et al. (2000).

⁸ Ali-Yrkkö et al. (2000).

Opportunities and challenges

Wireless telecommunications is currently one of the fastest growing markets and seems set to expand further in the near future. The number of mobile phone subscribers worldwide is probably well over 400 million and the one billion mark is expected to be passed in the next few years. This year alone sales of mobile phones are projected to exceed 400 million units. In a number of large European markets such as France and Germany penetration rates for mobile phones are still low in comparison with the Nordic countries. Adding to the demand for mobile phones is the fact that in many developing countries, like China, mobile telephones are often a cheaper solution than a fixed telephone network. But perhaps the most important consideration from the point of view of profitability is the extension in the use of mobile phones beyond voice transmission to data and image transmission. Similarly, the practice whereby a subscriber has number of mobile phones for different purposes is becoming increasingly widespread in industrial countries.

Over the last few years the financial position of the public sector in Finland has improved at a rapid pace, partly because of the growth of the ICT cluster. If, as the market expects, the earnings performance of ICT firms improves further in the years ahead, corporate and personal income tax revenues will continue to soar as a result of option-related share sales and capital gains.⁹ This could make it difficult to curb the growth of public expenditure, which is a key requirement for the growth of the economy in the longer term. Market difficulties would probably not have an immediate impact on employment in the electronic equipment industry, however, because of the cushioning effect provided by good profitability. On the other hand, a weakening in the profit outlook would push down share prices, which could lead to lower consumption and tax receipts.

⁹ For example, Nokia paid corporate tax totalling EUR 1.2 billion on its pre-tax profit of EUR 3.8 billion in 1999, with EUR 0.7 billion of this sum being paid in Finland. This year Nokia's pre-tax profit is expected to total more than EUR 5 billion, so that corporate tax payable in Finland will be more than EUR 1 billion, when calculated using the same relative share as in 1999.

There has been some concern in Finland that ICT firms or their head offices might relocate abroad. In Sweden it has been suggested that research activities and other highly skilled work might shift abroad along with the head office. Braunerhjelm and Lindqvist (1999) nevertheless argue that there is little evidence to support this view and that relocation abroad is not even necessary given the excellence of today's communications. In their calculations Braunerhjelm and Lindqvist show that the relocation of the head office abroad or the sale of the firm to a foreign company as a subsidiary would not have a serious impact on either employment or government tax revenues in the home country. Corporate tax is paid on basis of the location of the place of business, not of the head office. In that case the firm concerned would pay corporate tax on the basis of profits earned in Finland, provided it did not want to, or could not, transfer profits abroad. Braunerhjelm and Lindqvist do, however, draw attention to a number of other significant drawbacks associated with the relocation of the head office abroad, such as the drying up of demand by the head office for locally provided services requiring a very high level of skill. Also, the interest of foreign investors and other key stakeholders in the sector and in Finland in general could diminish.

Summary

Profitability in new industries is typically good in the beginning but falls with time as competitors develop substitute products. The product cycle may also come to an end because of lack of interest by consumers. The product cycle of the electronic equipment industry may eventually enter the stage of decline but it could take years or even decades before this happens. Product development in this sector is very rapid and good profitability can be maintained by constantly developing new products. Globalization offers further opportunities for Finland's electronic equipment industry. China's possible membership of the World Trade Organization is a good example of the potential in this regard.

The success of the electronic equipment industry has affected the fortunes of other firms and sectors in the economy. The rapid expansion of the industry and the recruitment of resources that has accompanied it have, at least to some extent, displaced other

activities. On the other hand, the rise of the electronic equipment industry has helped to diversify Finland's industrial base by adding a third pillar alongside the traditional forest and engineering industries. At the macroeconomic level, the sector is likely to continue to be a major factor contributing to Finland's rapid economic growth and dampening the amplitude of cyclical fluctuations.

8 August 2000

- **Key words: electronic equipment industry, information and communication technology cluster (ICT cluster), Nokia**

References:

Ali-Yrkkö, J, Pajja, L, Reilly, C, and Ylä-Anttila, P (2000), 'Nokia – a big company in a small country', B 162, ETLA, 2nd edition.

Braunerhjelm, P and Lindqvist, T (1999), 'Utöandrarne – effekter och drivkrafter bakom huvudkontorslyften', *Ekonomisk Debatt* 8/1999 (in Swedish).

Malkamäki, M and Virén, M (2000), 'Technological innovation and economic performance in the Nordic countries', The Council on Foreign Relations' project on Technological Innovation and Economic Performance.

Country studies: *The Nordic Countries* (unpublished).

Structural inflation differences in an enlarged euro area¹

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In the soon-to-be 12 countries of the euro area, there are considerable differences in living standards. Measured in euro, the per capita GDP of Portugal and Greece are each less than half that of Germany or Austria. A further 13 countries are in line for accession, several with per capita GDP levels that are less than half those of Portugal or Greece. In the coming years and decades, a catching-up process should lessen these differences. This is a welcome and healthy development, which will ultimately make for a stronger, richer, more vibrant and more stable EMU. Nonetheless, the catching-up process may also imply structural inflation differences for some time to come. The process should therefore be monitored closely by policymakers.

Differences today

The scope for catching up in living standards is illustrated in the accompanying chart. This chart includes all countries currently in the EU, as well as those that are formal candidates for accession. Per capita GDP is shown on the vertical axis, with the EU15 average normalized to 100. The horizontal axis shows cumulative population, and the countries are ordered from richest to poorest. As presented, the scope for catching up is large, and is set to increase further with EMU enlargement.

For the current euro area plus Greece, the scope for catching up is also illustrated in the accompanying table, which shows relative per capita incomes in euro and relative price levels.

¹ This article is based on the author's paper 'Real convergence in the enlarged euro area: a coming challenge for monetary policy', *Economics Department Working Papers*, 1/2000, Bank of Finland.

Catching up via faster growth and inflation

Catching up occurs via two mechanisms: faster real growth and faster inflation. These two variables move together in a process first described by Balassa and Samuelson in 1964. The intuition is that incomes are lower in poorer countries because manufacturing productivity is lower. Since prices of manufactured goods are set on world markets, lower productivity translates into lower wages. As productivity increases, the economy will grow in real terms and wages will increase.

In contrast with the manufacturing sector, productivity in the non-traded (service) sector is similar in both rich and poor countries. Nevertheless, service sector prices are much lower in poorer countries, because prices are set in local markets instead of on world markets. As poor countries catch up with

Table. Relative rankings of income and price levels in the euro area and Greece

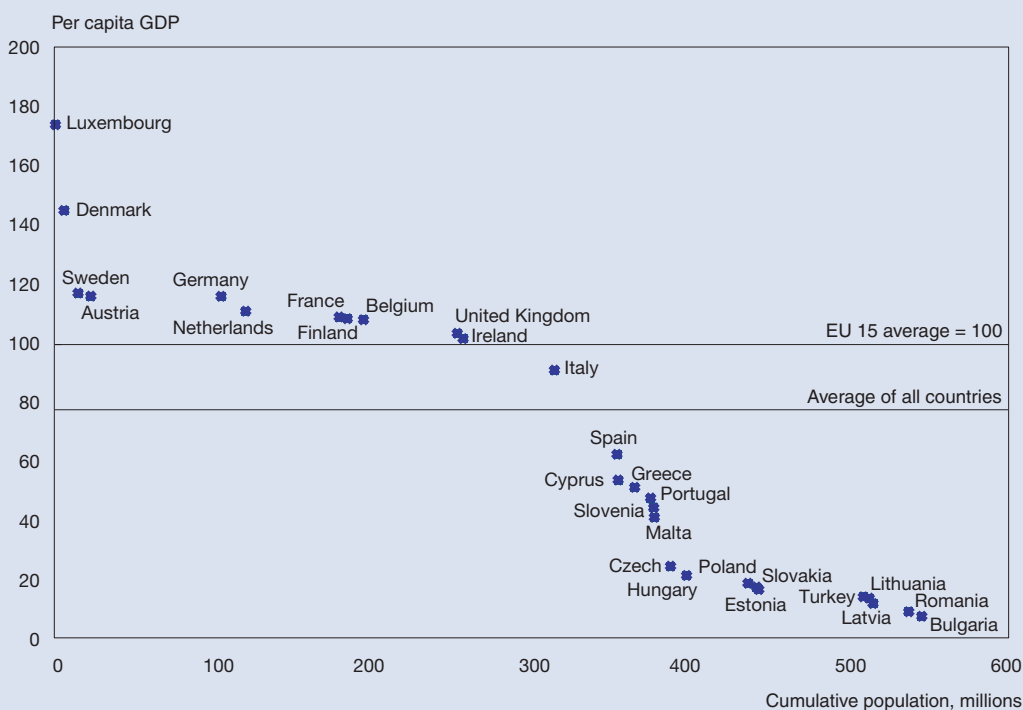
	GDP per capita ¹	Price level ²
Luxembourg	184	108
Austria	118.9	104
Germany	116.5	108
Finland	111.7	109
Belgium	110.2	98
France	109.2	108
Netherlands	109.2	98
Ireland	107.3	96
Italy	89.8	90
Spain	64.6	80
Greece	n.a.	80
Portugal	50	65

¹ Data from 1999, not PPP-corrected; Euro11=100. Data source: Eurostat.

² Data from 1997; EU15=100. Data source: European Commission.

Chart.

Relative per capita GDP distribution of European countries



rich countries in manufacturing productivity and wages, however, changes in the local markets will result in wages rising in the service sector as well. Prices will also rise because these wage increases are not matched by increases in service sector productivity. Hence, catching up occurs via both real growth and measured inflation, and as poorer EU countries catch up with richer ones, they can be expected to experience higher inflation.

In theory, adroit monetary policy in the catching-up countries should allow them to maintain external balance, stable traded-goods prices and stable exchange rates despite higher consumer price inflation and higher across-the-board wage increases. This would imply that monetary policy accommodates the increase in non-traded goods prices, but no more. Real interest rates would be lower than in more advanced countries, and current accounts would show deficits without, however, putting pressure on the exchange rate. A lower rate of growth of money supply would require that the nominal exchange rate

appreciates and domestic currency prices of traded goods decline. In practice, however, catching-up processes have often followed a particular macroeconomic path of development. First, rapid growth is accompanied by higher inflation, which causes the currency to appreciate in real terms. This real appreciation causes an external imbalance, as exports become less competitive and imports rise, especially consumer imports. External balance is then restored by adjusting the exchange rate downwards.

Lately, this process has become less stable because of the emergence of large cross-border capital flows. Such flows may magnify and accelerate the real appreciation, an external imbalance and a subsequent exchange rate adjustment. Consequently, with greater capital mobility, the dangers associated with fixed exchange rate regimes are now more pronounced than in the past, with currency adjustments sometimes having very disruptive consequences.

Now consider how catching-up might take place under EMU, with a common currency, a common

monetary policy and full capital mobility. The increased economic integration provided by EMU probably helps to accelerate a catching-up process. As before, rapid growth should be accompanied by higher inflation through the Balassa-Samuelson mechanism. Higher inflation decreases the real interest rate and promotes further borrowing, some of which is, in fact, required to finance the investment that makes catching up possible. If there is overheating, this cannot be countered by monetary policy, which is set according to the average circumstances in the EMU as a whole. In such a situation, more aggressive countervailing fiscal and structural measures would be required to maintain stability. In summary, poorer EMU members may find the journey to increased prosperity both faster and bumpier, and must exercise due care not to capsizе en route.

As for wealthier EMU countries, they need to recognize that area-wide price stability requires higher inflation in some parts of EMU to be offset by lower inflation in other parts. If catching-up widens the dispersion of inflation rates, the countries at or near the extremes will face an increased burden of adjusting fiscal and structural policies. This is equally true for countries with the lowest inflation in the euro area as it is for high inflation countries.

Empirical evidence

To better understand how catching-up processes can be successfully managed in monetary unions, it is worthwhile to look at the examples of successful, longstanding monetary unions in the United States and Canada. In both of these countries, catching up across regions has occurred in recent decades, but differences remain in the order of 10–20% around the average. This convergence process does not seem to have been very disruptive, but in part this is due to the fact that the regional dispersion of income has not been nearly as large as it is today across European states. From the chart, it is clear that the poorest accession countries have incomes that are up to 80% below the euro area average. Moreover, both Canada and the United States seem to have experienced much larger migration flows than are being projected in Europe, which may help to explain the smoothness of income convergence on the other side of the Atlantic.

Regression estimates in Björkstén (2000) indicate that while catching up appears to take decades rather than years, the estimated speed is still sufficiently rapid to result in substantial inflation differentials during that time period. At first, higher inflation in the poorest countries of an enlarged EMU will not have much effect on euro area averages, since the economic weight of these countries is relatively small. However, as incomes converge, the weight of the catching-up countries will converge towards their population share in the enlarged euro area, and this is a very large proportion indeed – about one third, in fact. Of course, towards the end of the convergence process, catching-up related differences in inflation will gradually disappear.

Conclusions

Three conclusions can be drawn from the above. First, catching up is likely to be an important issue for the enlarged euro area because of the implied large and sustained inflation differentials that it may entail. This needs to be taken into account in planning the timetable for EMU (as distinct from EU) enlargement, as well as in formulating an economic strategy for responding to the mechanisms driving catching-up, including migration, etc.

Second, as far as accession countries are concerned, the catching-up effect needs to be taken into account in formulating economic policy targets prior to accession. It is quite possible that the inflation levels proposed by the Maastricht treaty may be too low for several accession countries with substantial scope for catching up. An inflation level below 2%, which may be ideal for current euro area countries, may at present only be compatible with slow growth or even recession in poorer accession countries.

Finally, all catching-up countries need to make sure that institutions are robust enough to weather a potentially fast and bumpy ride towards prosperity. This includes prudent management of fiscal balances and adequate supervision of the banking sector in the event of fast growth and accelerating demand for credit.

Institutionally, it must be kept in mind that in a monetary union there can only be one single monetary policy and one single (policy) interest rate. It is not possible, nor would it be desirable, for the Euro-

pean Central Bank to try to reconcile the common monetary policy with differing inflation developments within the euro area. It is up to national policymakers to keep economic developments stable and balanced. The task of managing EMU enlargement in a sustainable and non-disruptive way must therefore fall to economic policymakers in the countries themselves, as post-enlargement economic strategies are prepared.

8 August 2000

- **Key words:** catching up, convergence, inflation, enlargement

References

- Balassa, B. (1964), 'The purchasing power parity doctrine: a reappraisal', *Journal of Political Economy*, December, pages 584–596.
- Björkstén, N. (2000), 'Real convergence in the enlarged euro area: a coming challenge for monetary policy', *Economics Department Working Paper*, 1/2000, Bank of Finland.
- Samuelson, P. (1964), 'Theoretical notes on trade problems', *Review of Economics and Statistics*, 46, May, pages 145–154.

Retail payments in Finland: changes in the 1990s

by **Jussi Snellman**, Economist
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Although retail payments in Finland were dominated throughout the 1990s by credit transfers, card payments and cash payments, the decade was one of major changes. Payment media, and particularly distribution channels, became more diversified and payment methods more electronified. Traditional methods, involving personal service and manual processing, gradually diminished in importance as customers switched from service to self-service and from service centre to home, thus making payments less dependent on time and place.

Developments in payment methods in the 1990s

Credit transfers

Credit transfers, whereby customers use funds in their accounts for making payments, are the most frequently used non-cash payment method. Of the 738 million payments transmitted by Finnish banks in 1999, some 65% were credit transfers. Executing a credit transfer requires that the payer first make a payment order, which can now be done in more ways than ever, thanks to technological advances.

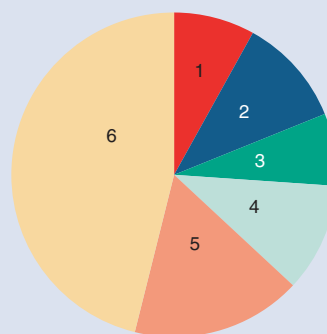
Home banking by telephone was launched in 1982 and PC banking, based on home computers and modems, in 1984. These were followed by giro ATMs in 1989 and Internet-based services in 1996. The latest advance is the provision of credit transfer services via mobile phone, a service now available in Finland (since 1996), Norway, Sweden and a number of other countries. Mobile phone-based WAP¹ services are on the increase, though their usage is still rather lim-

ited. Since credit transfer orders can still be made at bank branches or dropped off in payment service envelopes, the range of methods available for making orders is now very wide (Chart 1).

In recent years there has been rapid growth in use of the Internet for executing credit transfers. All of the Finnish banks provide these and other Internet services. Another popular self-service channel for credit transfers is the giro ATM (an ATM with a bill/giro payment facility but no cash withdrawal function), the number of which increased fivefold during the 1990s. This growth has come to a halt, however,

Chart 1.

Breakdown of credit transfers by transmission channel in 1998



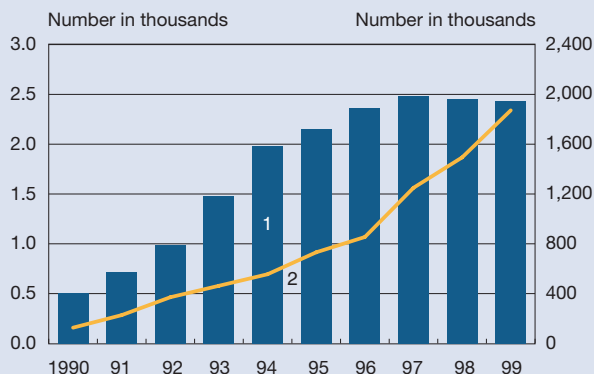
1. Bank branches (8 %)
2. Payment service (11 %)
3. Direct debiting (7 %)
4. PC or telebanking (11 %)
5. Giro ATM (17 %)
6. Electronic data interchange (EDI) between firms (46 %)

Source: Finnish Bankers' Association.

¹ Wireless Application Protocol, which enables the use of Internet services via mobile phone.

Chart 2.

Giro ATMs and data transfer agreements between banks and customers



- 1. Giro ATMs (left-hand scale)
- 2. Telebanking and offline agreements (right-hand scale)

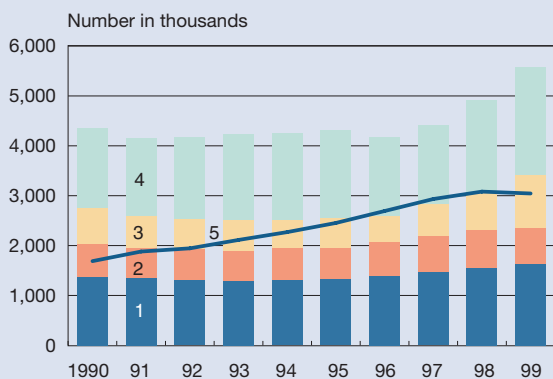
Source: Finnish Bankers' Association.

as banks have begun to encourage customers to switch (and customers have out of their own volition switched) to other service modes, including computer-based Internet terminals, which are intended to replace giro ATMs over the next few years. In Finland the bulk of credit transfers are executed electronically. At present, some 85% of all customer payment orders are transmitted to banks electronically. But despite all the technological advances, traditional ways of executing credit transfers are still available.

Although direct debiting became widespread in Finland in the 1990s, growing at an annual rate of 25% on average, the volumes involved are still fairly modest (Chart 2). In direct debiting, a customer enters an agreement with a named creditor under which the customer authorizes his bank to debit his account on due dates in payment of specified bills, without the need for any action on the part of the customer. The lack of popularity of this method can be ascribed to the easiness of executing credit transfers. Another likely factor is that people prefer to make final decisions on payments themselves and are thus reluctant to permit automatic debiting of their accounts.

Chart 3.

Payment cards outstanding



- 1. Debit cards
- 2. Multi-purpose cards
- 3. Credit cards
- 4. Retail cards
- 5. Cash cards

Source: Finnish Bankers' Association.

Card payments

Payment cards can be divided into debit, credit, pre-paid and multipurpose cards. There are two types of credit card: general purpose credit cards and retail cards (issued eg by petrol station chains). The number of payment cards outstanding increased rapidly in the 1990s, particularly in the second half of the decade, to about 5.6 million at the end of 1999 (Chart 3). The number of cash cards (used for withdrawing cash from cash dispensers but not for EFT-POS payments) also increased, to 3.4 million at the end of 1999. During the 1990s the annual total value of card payments also increased substantially, from FIM 47.2 billion to FIM 84.6 billion.² Over the same period, the average annual number of transactions per debit card outstanding rose from 66 to 92, and from 24 to 32 for general purpose credit cards. In 1999 there were about 63 card payments per capita.

In 1999 there were about 1.4 payment cards per Finnish adult, of which 0.9 were general purpose credit cards. Not all Finns have payment cards yet,

² Finnish Bankers' Association (1993 and 2000).

but the arrival of ‘online cards’ may change the situation. These are linked to customers’ accounts and function like debit cards except that they prevent overdrawing of accounts. The online card is therefore an option for customers who, for example, cannot obtain a debit card.

Cash payments

Despite the development and spread of alternative payment methods, cash still plays a significant role in the payment system. Cash payments account for a substantial share of the total number of payments in the economy. According to a 1992 survey on households’ use of different payments methods, cash payments accounted for 40% of total value and over 80% of the number of transactions.³ Cash was thus the dominant medium for small-value payments. A more recent estimate by the Bank of Finland indicates that the use of cash is still widespread, nor has there been a notable decline in its relative importance in recent years.⁴ Cash withdrawals have largely shifted from bank branches to cash dispensers, which in 1999 accounted for 80% in value terms. The number of cash dispensers has declined in recent years, from a peak of about 3,000 in 1993 to some 2,200 in 1999.

In Finland the ratio of the value of banknotes and coins in circulation to GDP is low, 2.2% in 1999 (Chart 4). The ratio declined steeply until the first half of the 1990s but has increased slightly in recent years. This pattern of development may be partly explained by the low level of interest rates, which has reduced the opportunity cost of holding money, as well as the weakening of the trend for substitution by non-cash payments. Moreover, the decline in numbers of cash dispensers and bank branches may have increased the inclination to hold cash because there are now fewer places where cash can be obtained.

Electronic money

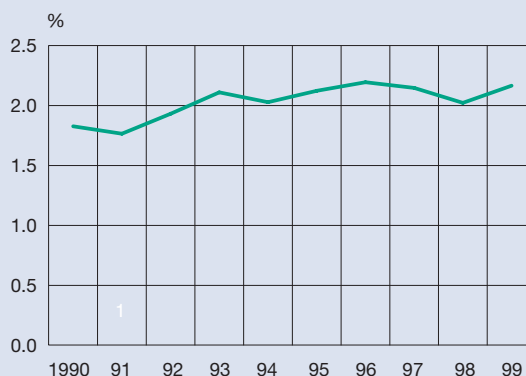
Electronic money can be broadly defined as ‘an electronic store of monetary value on a technical device

³ Virén (1993), pp. 56–60.

⁴ Snellman and Vesala (1999) and Snellman, Vesala and Humphrey (2000).

Chart 4.

Ratio of cash held by the public to GDP¹



¹ Excl. cash in cash dispensers.

Source: Bank of Finland.

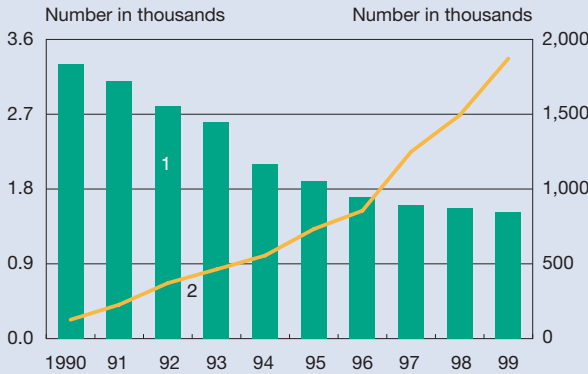
that may be widely used for making payments to undertakings other than the issuer without necessarily involving bank accounts in the transaction, but acting as a prepaid bearer instrument’.⁵ At present, Finland has only one general purpose e-money scheme – Automatia’s Avant II – which has been in operation since 1997. Avant money is available in the form of disposable cards or reloadable smart cards issued by banks (the e-money function is embedded in a debit or credit card). E-money is not very widely used as yet. In 1999 some 510,000 payments were made with e-money, and at year-end there were about 450,000 e-money cards outstanding.⁶ Currently, some 600 service providers accept e-money and about 5,300 such payment terminals are in use.

⁵ ECB (1998).

⁶ Automatia.

Chart 5.

Bank branches and data transfer agreements between banks and customers



- 1. Bank branches (left-hand scale)
- 2. Telebanking and offline agreements (right-hand scale)

Source: Finnish Bankers' Association.

Availability of different payment methods and new technologies

Developments in the availability of payment methods in the 1990s were marked by divergent trends. Availability of services tied to physical outlets decreased as the total number of bank branches was reduced sharply, from 3,300 to 1,500. During the same period the number of bank employees was halved, roughly from 50,000 to 24,000. Numbers of cash dispensers and giro ATMs have also declined in recent years. These changes are partly due to the banking crisis of the early 1990s and banks' need to cut costs, as well as the trend in recent years towards mergers and alliances in the banking sector. In the last couple years declines in numbers of branches and employees have slowed. In the future the development and density of service networks based on physical outlets may be significantly affected by banks' cooperation with other service providers and developments in new service concepts (Chart 5).

The decline in the 1990s in the level of service provision based on physical outlets was counterbalanced by significant growth in remote-access payment methods. There has been particularly rapid growth in the use of Internet-based payment services, and mobile phone-based payment services have also come on stream. It is likely that by the end of this year almost all banking services will be available via mobile phone. Thus remote access to payment services is already possible using fairly inexpensive terminals.

New developments in electronic payment methods

The latest development in Internet banking and payment services is the routing of bills through the Internet. Customers of certain service providers, eg telephone companies, can request that their bills be sent electronically to their own Internet banking website or by email instead of by ordinary mail. There are two options for paying bills: direct debiting, ie automatic debiting of the customer's account on the due date, and 'direct payment', which requires that the customer approve the payment via the Internet service function.

Banks are trying to increase usage of their existing Internet services by providing e-commerce payment facilities. The customer pays for an online purchase by selecting from the merchant's website the Internet payment code for his own bank and accepting the bill that appears on the screen. After this, he is directed to his bank's website in order to execute the payment. The arrangement requires prior agreements between the merchant and the bank (on Internet payments) and between the customer and the bank (on Internet banking services). At least for now, the two agreements must involve the same banking group.

In the near future technological advances, particularly in wireless access to Internet, will enable provision of more sophisticated payment services. Within a couple years the third generation of mobile phones and Bluetooth technology (short-range wireless data communications) will enable new payment methods. The role of wireless media – Internet and mobile phones – in provision of payment services will strengthen further. Besides Internet-based (wired

or wireless) solutions, a number of other service channels are available or under development, including digital TV. Generally speaking, technologically literate customers will have access to an increasingly wide range of payment services whereas others, who are not familiar with these devices, may encounter difficulties. Similarly, the pricing of these services may put them beyond the reach of some user groups.

Developments in Finland

European countries differ widely as regards the use of different payment media (Chart 6). In comparison with other EU countries, Finland can be described as a credit transfer and card payment country where the cash-to-GDP ratio is very low and the use of cheques virtually non-existent (Chart 7).

Electronification of retail payments has also reached an exceptionally advanced stage in Finland. Especially with regard to Internet-based banking services, Finland is at the forefront; for example, in mid-1999 Europe's three largest Internet banks, as measured by number of Internet customers, were MeritaNordbanken, the Amalgamation of cooperative banks and Leonia. Since all three of these are quite small relative to Europe's largest banks, Finnish banks can be said to lead Europe in terms of Internet banking. By contrast, the number of bank branches in relation to population in Finland is below the average for euro area countries. In 1998 the Finnish ratio (3.1 per 10,000 inhabitants) was the lowest in the euro area; the GDP-weighted average for euro area countries was 5.4.

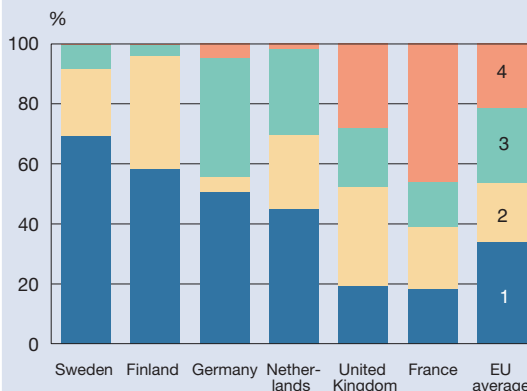
The Finnish retail payment system did not come about by accident, but rather is the product of a long development process. At least three factors have contributed to its development: banking sector regulation; interbank cooperation; and heightened competition following deregulation.

Competitive effects of past regulation

As a result of an understanding reached between banks, employers and employees, Finland gradually adopted a 'salary bank' scheme in the course of the 1960s whereby wages and salaries were paid into bank accounts instead of in cash. The changeover led to

Chart 6.

Breakdown of number of non-cash payments in selected EU countries, 1998

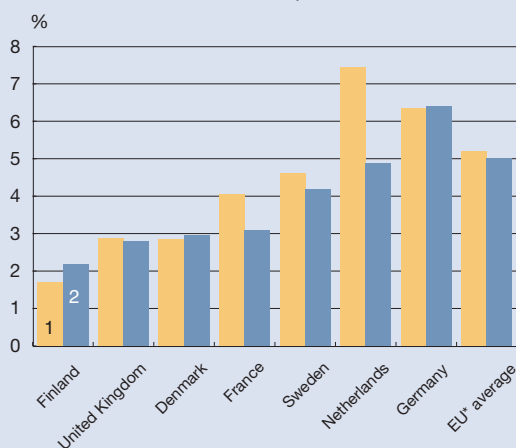


1. Credit transfers
2. Card payments
3. Direct debits
4. Cheque payments

Sources: ECB and Finnish Bankers' Association.

Chart 7.

Ratio of cash held by the public to GDP in selected EU countries, 1990 and 1998



1. 1990
2. 1998

* Figure for 1990 excludes Finland, Sweden and Austria, which joined the EU in 1995.

Sources: ECB and Finnish Bankers' Association.

the further spread of bank accounts among the working population and hence to greater opportunities for using account-based funds instead of cash for making payments. At this time the Finnish banking sector was very highly regulated, and remained so until the mid-1980s. The regulatory structure precluded the possibility of interest rate competition between banks but guaranteed them a high level of profitability. Because it was impossible to compete via interest rates or lending, the only way that banks could hope to gain market share was by improving the level of services. One way to do this was to expand the branch network and develop payment services. As increasingly large numbers of Finns had bank accounts by the start of the 1970s as a consequence of the salary bank arrangement, the banks had an incentive to offer payment services that were tied to bank accounts. Moreover, since regulation ensured the profitability of banking business, it was not necessary to price the new services on the basis of costs. The services were usually offered free of charge as a means of attracting new customers. This is essentially the way things worked in Finland all the way up until the 1990s.

Interbank cooperation

Through their cooperative efforts, banks have been able to cut costs by developing and applying new technologies. In Finland this cooperation has been particularly active in the area of payment methods. One of the first results of this was the standardization of the bank giro. After the post giro was introduced in 1939, the banks were quick to jointly develop the bank giro in order to compete with the Post Office. A more recent example of cooperation among banks was the establishment in 1994 of the Automatia company for handling cash dispensers for the largest banks. Interbank cooperation has been facilitated by the positive attitude on the part of Finnish authorities.

Deregulation and banking competition

The situation in Finland prior to the banking crisis of the 1990s was exceptional. Although payment transfers were already highly electrified by international standards, the bank branch network was still ex-

tremely dense. The severe recession and banking crisis of the early 1990s forced banks to seek every means of cutting costs. Bank branches were closed in large numbers, and banks employed pricing as an inducement for customers to switch to less costly electronic payment methods.

Price incentives and level of service increased the public's interest in the new banking services. The rapid acceptance of new services was also aided by the existence of a good infrastructure for Internet- and mobile phone-based services. Finns are among the most active Internet users in the world. A private study by Taloustutkimus found that 1.7 million people in Finland used the Internet in 1999, and it is expected that the number will rise to 2.2 million in 2000. Finland leads the world in terms of penetration of mobile phones. More than 75% of Finnish households have access to a mobile phone. Because the necessary infrastructure is in place, it is natural that customers are increasingly becoming users of new services, which are often more user-friendly than the older ones. Generally, one does not need to queue up to use Internet banking services, and payments can be made without regard to time or location.

Future prospects

Can the Finnish experience be used as a basis for forecasting developments in other European countries? Despite globalization, social and other country-specific factors impinging on the structure of a country's payment system will continue to affect developments in the near future. Thus, while self service and remote services will expand in other countries, developments in these countries are unlikely to mimic the Finnish experience in all respects. For example, it would make no sense for these countries to build up a network of highly expensive giro ATMs given that other, more cost-effective, alternatives such as the Internet are now available.

Differences are also discernible between Finland (and other Nordic countries) and several other European countries as regards attitudes to Internet banking and the way it is organized. Banks in the Nordic countries have tended to consider the Internet to be part of their basic operations whereas banks elsewhere have often set up Internet operations in separate units. However, the overall pattern of development is the

same. All forecasts point to rapid growth in numbers of Internet customers throughout Europe over the next few years, and this means that the Internet will also become increasingly important in the provision of payment services.

10 August 2000

■ **Key words: payments, retail payments, payment media, electrification**

References

European Central Bank (2000), *Payment systems in the European Union. Addendum incorporating 1998 figures*, Frankfurt, February.

European Central Bank (1998), *Report on electronic money*, Frankfurt, August.

European Monetary Institute (1997), *Payment systems in the European Union*, Frankfurt, January.

Finnish Bankers' Association (2000), *Statistical data on banks' payment systems in Finland*.

Finnish Bankers' Association (1993), *Payment systems and banks' distribution networks in Finland*.

Kontkanen, E (ed) (1996), *Pankkitoiminnan käsikirja*, Kirjayhtymä Oy, Helsinki (in Finnish).

Snellman, J and Vesala, J (1999), 'Forecasting the electrification of payments with learning curves: the case of Finland', *Bank of Finland Discussion Papers*, 8/1999.

Snellman, J, Vesala, J and Humphrey, D (2000), 'Substitution of noncash payment instruments for cash in Europe', *Bank of Finland Discussion Papers*, 1/2000.

Virén, M (1993), 'Maksuvälineiden käyttö ja käteisrahan kysyntä Suomessa', *Bank of Finland Publications*, A:87 (in Finnish with English summary).

Items

The Board of the Bank of Finland

On 18 May 2000 **Esko Ollila**, the Deputy Governor, informed the Parliamentary Supervisory Council that he would retire on 1 January 2001. Mr Ollila reached the retirement age of 60 in July. Mr Ollila was appointed to the Board in summer 1983.

Matti Korhonen, Member of the Board, died on 29 June 2000. Mr Korhonen was appointed Member of the Board with effect from 1 January 1998.

Supplementary budget

In June Parliament approved the first supplementary budget for 2000, amounting to a total of FIM 19.5 billion. FIM 10.9 billion was earmarked for additional net redemptions of central government debt and FIM 5.8 billion for debt servicing costs arising mainly from debt repayment prior to maturity. The rest comprised various outlays of an administrative nature, including additional funds to cover wage increases negotiated in early spring. Total budgeted expenditure for 2000 was raised to FIM 202.3 billion (excluding net debt redemptions).

On the revenue side, proceeds from sales of Government property were revised upwards by FIM 10.4 billion, largely as a result of the sale of shares in Sonera Oyj. There was also a FIM 2.1 billion increase in estimated revenue from dividends, which was mainly due to the exceptionally large dividends paid out by Leonia Oyj. Tax revenue estimates were revised upwards by FIM 6.5 billion. Total budgeted revenue for 2000 was raised to FIM 219.1 billion.

Commemorative coin for the church

On 29 March 2000 the Ministry of Finance decided on the striking of a silver commemorative coin in honour of the international celebration of the Church's Jubilee Year and of the 700th anniversary of Turku Cathedral. The nominal value of the coin is FIM 100, and the maximum number to be struck is 25,000.

The basis for the design of the coin – entitled *Year of Peace* – is the work of the artist Maija Lavonen who won the competition for the design of the coin. The coin measures 35 mm in diameter and weighs 22 grams. The obverse comprises an embossed text in curvature form, *Annus jubelei MM-Annus spei*, around a Swedish whitebeam leaf, with a Greek cross at the bottom. The reverse features the vault of a church encircled by the text *2000, FIM 100, SUOMI* and *FINLAND*.

The new coins went on sale on 18 April 2000. The price of the BU version is FIM 158, and the proof version is priced at FIM 268.



Commemorative coin for the church

Commemorative coin for Helsinki

On 17 May 2000 the Ministry of Finance decided on the striking of a silver commemorative coin for the city of Helsinki to mark the city's 450th anniversary and the fact that it is one of the European cultural capitals for the year 2000. The nominal value of the coin is FIM 100, and the maximum number to be struck is 20,000.

The design of the coin is by the sculptor Reijo Paavilainen and is entitled *Growing City*. The design was chosen on the basis of a competition held in autumn 1999.

The coin weighs 22 grams and measures 35 mm in diameter. The obverse features the words *CULTURAL CAPITAL FINLAND SUOMI* in curvature form, and at the centre there is an embossed stylized depiction of a column. The capital of the column is encircled by the EU circle of stars, with *2000* on the right-hand side. The reverse features the text *HELSINKI • 450 • HELSINGFORS* in curvature around a

stylized embossment of a group of buildings in Helsinki, with FIM 100 in raised text on the left-hand side.

The new coins went on sale on 9 June 2000. Some of the coins are of a special quality in that they have a gloss finished background and matt finished motif. The price of the BU version is FIM 158, and the proof version is priced at FIM 268.



Commemorative coin for Helsinki

The Eurosystem's monetary policy instruments 15 August 2000

Key interest rates

The main refinancing operations are the principal monetary policy instrument used by the Eurosystem¹. 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. From the beginning of 1999 to June 2000 the main financing operations of the Eurosystem were conducted using the fixed rate tender procedure. At its meeting on 8 June 2000 the Governing Council of the ECB decided that, starting from the operation to be settled on 28 June 2000, the main financing operations of the Eurosystem would be conducted as variable rate tenders, using the multiple rate auction procedure. Furthermore, the Governing Council decided to set a minimum bid rate for these operations. The minimum bid rate was initially set at 4.25%, the same level applied for the previous fixed rate tender operations. In the new procedure the minimum bid rate signals the monetary policy stance, which previously was indicated by the rate applied to fixed rate tenders.

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 9 June 2000, the interest rate on the Eurosystem's marginal lending facility is 5.25% and the overnight interest rate on the deposit facility 3.25%.

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. 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 movements in overnight interest rates by providing or absorbing overnight liquidity and to signal

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.

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 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% 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. When the main financing operations are conducted as variable rate tenders, the interest rate on minimum reserves is determined on the basis of the marginal interest rates applied in the tenders held during the maintenance period in question.

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
Treviso Bank Plc
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 na-

tional 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

Informed Trading, Short Sales Constraints and Futures' Pricing

Pekka Hietala – Esa Jokivuolle –
Yrjö Koskinen
4/2000

The purpose of this paper is to provide an explanation for relative pricing of futures contracts with respect to underlying stocks using a model incorpo-

rating short sales constraints and informational lags between the two markets. In this model stocks and futures are perfect substitutes, except for the fact that short sales are only allowed in futures markets. The futures price is more informative than the stock price, because the existence of short sales constraints in the stock market prohibits trading in some states of the world. If an informed trader with no initial endowment in stocks receives negative information about the common future value of stocks and futures, he is only able to sell futures. Uninformed traders also face a similar short sales constraint in the stock market. As a result of the short sales constraint, the stock price is less informative than the futures price even if the informed trader has received positive information. Stocks can be under- and overpriced in comparison with futures, provided that market makers in stocks and futures only observe the order flow in the other market with a lag. Our theory implies that: 1) the basis is positively associated with the contemporaneous futures returns; 2) the basis is negatively associated with the contemporaneous stock return; 3) futures returns lead stock returns; 4) stock returns also lead futures returns, but to a lesser extent; and 5) the trading volume in the stock market is positively associated with the contemporaneous stock return. The model is tested using daily data from the Finnish index futures markets. Finland provides a good environment for testing our theory, since short sales were not allowed during the period for which we have data (27 May 1988 – 31 May 1994). We find strong empirical support for the implications of our theory.

■ **Key words:** futures' markets, short sales constraints, asymmetric information

Labour Supply and Income Tax Changes: A Simulation Study for Finland

Mika Kuismanen
5/2000

It is well known that estimation of the labour supply function is complicated by the non-linearity of the individual's budget constraint. Non-linearity may be caused by a number of factors such as the structure of the tax/benefit scheme or overtime rates. Non-linearities also cause problems in interpreting the

policy implications of the estimates. In this study we use a well-structured econometric labour supply model that mimics actual budget constraints as closely as possible to analyse the labour-supply effects of different income tax regimes and systems. In addition to the empirically-specified labour supply model, we construct, for the first time in Finland, a behavioural microsimulation model. Our intent is to contribute to the tax debate in Finland by simulating several suggested changes in the tax system. Our simulation results show that none of the proposed reforms are self-financing. Revenue-neutral proportional tax systems do not have major effects on labour supply. The most pronounced behavioural effects are achieved when marginal tax rates are reduced at the lower end of the State income tax schedule.

■ **Key words:** microsimulation, labour supply, taxation

Payments Remain Fundamental for Banks and Central Banks

Ralf Pauli
6/2000

Is commercial banking in the traditional sense obsolete? Are we in fact witnessing the emergence of a fundamentally new era of finance and payments intermediation? These questions are raised in this paper. Instead of a formal analysis, an attempt is made here to approach these questions from a historical perspective and a practitioner's standpoint. Which factors have in the course of time shaped the role of commercial banks and are present trends in the market eroding the foundation of traditional commercial bank functions to the extent that we are actually entering upon something that is new in a fundamental way.

Of course, we will not get definitive answers. The conclusion arrived at in the paper is that banks will remain important intermediators of financing and payments, and that these functions will constitute the core of banking also in the foreseeable future. This however does not exclude structural changes in the banking sector as a whole and in the activities of individual banks. On the contrary, these are essential to the survival of banks.

The paper analyses prospects for new media of exchange replacing deposit money. It is concluded that, as regards asset transfers in the capital market becoming a dominant medium of exchange (in the spirit of the New Monetary Economics), there are serious impediments.

Payment flows have increased sharply at the same time as the whole banking sector has been making the adjustment to a more competitive situation. This has accentuated the role of the central bank as a payments service provider to the banks and particularly as an overseer of payment systems. The central bank's role as payment systems overseer is likely to receive even greater emphasis in the future. The central bank's oversight mandate requires further specification as regards the payment systems to be overseen and how oversight relates to banking supervision.

Our analysis demonstrates also that current trends in the market are not weakening but rather are strengthening the traditional interrelationship between banks and the central bank in the field of payments. The roles of the banks and the central bank still need fine tuning. It is concluded that payment systems can best serve the rest of the economy if the prime responsibility to develop the systems is left to the private sector, while the central bank has a recognized position as a public policy entity that will do what is necessary to achieve a sufficient level of safety and efficiency.

■ **Key words:** payments, oversight, medium of exchange, bank, central bank

Surveys on Electronic Money

Yuksel Gormez – Forrest Capie
7/2000

This paper investigates the views of electronic money operators and innovators on the possibilities and implications of e-money, especially with respect to replacing central bank money as well as technical issues regarding e-money, its implications for the financial industry and central banking. This has been done using surveys of major e-money innovators and operators, based on the assumption that these operators and innovators are likely to shape the future framework for e-money schemes. It seems that innovators and operators are quite confident about the

future of e-money – despite problems and obstacles surrounding current testing – and that central banks’ monopoly of the issuance of money as a medium of exchange will no longer be unchallenged.

- **Key words:** electronic money, financial regulation, central banks, financial innovation

Housing Markets, Liquidity Constraints and Labor Mobility

Markus Haavio – Heikki Kauppi
8/2000

Recent European data indicate that countries where a large proportion of the population lives in owner-occupied housing are experiencing higher unemployment rates than countries where the majority of people live in private rental housing, which might suggest that rental housing enhances labor mobility. In this paper, we develop a simple intertemporal two-region model that allows us to compare owner-occupied housing markets to rental markets and to analyze how these alternative arrangements allocate people in space and time. Consistent with the empirical observations, we find that the interregional labor market is more fluid under rental housing than under owner-occupation. As a result of greater mobility, the rental arrangement also results in better allocational efficiency than owner-occupation. When dwellings are rented, the decision to move to a booming region is largely based on current productivity, whereas under owner-occupation random wealth effects encourage deviations from this optimal behavior.

- **Key words:** labor mobility, liquidity constraints, owner-occupation, rental housing

BOFIT Discussion Papers

Econometric Analysis of Currency Substitution: A Case of Latvia

Vadims Sarajevs
4/2000

The paper provides a comprehensive econometric analysis of currency substitution for Latvia. Rather than drawing inferences on the degree of currency substitution from domestic money demand modelling, the most common approach to empirical analysis of the phenomenon, direct modelling of currency substitution ratio is applied. Extensive model construction, estimation, evaluation and testing are performed. Methodological issues are also discussed. No simple policy recommendations can be made at this stage of research, but a number of instruments are identified, which can be used by the authorities to influence currency substitution behaviour.

- **Key words:** currency substitution, exogeneity, unit roots, causality, cointegration, parameter constancy

Fiscal Policy and Structural Reforms in Transition Economies: An Empirical Analysis

Jukka Pirttilä
5/2000

This paper makes an empirical examination of the relationship between fiscal balance and structural reforms using panel data from 25 transition economies. The results indicate that price liberalisation has a positive impact on fiscal performance, while privatisation and restructuring, via unemployment, affect the fiscal balance negatively. These findings are somewhat in contrast with earlier empirical work and theoretical transition economics that maintain fiscal pressures are most severe in fast-reforming countries. The analysis further suggests that countries with better fiscal positions may have benefited from favourable initial conditions.

- **Key words:** fiscal policy, structural reforms, transition economies

**Tax Evasion in a Transition from
Socialism to Capitalism:
The Psychology of the Social Contract**

Martti Vihanto
6/2000

In a common assumption of the economics of tax evasion, extending beyond the basic Allingham-Sandmo model, the choice of a taxpayer to evade taxes depends upon the perceived fairness of the tax system. The purpose of the paper is to provide a psychological foundation for this assumption by drawing on Hayek's theory of human behavior as a process of rule following. According to the main hypothesis, taxpayers are more compliant with tax laws to which they can in principle give their full consent. A social contract as a basis of tax policy may provide a potent means to combat tax evasion particularly in transition economies that have inherited a deep mistrust of the government from their socialist past.

- **Key words: tax evasion, social contract, economics of psychology, transition economies, Austrian economics**

**Development and Efficiency of
the Banking Sector in a Transitional Economy:
Hungarian Experience**

Iftekhhar Hasan – Katherin Marton
7/2000

The paper analyzes the experiences and developments of Hungarian banking sector during the transitional process from a centralized economy to a market-oriented system. The paper identifies that early reorganization initiatives, flexible approaches to privatization, and liberal policies towards foreign banks' involvement with the domestic institutions helped to build a relatively strong and increasingly efficient banking system. Banks with higher foreign bank ownership involvement were associated with lower inefficiency.

- **Key words: banking, transition, efficiency, privatisation, Hungary**

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 551,123 inhabitants, Espoo (Esbo) 209,667, Tampere (Tammerfors) 193,174, Vantaa (Vanda) 176,386 and Turku (Åbo) 172,107.

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 2000 to 1 March 2006, is Ms Tarja Halonen.

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; Centre 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, 1 by the Swedish People's

Party, 2 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 Stage Three of EMU in 1999.

The economy

Output and employment. Of the gross domestic product of FIM 625 (EUR 105) billion in basic values in 1999, 1.3% was generated in agriculture, hunting and fishing, 2.4% in forestry, 27.2% in industry, 5.6% in construction, 12.3% in trade, restaurants and hotels, 9.2% in transport and communications, 3.9% in finance and insurance, 17.6% in other private services and 20.5% by producers of government services. Of total employment of 2.2 million persons in 1999, 6.5% were engaged in primary production, 27.9% in industry and construction and 65.6% in services.

In 1999 expenditure on the gross domestic product in purchasers' values amounted to FIM 724 (EUR 122) billion and was distributed as follows: net exports 8.1% (exports 37.4%, imports -29.3%), gross fixed capital formation 19.1%, private consumption 50.3% and government consumption 21.5%. Finland's tax ratio (gross taxes including compulsory employment pension contributions relative to GDP) was 46.1%.

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 1.7% in 1990–99. Finland's GDP per capita in 1999 was USD 25,113.

Foreign trade. EU countries absorb the bulk of Finnish merchandise exports. In 1995–1999 their average share was 55.9%. Over the same period, Finnish exports to other European countries (including Russia) accounted for 18.2% and to the rest of the world for 25.9%. During the same period the regional distribution of Finnish merchandise imports was quite similar to that of exports: EU countries accounted for 56.0%, other European countries for 16.8% and the rest of the world for 27.2%.

In 1999 the share of forest industry products in total merchandise exports was 29.4%, the share of metal and electrical products 53.2% and the share of other goods 17.4%. Raw materials and intermediate goods and energy together accounted for 49.8% of merchandise imports, capital goods for 25.8% and durable and non-durable consumer 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 July 2000). Finland has three major groups of deposit banks with a total of about 1,540 branches. There are three big commercial banks with national branch network and six smaller ones. The commercial banks have a total of 17 foreign branches, subsidiaries and associate banks and 18 representative offices abroad. There are 40 savings banks, a group of cooperative banks (244) and 43 local cooperative banks. In addition, 7 foreign banks have branches and 5 foreign banks have representative offices in Finland.

Financial markets. The total stock of domestic credit amounted to FIM 754.0 (EUR 126.8) billion at end-March 2000 and was broken down by lender group as follows: deposit banks 54%; insurance companies 6%; pension insurance institutions 20%; other credit institutions 10%; central and local authorities and social security funds 10%.

In the money market, the total value of instruments outstanding was about FIM 140.3 (EUR 23.6) billion at end-June 2000; bank certificates of deposit accounted for 79% of the total and Treasury bills, commercial paper and local authority paper for the rest.

At end-December 1999 there were 104 companies on the Main List, 39 on the Investors' List and 8 on the NM List of the HEX, Helsinki Exchanges. At end-June 2000 total market capitalization was FIM 2,184.4 (EUR 367.4) billion for the Main List, FIM 9.5 (EUR 1.6) billion for the Investors' List and FIM 6.5 (EUR 1.1) billion for the NM List. Domestic bonds and debentures in circulation at end-June 2000 amounted to FIM 322.8 (EUR 54.3) billion; government bonds accounted for 82% of the total. Share turnover on the HEX, Helsinki Exchanges amounted to FIM 623.1 (EUR 104.8) billion in 1999. In January-June 2000 share turnover amounted to FIM 703.9 (EUR 118.4) 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 electrification 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

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Balance sheet of the Bank of Finland, million EUR

	2000			
	26.5.	30.6.	28.7.	25.8.
Assets				
1 Gold and gold receivables	456	477	477	477
2 Claims on non-euro area residents denominated in foreign currency	8 270	8 117	8 397	8 300
2.1 Receivables from the IMF	758	800	811	878
2.2 Balances with banks and security investments, external loans and other external assets	7 512	7 317	7 585	7 422
3 Claims on euro area residents denominated in foreign currency	746	760	743	736
4 Claims on non-euro area residents denominated in euro	813	2 882	1 993	1 111
4.1 Balances with banks, security investments and loans	813	2 882	1 993	1 111
4.2 Claims arising from the credit facility under the ERM II	–	–	–	–
5 Lending to financial sector counterparties in the euro area denominated in euro	887	184	167	202
5.1 Main refinancing operations	884	170	152	187
5.2 Longer-term refinancing operations	–	11	11	11
5.3 Fine-tuning reverse operations	–	–	–	–
5.4 Structural reverse operations	–	–	–	–
5.5 Marginal lending facility	–	–	–	–
5.6 Credits related to margin calls	–	–	–	–
5.7 Other claims	3	3	3	3
6 Securities of euro area residents denominated in euro	–	–	–	–
7 General government debt denominated in euro	–	–	–	–
8 Intra-Eurosystem claims	768	2 912	768	2 489
8.1 Share in ECB capital	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	–	–	–	–
8.4 Other claims within the Eurosystem (net)	–	2 144	–	1 721
9 Other assets	614	620	613	618
Total assets	12 555	15 952	13 159	13 932

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

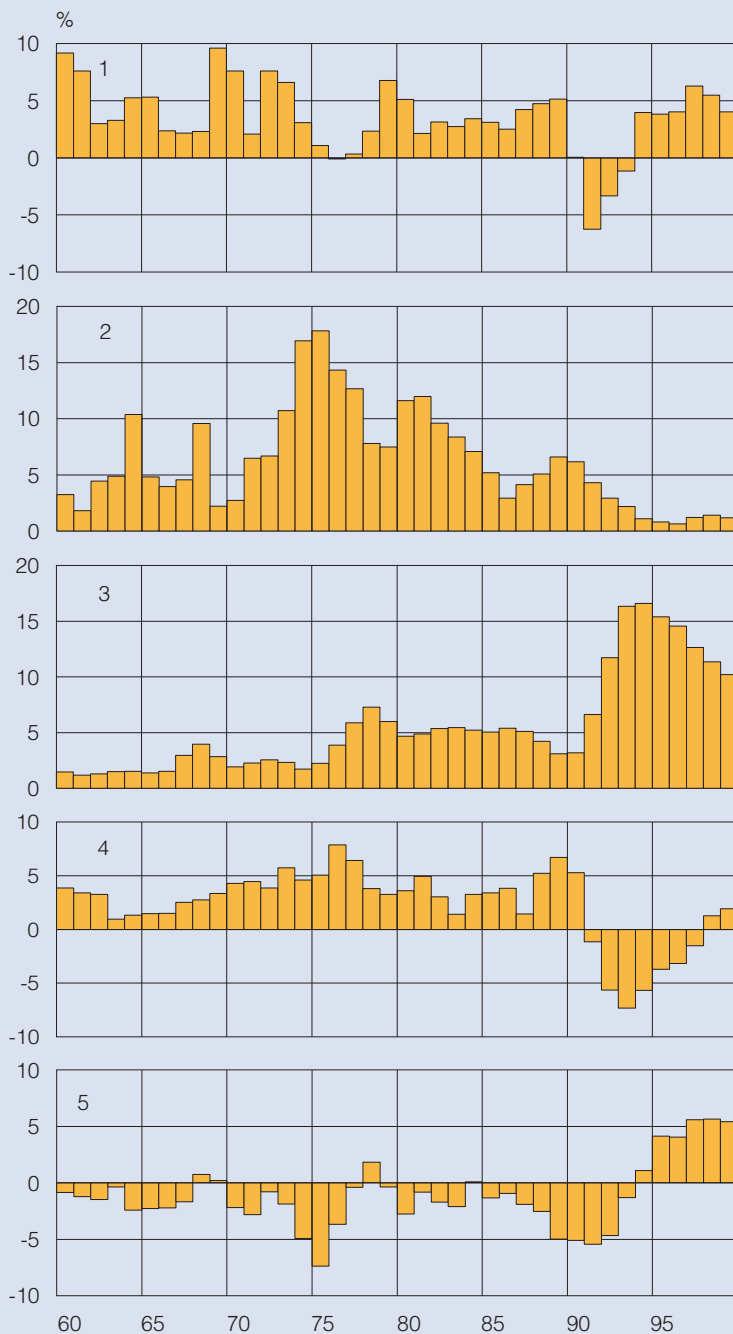
2000

	26.5.	30.6.	28.7.	25.8.
Liabilities				
1 Banknotes in circulation	2 686	2 782	2 799	2 750
2 Liabilities to euro area financial sector counterparties denominated in euro	1 604	1 905	1 948	1 192
2.1 Current accounts (covering the minimum reserve system)	1 604	1 905	1 948	1 192
2.2 Deposit facility	–	–	–	–
2.3 Fixed-term deposits	–	–	–	–
2.4 Fine-tuning reverse operations	–	–	–	–
2.5 Deposits related to margin calls	–	–	–	–
3 Liabilities to other euro area residents denominated in euro	1	1	1	3
3.1 General government	–	–	–	–
3.2 Other liabilities	1	1	1	3
4 Liabilities to non-euro area residents denominated in euro	1 597	5 887	2 063	4 459
5 Liabilities to euro area residents denominated in foreign currency	–	–	–	–
6 Liabilities to non-euro area residents denominated in foreign currency	105	147	368	210
6.1 Deposits, balances and other liabilities	105	147	368	210
6.2 Liabilities arising from the credit facility under the ERM II	–	–	–	–
7 Counterpart of special drawing rights allocated by the IMF	202	200	202	204
8 Intra-Eurosystem liabilities	1 161	–	718	–
8.1 Liabilities related to promissory notes backing the issuance of ECB debt certificates	–	–	–	–
8.2 Other liabilities within the Eurosystem (net)	1 161	–	718	–
9 Other liabilities	249	317	345	399
10 Revaluation account	1 475	1 240	1 240	1 240
11 Capital and reserves	3 475	3 475	3 475	3 475
Total liabilities	12 555	15 952	13 159	13 932

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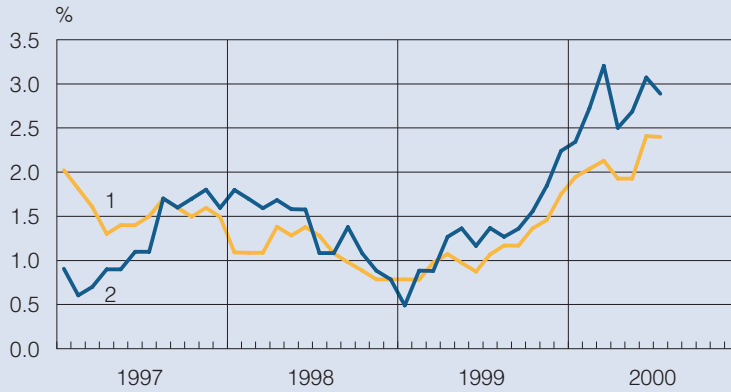
1. Finland: key economic indicators



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

Sources:
 Statistics Finland and
 Bank of Finland.

2. Price stability in the euro area and Finland

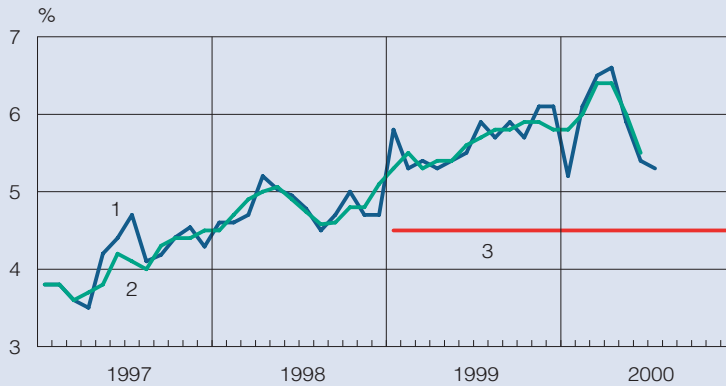


Harmonized Index of Consumer Prices, 12-month percentage change

1. Euro area countries
2. Finland

Sources:
Eurostat and Statistics Finland.

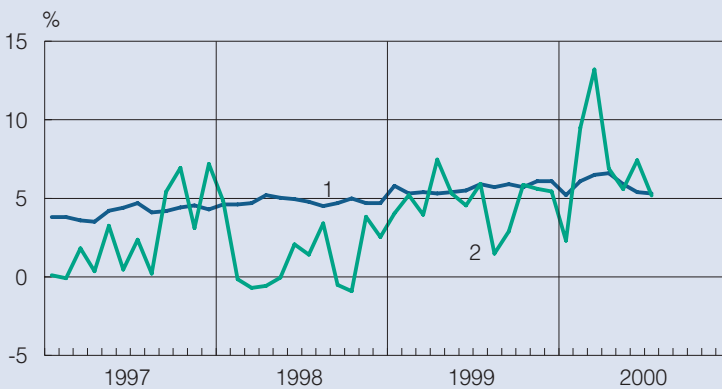
3. Monetary aggregates for the euro area



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

Source:
European Central Bank.

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

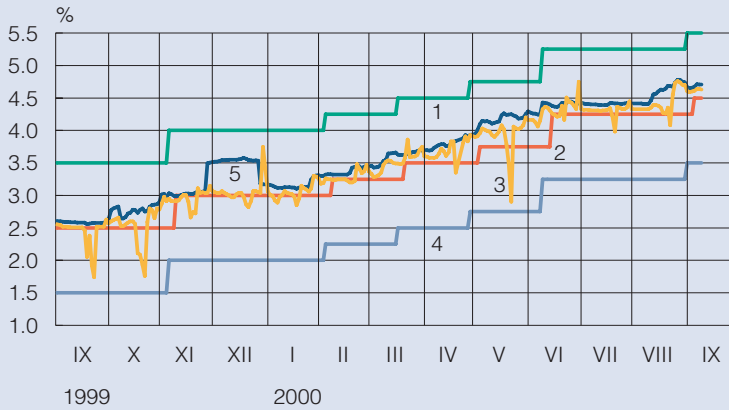


12-month percentage change

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

Sources:
European Central Bank and Bank of Finland.

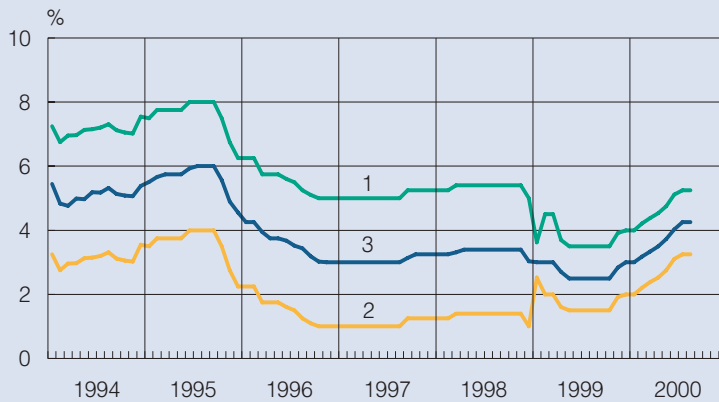
5. Eurosystem interest rates and money market rates



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

Sources:
European Central Bank and Reuters.

6. Eurosystem (Bank of Finland) interest rates

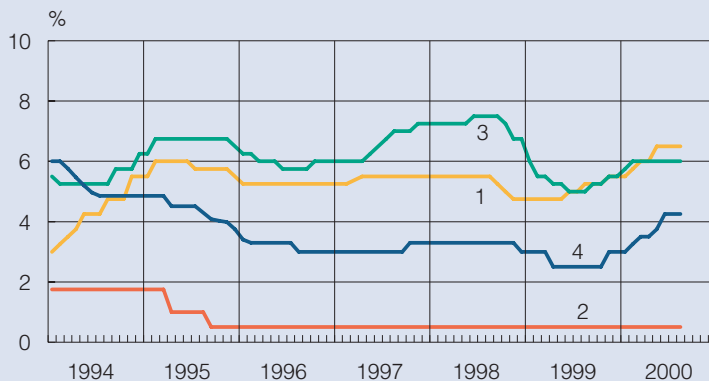


Bank of Finland interest rates until end-1998

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

Source:
European Central Bank.

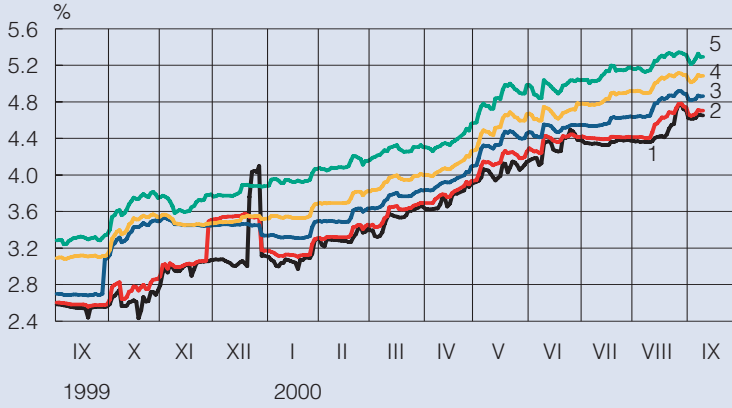
7. Official interest rates



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)

Source: Bloomberg.

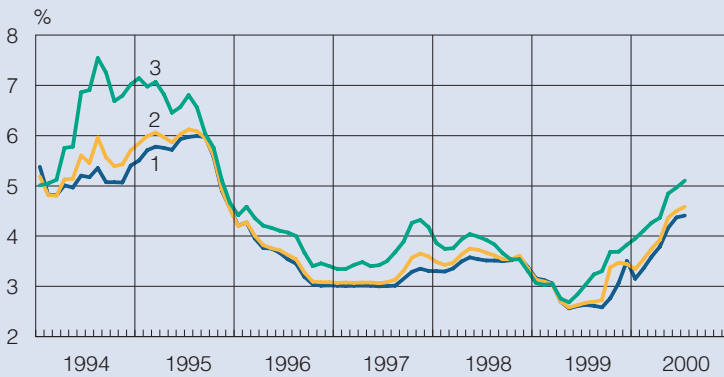
8. Euribor rates, daily values



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

Source: Reuters.

9. Euribor rates, monthly values

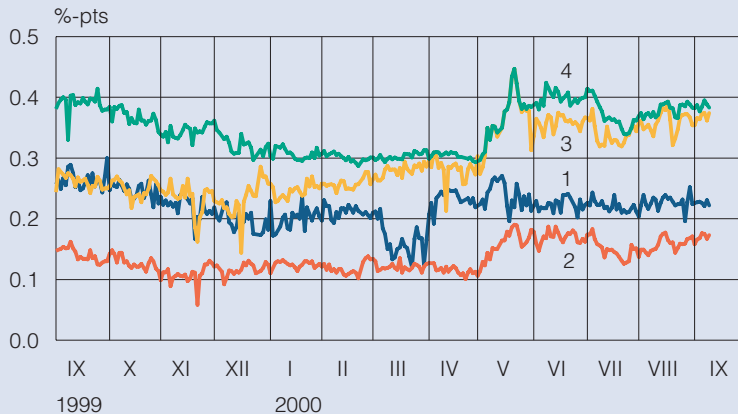


Helibor rates until end-1998

- 1. 1-month
- 2. 3-month
- 3. 12-month

Source: Reuters.

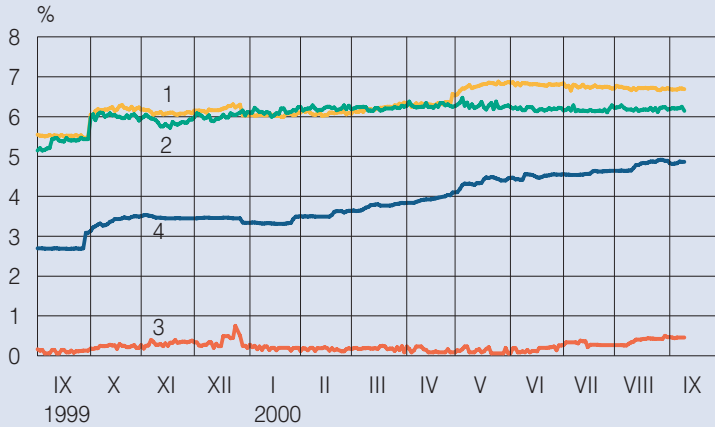
10. Differentials between ten-year yields for Germany and selected euro area countries



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

Source: Reuters.

11. International three-month interest rates, daily values

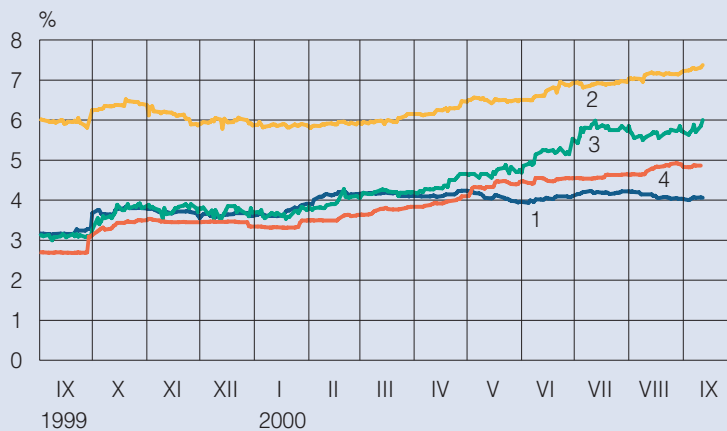


Interbank rates

- 1. United States
- 2. United Kingdom
- 3. Japan
- 4. Euro area

Source: Reuters.

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

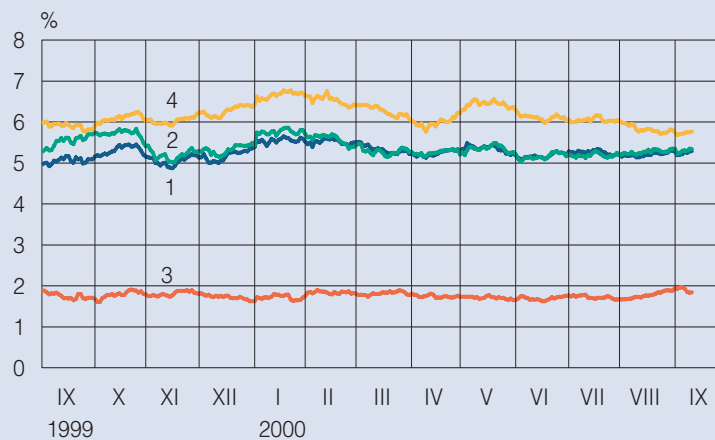


Interbank rates

- 1. Sweden (Stibor)
- 2. Norway
- 3. Denmark
- 4. Finland (Euribor)

Source: Reuters.

13. International long-term interest rates, daily values

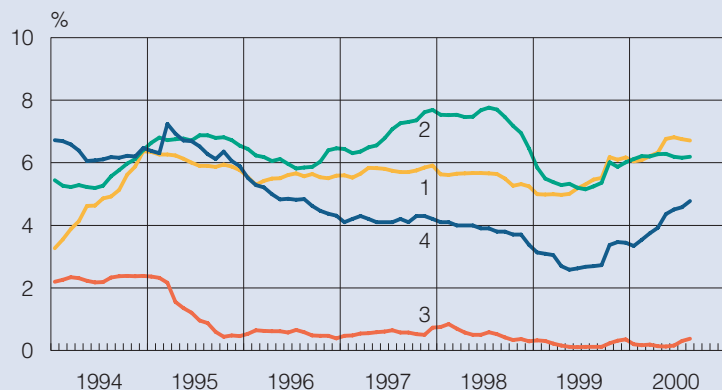


Yields on ten-year government bonds

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

Source: Reuters.

14. International three-month interest rates, monthly values

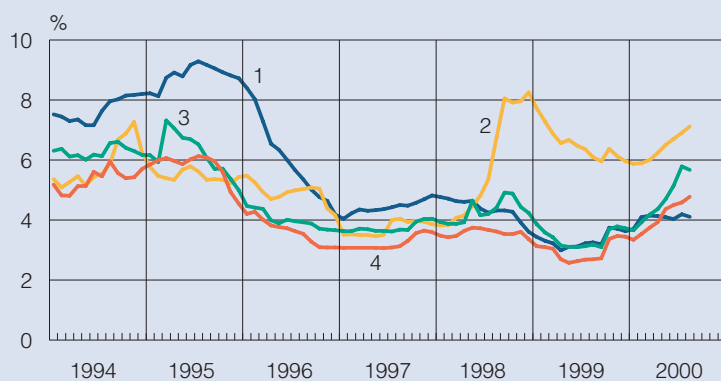


Interbank rates

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

Source: Reuters.

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

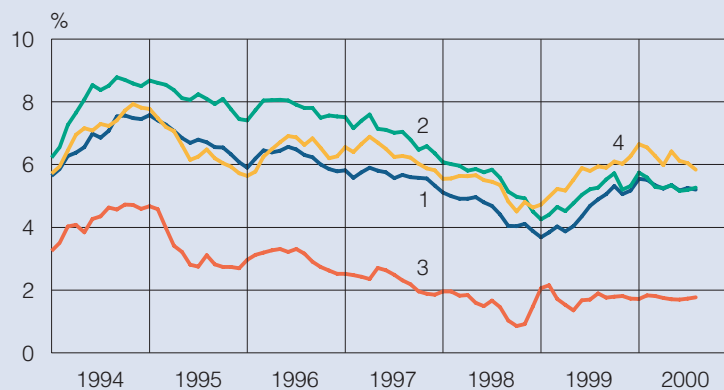


Interbank rates

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

Source: Reuters.

16. International long-term interest rates, monthly values

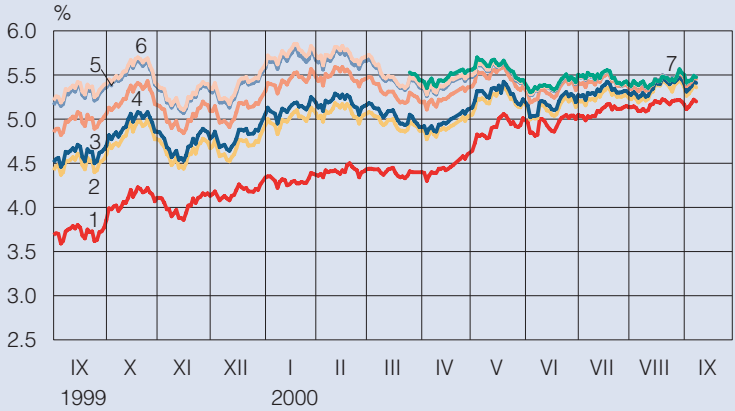


Yields on ten-year government bonds

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

Source: Reuters.

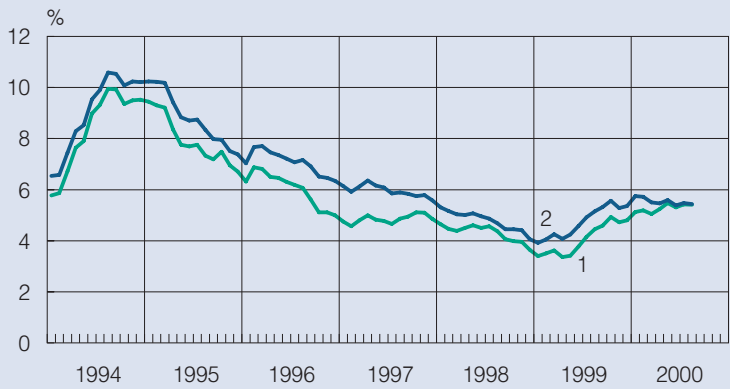
17. Yields on Finnish benchmark government bonds



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 %
7. Bond maturing on 2 February 2011, 5.75 %

Source: Reuters.

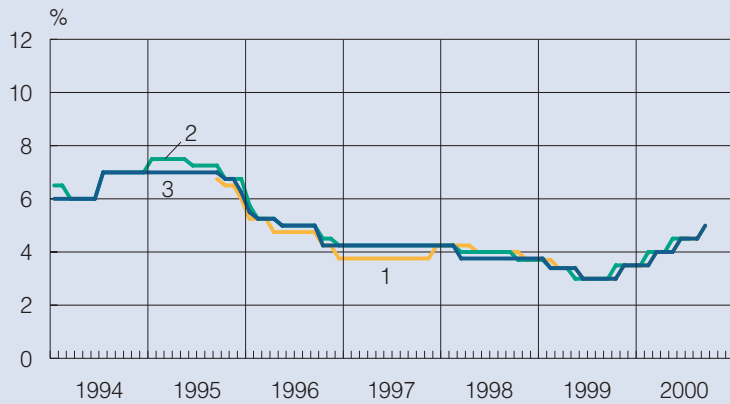
18. Yields on five and ten-year Finnish government bonds



1. 5 years
2. 10 years

Source: Reuters.

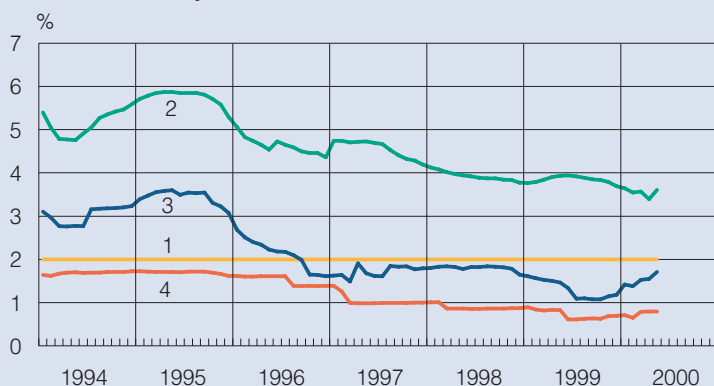
19. Bank reference rates in Finland



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

Source: Banks.

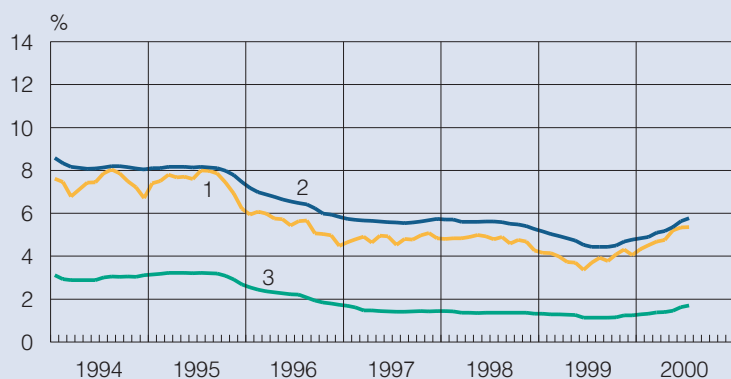
20. Bank deposit rates in Finland



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

Source: Bank of Finland.

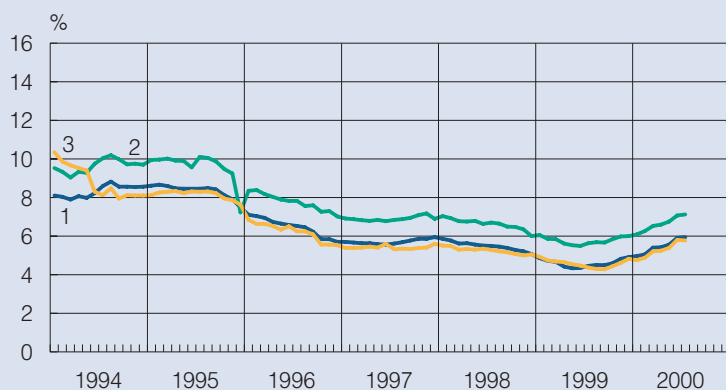
21. Bank lending and deposit rates in Finland



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

Source: Bank of Finland.

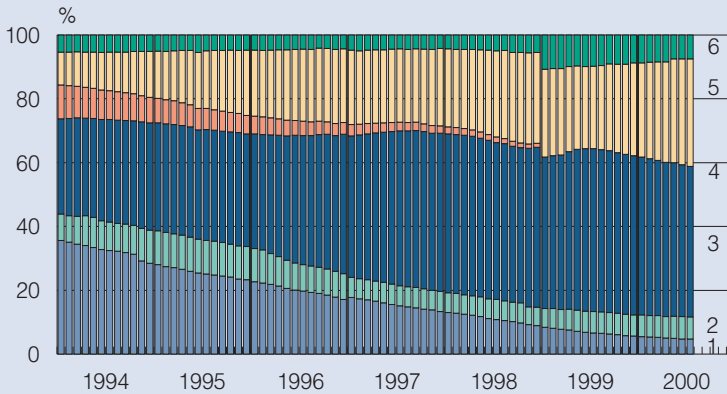
22. Interest rates charged by Finnish banks on new lending to households



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

Source: Bank of Finland.

23. Stock of bank lending in Finland

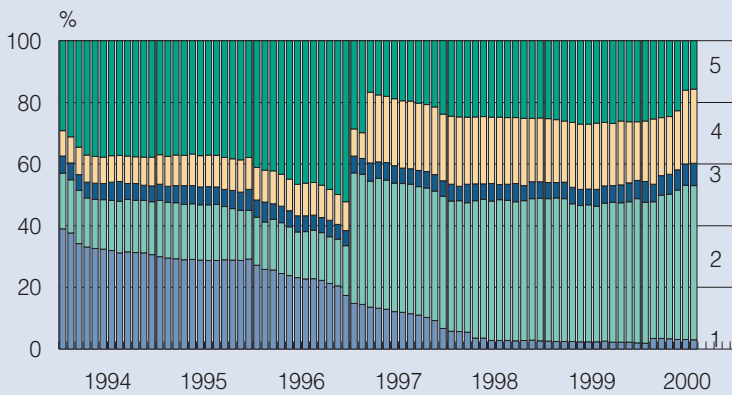


Interest rate linkages, percentages

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

Source: Bank of Finland.

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

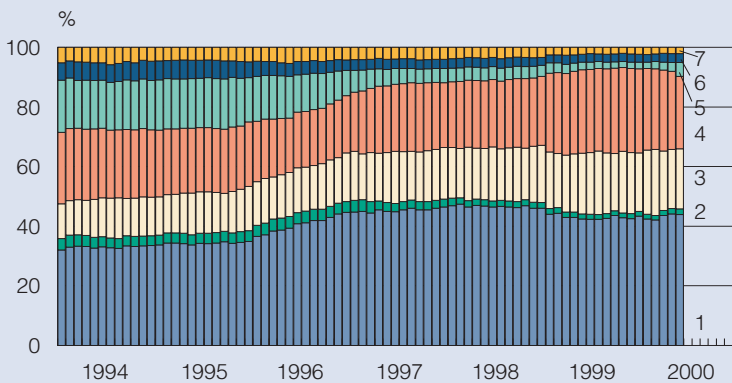


Interest rate linkages, percentages

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

Source: Bank of Finland.

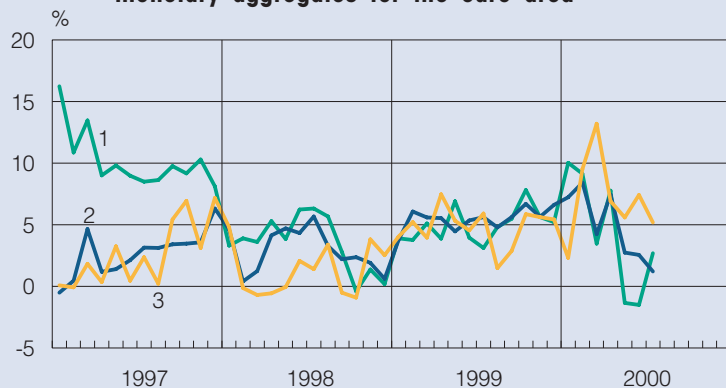
25. Stock of bank deposits in Finland by tax treatment



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

Source: Bank of Finland.

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

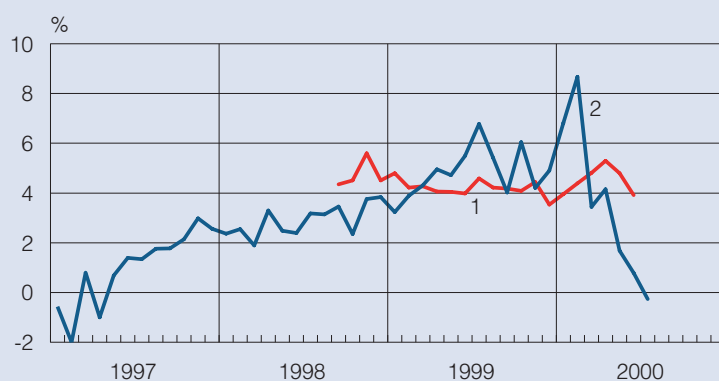


12-month percentage change

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

Source: Bank of Finland.

27. Euro area and Finnish banks: growth of deposits

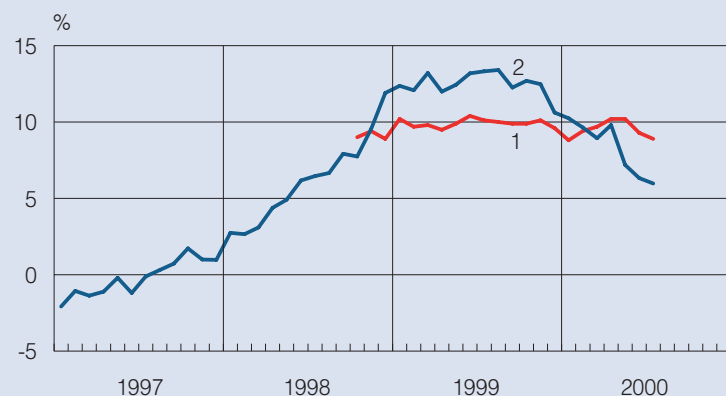


12-month percentage change

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

Sources: European Central Bank and Bank of Finland.

28. Euro area and Finnish banks: growth of lending

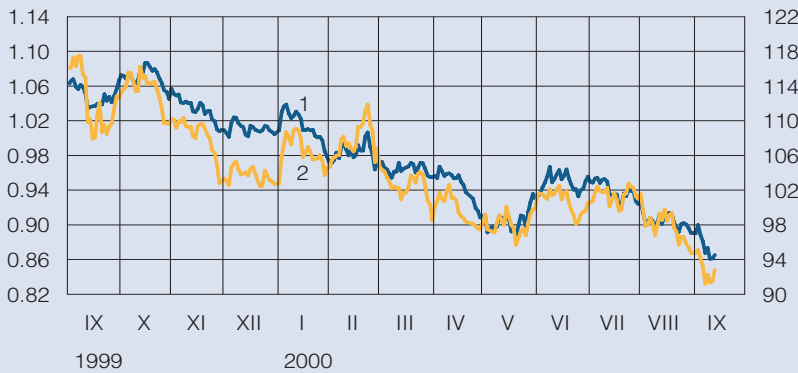


12-month percentage change

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

Sources: European Central Bank and Bank of Finland.

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

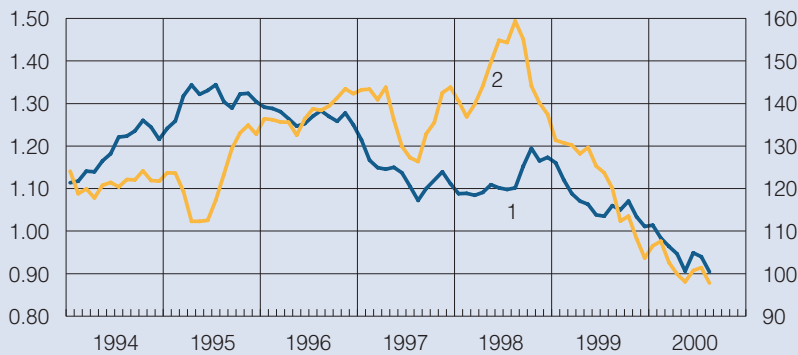


Rising curve indicates appreciation of euro

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

Sources:
European Central Bank and Reuters.

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



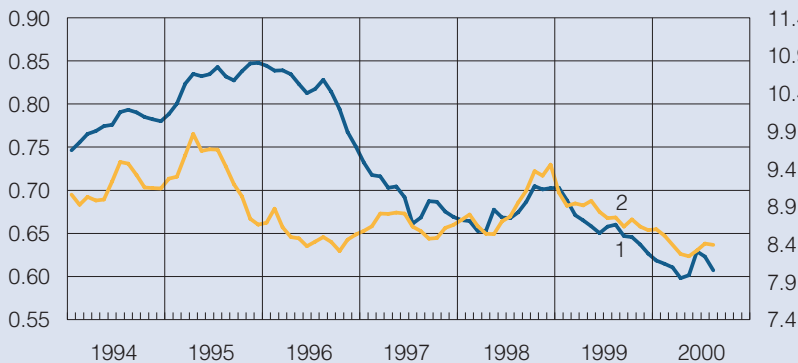
(ecu exchange rate until end-1998)

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)

Sources:
European Central Bank and Reuters.

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



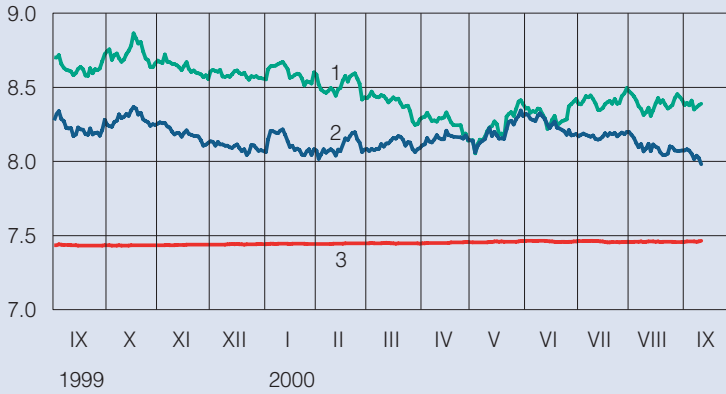
(ecu exchange rate until end-1998)

Rising curve indicates appreciation of euro

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

Sources:
European Central Bank and Reuters.

32. Euro exchange rates against the Scandinavian currencies



Rising curve indicates appreciation of euro

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

Sources: European Central Bank and Reuters.

33. Euro's external value and Finland's competitiveness indicator

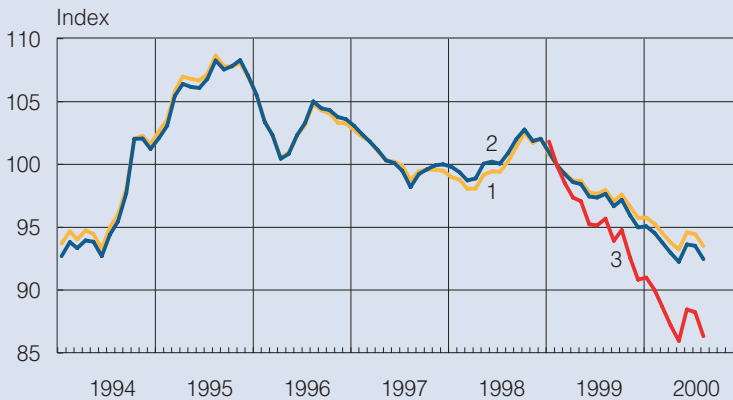


1999 Q1 = 100
An upward movement of the index represents an appreciation of the euro / a weakening in Finnish competitiveness

1. Euro's effective exchange rate
2. Finland's narrow competitiveness indicator

Sources: European Central Bank and Bank of Finland.

34. Competitiveness indicators for Finland

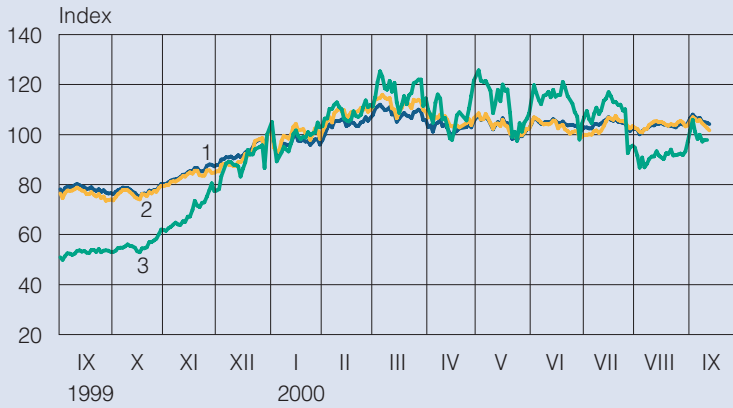


1999 Q1 = 100
An upward movement of the index represents a weakening in Finnish competitiveness

1. Bank of Finland's old currency index
2. Narrow plus euro area competitiveness indicator
3. Narrow competitiveness index

Source: Bank of Finland.

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

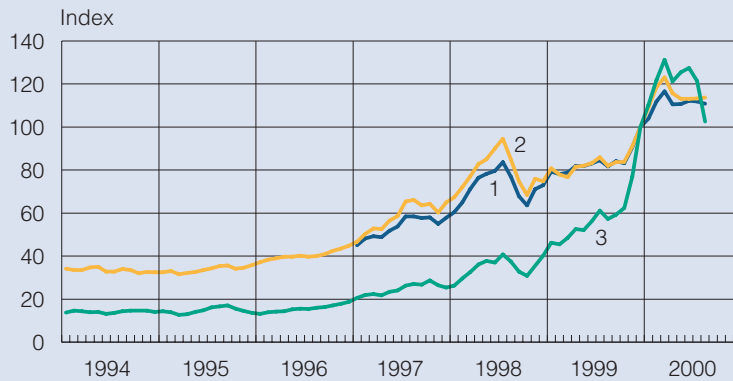


30 December 1999 = 100

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

Sources: Bloomberg and
HEX Helsinki Exchanges.

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

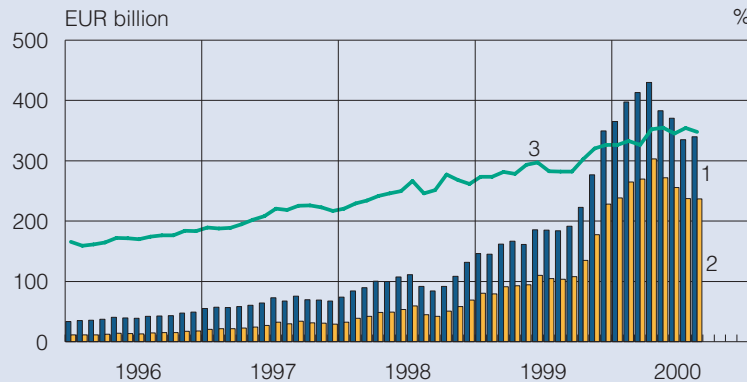


30 December 1999 = 100

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

Sources: Bloomberg and
HEX Helsinki Exchanges.

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

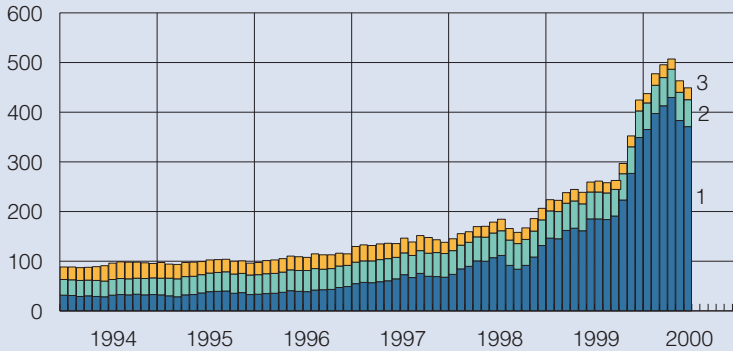


1. Market capitalization of all listed shares (left-hand scale)
2. Market capitalization of non-residents' holdings (left-hand scale)
3. Market capitalization of non-residents' holdings as a percentage of total market capitalization (right-hand scale)

Sources: HEX Helsinki Exchanges and Finnish Central Securities Depository.

38. Securities issued in Finland

EUR billion



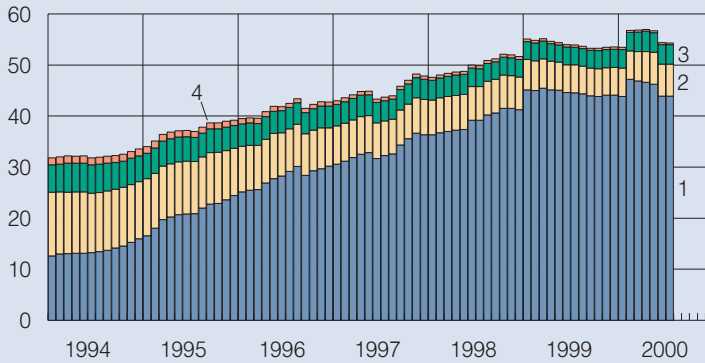
End-month stock

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

Sources:
HEX Helsinki Exchanges,
Bank of Finland,
Statistics Finland and
State Treasury.

39. Bonds issued in Finland

EUR billion



End-month stock

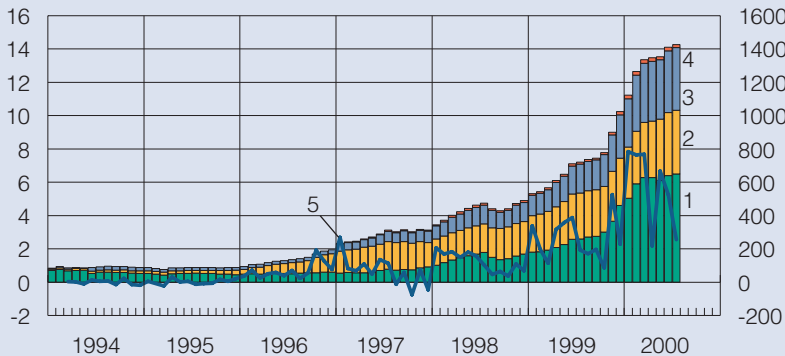
1. Central government
2. Financial institutions
3. Companies
4. Other

Source: Statistics Finland.

40. Mutual funds registered in Finland

EUR billion

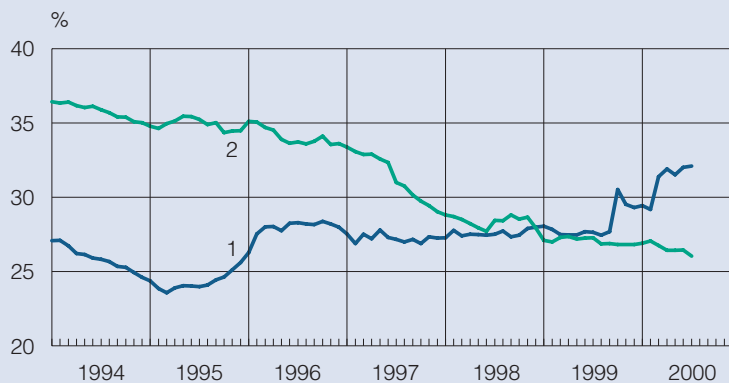
EUR million



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)

Source: HEX Helsinki Exchanges.

41. Central government revenue and expenditure in Finland

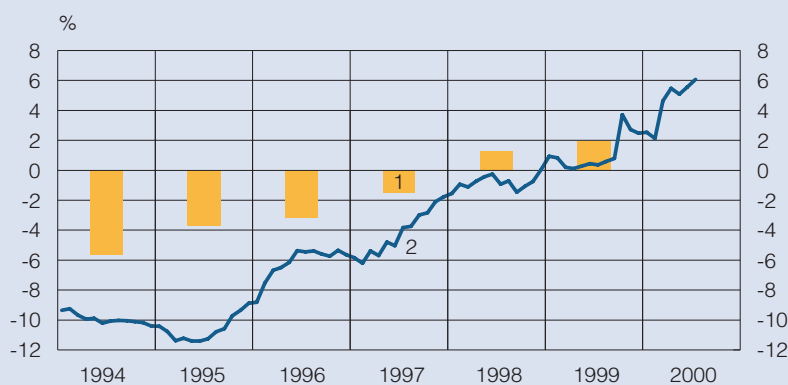


Excluding financial transactions
12-month moving totals, % of GDP

1. Revenue
2. Expenditure

Sources: State Treasury,
Statistics Finland and
Bank of Finland.

42. Public sector balances in Finland

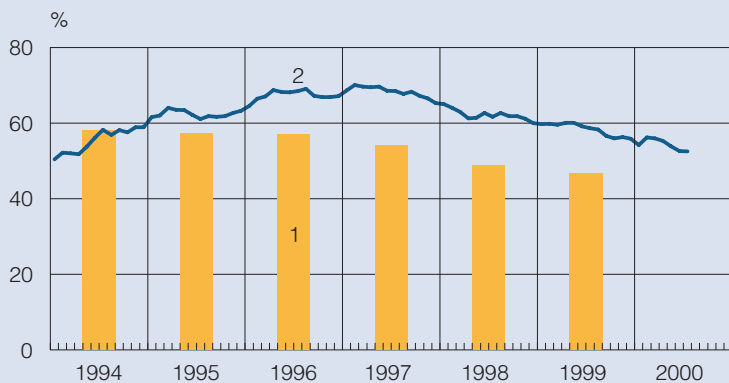


% of GDP

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

Sources: State Treasury,
Statistics Finland and
Bank of Finland.

43. Public debt in Finland

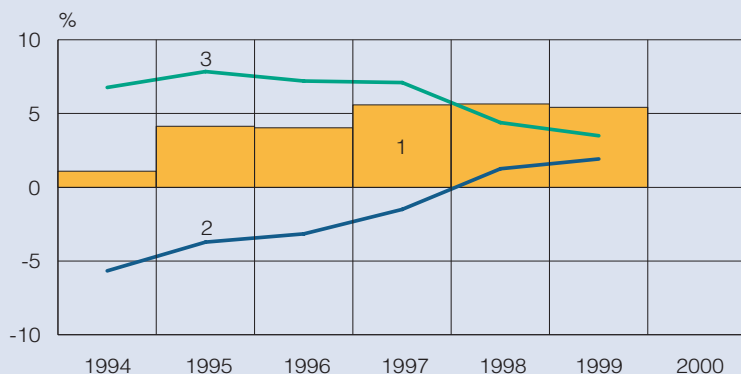


% of GDP

1. General government debt
2. Central government debt

Sources: Statistics Finland and
State Treasury.

44. Net lending in Finland by sector

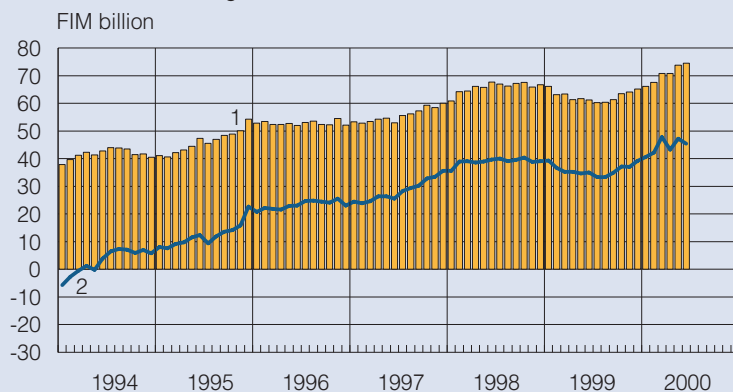


Main sectoral financial balances, % of GDP

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

Sources: Bank of Finland and Statistics Finland.

45. Finland: goods account and current account

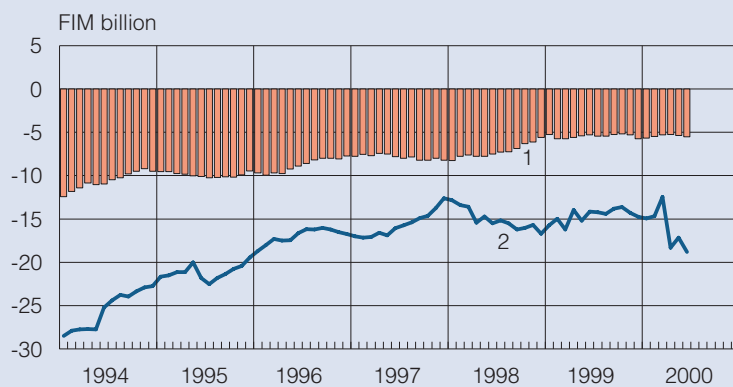


12-month moving totals

1. Goods account, fob
2. Current account

Source: Bank of Finland.

46. Finland: services account and income account

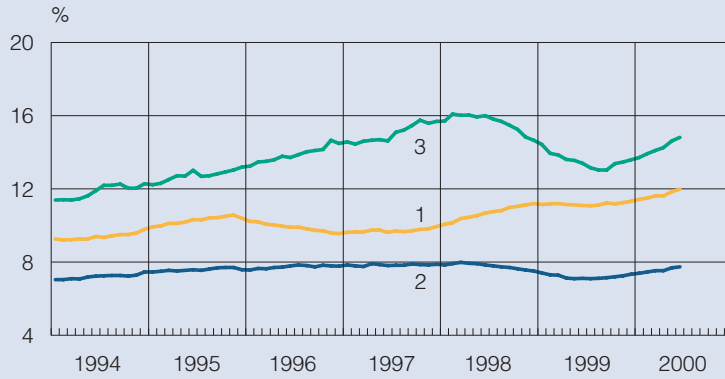


12-month moving totals

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

Source: Bank of Finland.

47. Regional distribution of Finnish exports

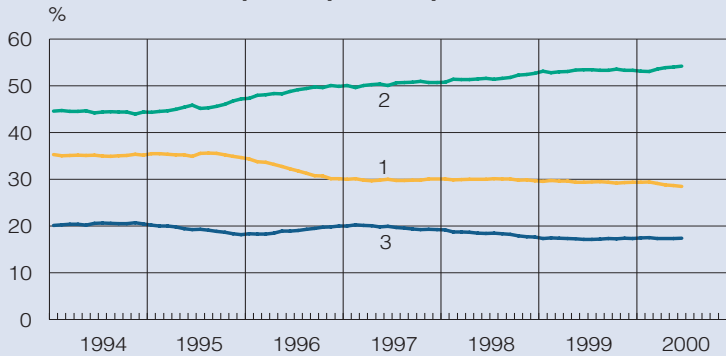


12-month moving totals,
% of GDP

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

Sources:
National Board of Customs
and Statistics Finland.

48. Finnish exports by industry

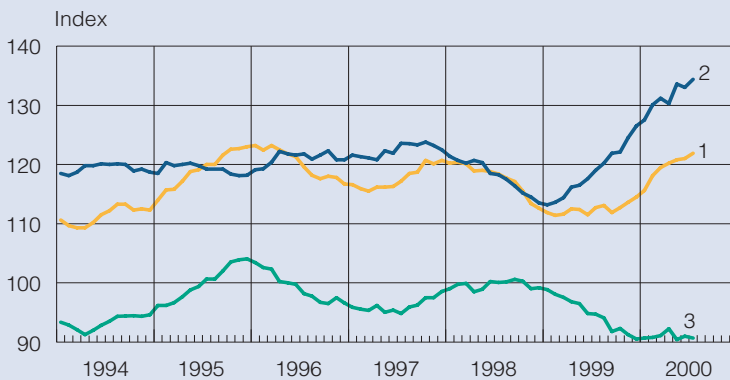


12-month moving totals,
percentage of total exports

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

Source:
National Board of Customs.

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

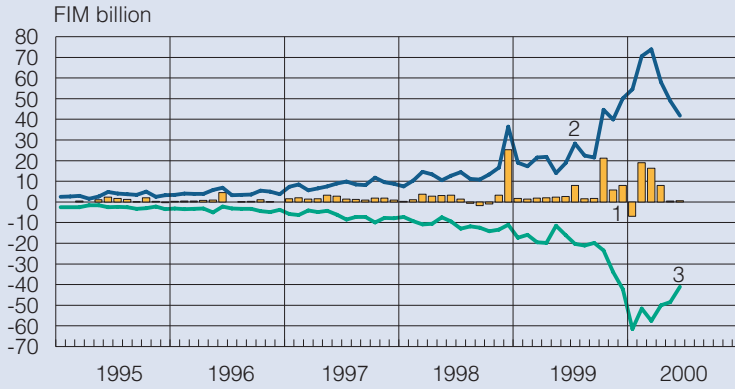


1990 = 100

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

Source: Statistics Finland.

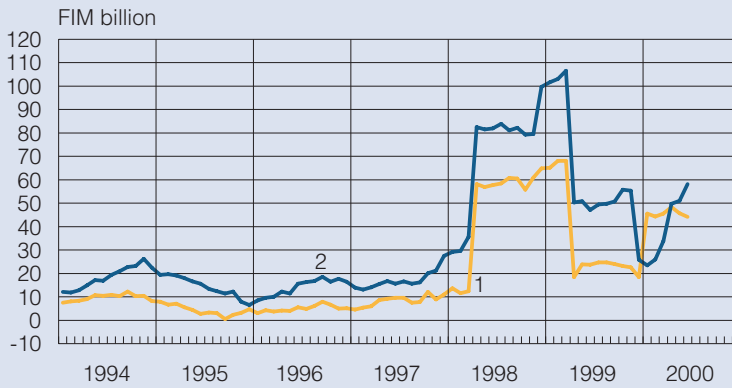
50. Non-residents' portfolio investment in Finnish shares



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

Source: Bank of Finland.

51. Finland: direct investment

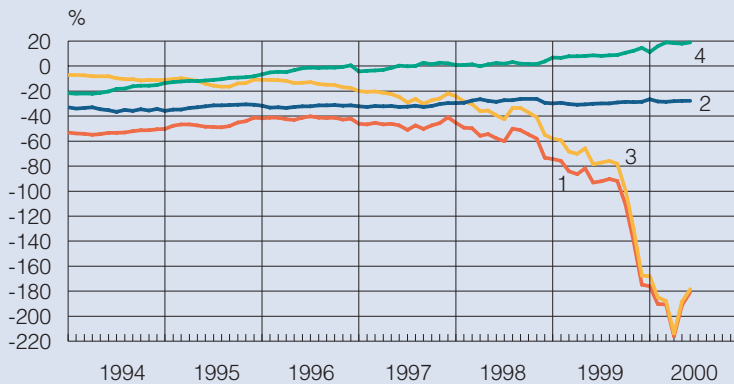


12-month moving totals

1. In Finland
2. Abroad

Source: Bank of Finland.

52. Finland's net international investment position

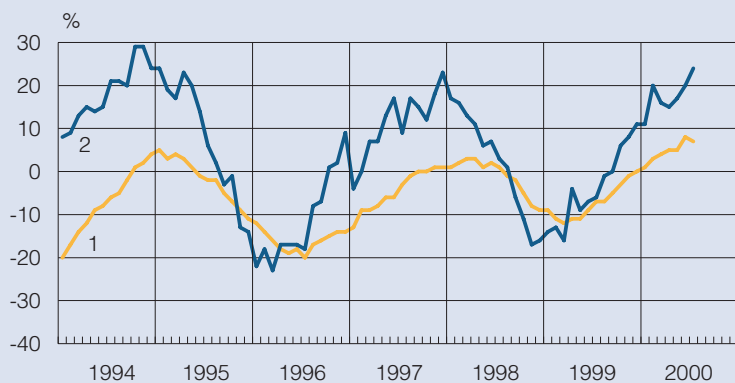


% of GDP

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

Sources: Bank of Finland and Statistics Finland.

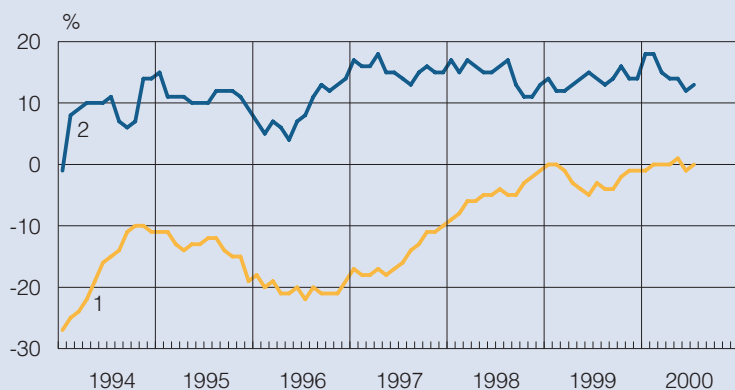
53. Industrial confidence indicator in the euro area and Finland



1. Euro area countries
2. Finland

Source: European commission.

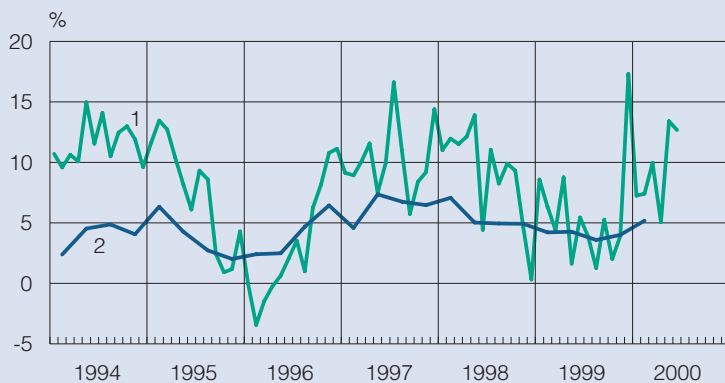
54. Consumer confidence indicator in the euro area and Finland



1. Euro area countries
2. Finland

Source: European commission.

55. Finland: GDP and industrial production

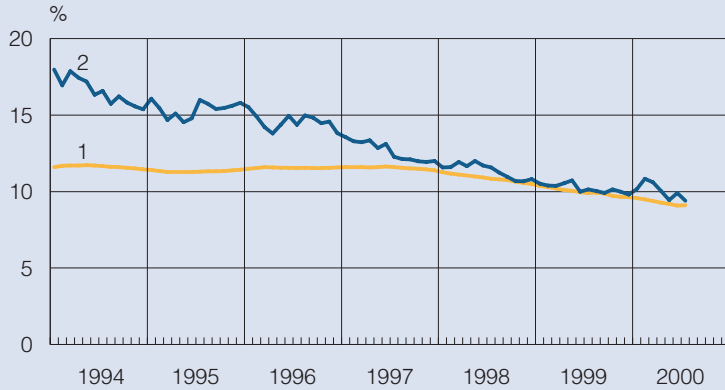


Percentage change from previous year

1. Industrial production
2. Gross domestic product

Source: Statistics Finland.

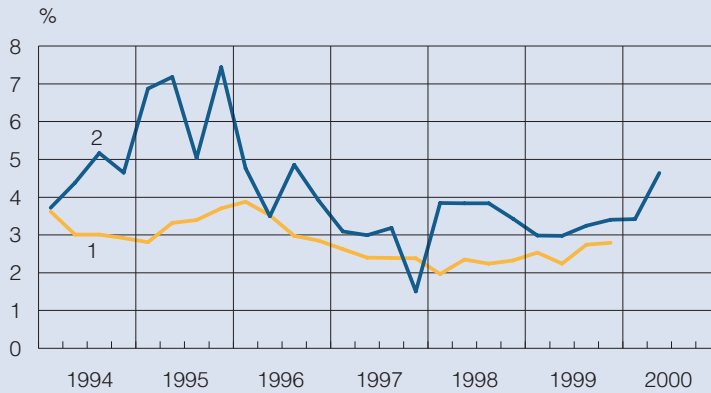
56. Unemployment rate in the euro area and Finland



- 1. Euro area countries
- 2. Finland

Sources: Eurostat, Statistics Finland and Bank of Finland.

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

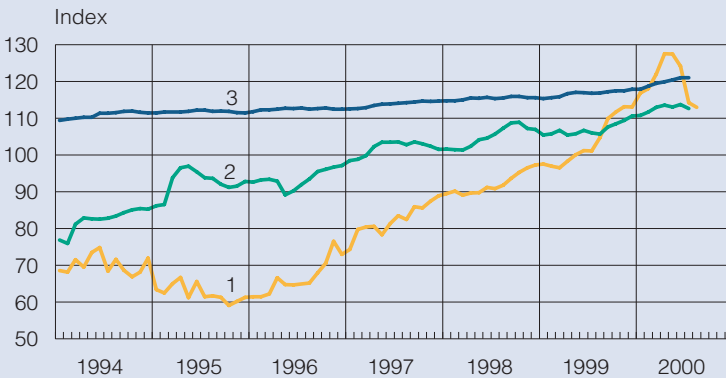


Percentage change from previous year

- 1. Euro area countries
- 2. Finland

Sources: Eurostat and Statistics Finland.

58. Selected asset prices in Finland



January 1990 = 100

- 1. Housing prices (old two-room flats; debt-free price per m²)
- 2. Stumpage prices
- 3. Consumer prices

Sources: Finnish Forest Research Institute, Huoneistokeskus, Statistics Finland and National Board of Customs.

The Organization of the Bank of Finland

1 August 2000

The Parliamentary Supervisory Council

**Ilkka Kanerva, Chairman, Virpa Puisto, Vice Chairman,
Olavi Ala-Nissilä, Ben Zyskowicz, Antero Kekkonen, Anneli Jääteenmäki,
Martti Tiuri, Kari Uotila, Mauri Pekkarinen**

Anton Mäkelä, Secretary to the Parliamentary Supervisory Council

The Board

Matti Vanhala
Governor

Esko Ollila
Deputy Governor

Matti Louekoski
Member of the Board

Vacant

Heikki T. Hämäläinen, Secretary to the Board

Pentti Koivikko, Director

Departments and other units

Pentti Pikkarainen
Economics
Antti Suvanto*

Kjell Peter Söderlund
International Secretariat

Heikki Koskenkylä
Financial Markets
Harry Leinonen*

Urpo Levo
Payment Instruments

Markus Fogelholm
Market Operations

Armi Westin
Information Technology

Raimo Hyvärinen
Payments and
Settlement

Esa Ojanen
Administration

Antti Juusela
Communications

Jyrki Ahvonen
Security

Aura Laento
Personnel
Anton Mäkelä*

Juha Tarkka
Research
David Mayes*

Taina Kivelä
Internal Audit

Martti Lehtonen
Statistics

Heikki T. Hämäläinen
Management
Secretarial Staff

Arno Lindgren
Legal Affairs

Antero Arimo
Publication and
Language Services

Terhi Kivilahti
Development and
Budget

* Adviser to the Board

Pekka Sutela
Institute for
Economies in Transition

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.