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The Bank of Finland's macroeconomic forecast 2001–2003

After growing at an average annual rate of 5% since the mid-1990s, economic activity in Finland has slowed along with the deterioration in world economic prospects. GDP growth is expected to remain robust but to fall back close to trend. Starting from the second half of 2001, real GDP is forecast[1] to grow at annual rate of over 3% until 2003 (Table 1 and Chart 1). Owing to the carry-over effect of growth in 2000, the economy is forecast to grow by nearly 4% in 2001. The share of exports in GDP is forecast to increase further, albeit at a more moderate pace than in the past few years. Similarly, the share of the ICT (information and communication technology) sector in total exports is expected to continue growing, but at a slower pace than before.

The change in the growth profile for GDP and the substantial revision to the autumn forecast are a consequence of the weakening in the international economic environment, which started towards the end of 2000 and is already reflected in slower growth in Finnish exports. The contribution of net exports to GDP growth is forecast to decline to about one percentage point a year. This is in contrast to 2000 when net exports contributed more than three percentage points to GDP growth of 5.7%.

Growth in domestic demand will remain fairly strong throughout the forecast period, although it too will slow slightly after 2001. Private consumption will be underpinned by favourable income developments and a further improvement in employment, which will sustain household confidence. In the corporate sector, the fairly positive outlook for demand and profitability over the next few years will lay the ground for moderate growth in investment activity, despite a temporary weakening. The expectation of no change in real interest rates will bolster business investment and also have a stabilizing effect on house prices. On the whole, Finnish households and firms are not highly indebted, and so a temporary slackening in international demand will not generate strong pressure to increase saving or postpone investment. The financial positions of both the public and private sectors will be in surplus during the forecast period, and hence there will continue to be a healthy current account surplus.

The forecast is based on the prevailing view[2] that the slowdown in world economic growth is likely to be short-lived and that GDP growth in the United States will pick up to 2½–3% in 2002 from 1½% in 2001. US firms have postponed investment projects, which means weaker demand for ICT capital goods, in particular. But the technology embodied in computer and communications equipment rapidly becomes obsolete, so that investment activity is expected to recover fairly quickly. With the deterioration in prospective returns, equity prices of ICT firms have fallen substantially from previous levels, which, in the light of current information, were overvalued, including also those in Europe. GDP in the euro area is generally expected to grow by more than 2½ a year in 2001 and 2002. This is noticeably slower than in 2000 when euro area GDP grew by 3.4%.

In several countries, economic policy has been relaxed in response to the slowing of growth and easing of inflationary pressures. In the United States, the Federal Reserve has cut official rates in a series of steps since the beginning of the year from 6.5% to 4.0%. In the euro area, the economic outlook still appears favourable and the twelve-month inflation rate is generally expected to slow from 2.9% in April 2001 to below 2% in 2002. The upward pressure on prices in the medium term have subsided a little, as

[1] The forecast is based on data available up to 11 May 2001.

[2] Forecasts published by the European Commission, OECD and IMF in April-May 2001.

Table 1. Summary of the forecast

Demand and supply 1999–2003 (1995 prices)

	1999	2000	2001	2002	2003
Percentage change on a year earlier					
Gross domestic product	4.2	5.7	3.9	3.3	3.3
Imports	4.3	12.8	6.1	5.3	5.9
Exports	7.1	17.7	6.1	6.1	6.3
Private consumption	3.7	3.0	3.2	2.8	2.6
Public consumption	2.0	0.4	1.8	2.0	2.0
Private fixed investment	3.5	5.7	5.3	4.6	3.4
Public investment	–1.3	0.1	0.9	1.5	1.2
Change in inventories and statistical discrepancy, % of total demand in the previous year	0.2	–0.2	0.2	–0.3	0.1
Total demand	4.2	7.4	4.5	3.8	4.0
Final domestic demand	2.9	2.5	3.6	2.5	2.7

Key economic indicators

	1999	2000	2001	2002	2003
Percentage change					
Harmonized Index of Consumer Prices	1.3	3.0	2.5	1.9	1.9
Consumer Price Index	1.2	3.4	2.8	1.9	2.0
Level of earnings	2.7	3.9	4.1	3.9	4.3
Labour productivity	2.1	4.4	2.8	2.3	2.4
Unit labour costs	0.3	–0.2	1.5	2.1	2.3
Number of employed	3.3	1.7	1.4	0.9	1.3
Employment rate, 15–64 year-olds, %	66.0	66.9	67.8	68.4	69.2
Unemployment rate, %	10.2	9.8	9.2	9.0	8.5
Export prices of goods and services	–5.4	4.6	0.5	0.6	1.6
Terms of trade	–4.2	–1.9	0.2	–1.6	–0.8
% of GDP (National Accounts)					
Ratio of taxes to GDP	45.8	46.7	44.8	44.2	43.7
General government net lending	1.8	6.7	5.2	4.9	5.1
General government debt (Maastricht definition)	46.9	44.0	40.4	37.3	34.0
Trade account	9.0	10.8	10.9	10.9	11.0
Current account	5.9	7.7	8.3	9.1	9.2
Average interest rate on new loans granted by deposit banks, %	3.9	5.2	5.5	5.5	5.8

Sources: Bank of Finland and Statistics Finland.

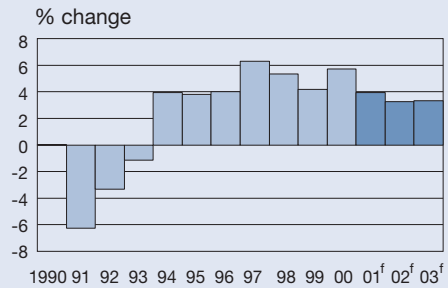
indicated by inflation forecasts and slower growth in monetary and credit aggregates. In response to this, the European Central Bank cut its key interest rate by 25 basis points in May to 4.5%.

The effects of the rapid but – it is assumed – short-lived weakening in global economic prospects will be transmitted to the euro area and Finland mainly via a slowdown in the growth of international trade. The growth of world trade is expected to slow clearly in 2001 but to recover to around trend in 2002 and 2003. The effects on Finnish foreign trade will not be of such a transitory nature as they were during the mini recession in 1996 or the Asian crises in 1998.

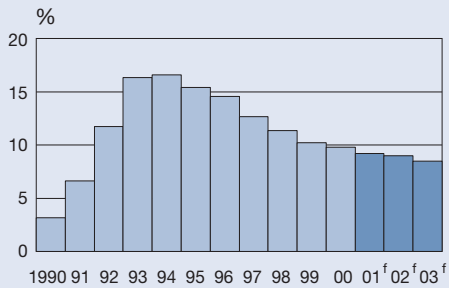
Chart 1.

Key economic indicators

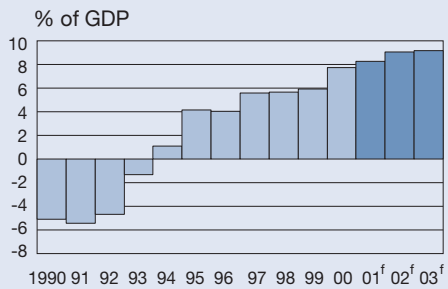
Gross domestic product



Unemployment rate

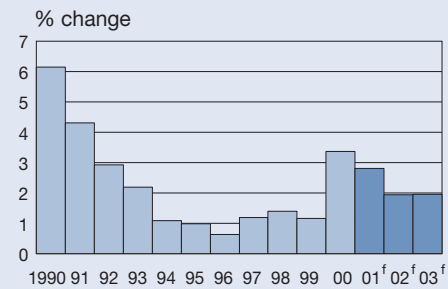


Current account

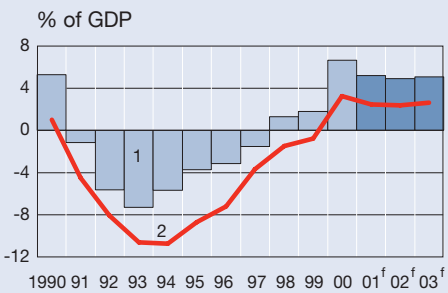


Inflation

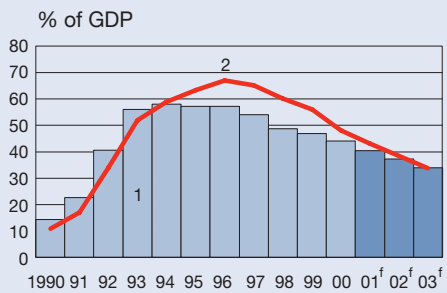
Consumer price index



General government fiscal position (Maastricht definition)



General government debt (Maastricht definition)



1. General government
2. Central government

f = forecast.

Sources: Bank of Finland and Statistics Finland.

Although the near-term outlook for economic growth in Finland has weakened substantially and inflationary pressures have thus subsided a little, the forecast for inflation is only marginally lower than in the autumn forecast. Consumer prices are forecast to rise by 2.8% in 2001, partly because of a rise in unit labour costs as productivity growth slows and the cost of labour continues to increase at a rapid pace. Rising import prices will also contribute to inflation in 2001, albeit less so than in 2000. Energy prices will continue to put upward pressure on housing costs, although the impact will be less pronounced than at present. A special factor in the first half of 2001 will be the effects of BSE and foot-and-mouth disease,

Box 1. Assumptions underlying the forecast

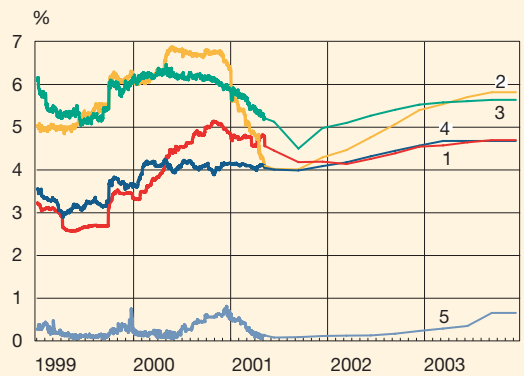
World trade and import prices

The forecast is based on the assumption that the current slowdown in world trade is temporary and that it will be followed by a fairly rapid recovery in the second half of 2001. Import growth in countries that are key export markets for Finland is expected to decline to about 6% in 2001and then steadily increase to 8.5% in 2003 (Table 2). The price of crude oil is expected to fall from USD 26 per barrel at the beginning of 2001 to USD 22 per barrel by the end of 2003. The slowdown in world trade growth and weaker export prospects have also slowed the rise in prices of goods imports. Prices of goods imports are assumed to remain at the previous year's level in 2001 and to rise by about 2% a year in 2002 and 2003.

Interest rates and exchange rates

The forecast for interest rates and exchange rates is based on expectations in money and exchange rate markets on 11 May 2001. Three-month money market rates and long-term interest rates are assumed to be consistent with market interest rate and exchange rate expectations on that date. Thus the assumptions concerning interest rates and exchange rates are purely technical and no attempt is made to predict the ECB's future interest rate policy or estimate the equilibrium exchange rate. Expectations

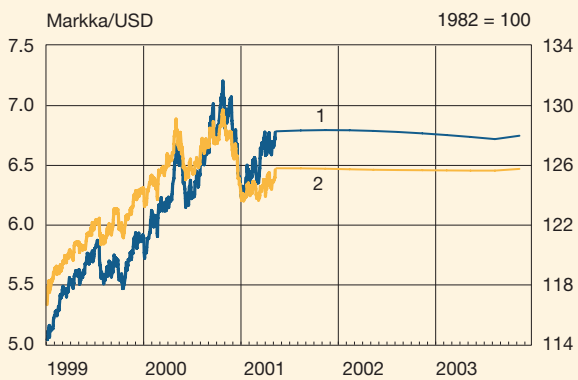
Chart 2. Three-month interest rates and interest rate expectations for selected currencies



Interbank rates
1. Euro area
2. United States
3. United Kingdom
4. Sweden
5. Japan

Sources: Bloomberg and Bank of Finland.

Chart 3. Exchange rate expectations



1. Value of one US dollar in markkaa (left-hand scale)
2. Trade-weighted currency index 1982 = 100 (right-hand scale)

Source: Bank of Finland.

Table 2. Assumptions of the forecast

	1999	2000	2001	2002	2003
Import volume growth in Finnish export markets, percentage change	4.1	10.8	6.3	7.5	8.5
Finnish import prices, percentage change	–2.0	6.6	0.4	2.0	2.2
Oil price, USD per barrel	17.8	28.3	26.5	24.2	22.4
3-month Euribor, %	3.0	4.5	4.4	4.3	4.7
Yield on taxable 4–5 year government bonds, %	4.1	5.3	4.7	5.0	5.2
Finland's trade-weighted exchange rate index	121.2	126.6	125.4	125.7	125.7
Markka/US dollar exchange rate	5.58	6.45	6.70	6.78	6.74

Sources: Bank of Finland and Statistics Finland.

are calculated on the basis of publicly quoted interest rate futures.[3] The term structure of interest rates is relatively flat. Interest rates are expected to move lower during the second half of 2001 and to rise towards the end of the forecast period. The euro's exchange rate[4] weakens initially, but then strengthens; exchange rate changes are nevertheless small (Charts 2 and 3).

[3] An interest rate future is a standardized money market instrument that enables the interest rate on a debt obligation at a specified future date to be fixed at the present point in time. For long-term interest rates the assumption is based on the estimated yield curve as at 11 May 2001 (see Seppälä, J, and Viertiö, P (1996), 'The term structure of interest rates: estimation and interpretation', *Bank of Finland Discussion Papers 19/96*).

[4] The expected future paths of exchange rates are calculated on the basis of uncovered interest rate parity (which rules out the possibility of arbitrage) using the exchange rates quoted on the day in question and the expected future paths of interest rates.

which will give a temporary boost to inflation through higher food prices. Inflation is expected to slow in 2002 and 2003, but will still be close to 2%, even though world oil prices are assumed to fall. Higher unit labour costs and rising import prices will provide the main impulse to inflation.

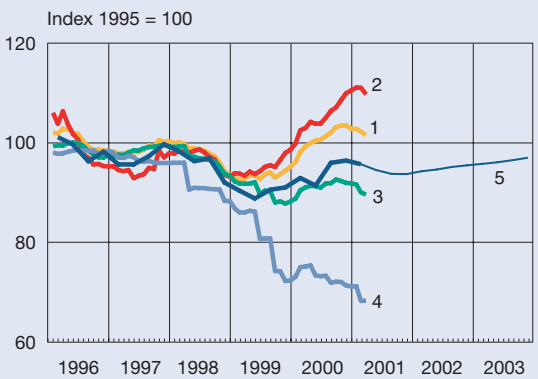
The new wage settlements, which cover the major part of the labour force and provide for fairly uniform increases in basic pay over a two-year period, will act as a brake on employment growth in sectors with below-average productivity. The fall in the unemployment rate is expected to slow during the forecast period, and labour market conditions will tighten, despite the fact that the unemployment rate will still be high – about 8½% – at the end of the forecast horizon.

Foreign trade

The growth of world trade is expected to almost halve in 2001 compared with the previous year, and as a result Finnish export growth is forecast to slow from the record level of nearly 18% reached in 2000 to an estimated 6%. Moreover, the export growth figure for 2001 will be boosted by the carry-over effect of export growth in 2000. With the recovery in world markets, the rate of growth in Finnish exports will pick up again in the second half of 2001. Exports are expected to expand at a steady pace towards the end of the forecast period, reflecting the swift recovery in world trade. Finnish exports will grow at a slightly slower pace than world markets during the forecast period as a whole. The Finnish export industries are more sensitive to changes in the global environment than the euro area countries on average.

Finnish export growth slowed sharply in the first quarter of 2001. The global decline in investment in ICT equipment and cyclical downturn in the traditional forest-based sector will have a major impact on the Finnish economy in 2001, as the electronic equipment industry accounts for 31% of total Finnish exports and the forest industries for a further 27%. Part of the slowdown in the growth of the exports of the electronic equipment industry can be attributed to the exceptionally rapid expansion in exports in

Chart 4. Export prices



1. Export price index (total index)
2. Forest industries
3. Metal and engineering industries
4. Electrical and optical equipment
5. Prices of exports of goods (National Accounts)

Sources: Bank of Finland and Statistics Finland.

2000. The exports of these sectors will nevertheless continue to grow faster than those of other sectors.

The price competitiveness of exports is expected to remain good over the forecast period. In the beginning of the period export prices will not grow as quickly as those of competitor countries on average, reflecting the business prospects for the traditional, cyclically-sensitive, export industries, particularly the forest-based industries, and a trend-wise decline in export prices in the electronic equipment industry due to productivity gains. In 2002 and 2003 export prices are forecast to rise in line with those of competitor countries (Chart 4).

Import prices of goods and services are not expected to increase in 2001 on average, and to rise by only about 2% a year in 2002 and 2003. Oil prices are assumed to rise slightly during summer 2001 but then to start falling. Exchange rate changes will have only a minor impact on prices, since it is assumed that there will be hardly any lagged effects from the earlier depreciation of the euro and that the exchange rate will remain fairly stable throughout the forecast period. The terms of trade, which have deteriorated since 1998, will weaken slightly further over the forecast period.

Import growth is expected to slow along with export growth in 2001, although imports will be buoyed by robust domestic demand. When growth in industrial production and exports starts to accelerate in the second half of 2002, import growth will also pick up. The propensity to import has increased in recent years as a consequence of structural change in the export sector and it assumed to increase further during the forecast period.

Real income growth will keep consumption buoyant

Although, at 3%, consumption growth in 2000 was reasonable, it slowed sharply in the course of the year. Contributing to the slowdown was a rapid increase in uncertainty in the wake of the crash in share values and the worsening in global economic prospects. The market value of household financial wealth declined substantially as a result of the fall in stock values. Household income grew by less than forecast in 2000: despite a 7% increase in the wage bill, real disposable income hardly grew at all, partly because of higher effective tax rates and a rise in consumer prices. Growth in consumption nevertheless exceeded growth in real disposable income, as households reacted to surprise inflation by attempting to smooth consumption. The household saving ratio fell to 1.2%, a very low level by historical standards.

The rate of growth in nominal household income is expected to accelerate to 6% in 2001, as employment will increase by nearly 2% and earnings by about 4%. In 2002 and 2003 growth in nominal income is forecast to level out at about 5%. Real disposable income is expected to increase at a steady rate of nearly 3.5% a year over the forecast period, since slower inflation will partly offset slower growth in nominal income. The favourable developments in

Box 2. Composition of exports

The slowdown in the growth of world trade in the latter part of 2000 and in early 2001 has been reflected in Finnish exports since last autumn. The effects of the slowdown have been evident in varying degree in all main industry sectors. But given the dominant position of forest-based products and communications equipment, the composition of Finnish exports differs considerably from that of world trade overall. Thus, whereas Finnish exports grew noticeably faster than world trade in 2000, the volume of exports declined in early 2001 compared with the final quarter of 2000.

Export prices remained at a high level on average, despite a fall in some world commodity prices. Admittedly, forest industry companies have maintained paper prices through production shutdowns. Export prices of electrical and optical equipment are forecast to continue falling, especially in the current year. Export prices of other products are expected to fall only slightly, on average, in the spring and summer before starting to slowly rise again towards the end of the year along with the recovery in world trade. Therefore the forecast envisages that the decline in export prices of ICT goods will be largely offset by a steady rise in export prices of other products.

Exports of ICT equipment in the first quarter of 2001 were well below the peak levels reached in the final months of 2000. On the whole, export volumes in other industries stagnated during the autumn and they declined in the first quarter of 2001 compared with the last quarter of 2000. The weakening in market conditions in the forest industries and the basic metals industry since the latter part of 2000 has nevertheless started in conditions of exceptionally high profitability.

The slowdown in economic activity in the United States had its origins in the ICT sector, where inventories started to build up rapidly following a severe slump in demand. Although Finland has also felt the impact of the downturn in the new economy, production and exports in the ICT sector have held up well in comparison with other countries and with the average levels recorded in 2000. It appears that demand for Finnish manufactured communications equipment has not suffered from the troubles afflicting US markets as much as other ICT sector products have. Indeed, Finnish manufacturers made substantial gains in market share for both mobile telephones and telecommunications networks in late 2000 and early 2001.

Export volumes in the ICT sector are expected to start growing at a fairly rapid pace again from the second quarter of 2001 onwards and by some 15–20% for the year as a whole. Despite slower growth in export volumes, there will be further gains in market share. As the value of ICT exports is expected to increase by more than 10%, the share of this sector in total exports will grow further.

Volumes of other goods exports are expected to decline until the beginning of 2002 and then embark on a cautious recovery. Thus the growth of Finland's traditional exports will clearly lag behind that of world trade. The scope for expansion in the traditional export industries in Finland is nevertheless limited. Much of the growth in production in firms in these industries is likely to occur abroad, as has been the case for a number of years now.

Although the weakening in the export markets of the forest industries will probably continue until the end of this year, profitability will nevertheless remain fairly good on average. The Finnish pulp and paper industries will be able to maintain profitability during a relatively short-lived recession through production cutbacks. Export volumes in 2001 will therefore be below end-2000 levels.

The picture as regards market prospects for other metal and engineering industries (ie excluding the electronic equipment industry) is mixed. Order books are very strong in the machinery and equipment industry. By contrast, market conditions in the basic metals industry are more difficult and export profitability has clearly weakened since the end of last year. But it is probably still profitable for companies in this sector to continue producing at slightly lower prices and expand exports within capacity limits.

household income point to a continued positive outlook for consumption. Private consumption is forecast to grow by more than 3% in 2001 before settling at a slightly lower growth rate in 2002 and 2003.

The main factor underlying the favourable developments in household income will be a rapid increase in the wage bill, since wages make up three-quarters of disposable income. Household income will also be boosted by income tax cuts in 2001 and 2002 of FIM 6 and 3 billion, respectively. The average household tax rate is expected to decline by about two percentage points over the forecast period. In 2003 it is assumed that the only reduction in income taxation will be an inflation adjustment. Government transfers to the household sector are expected to increase by 2–3% a year in nominal terms.

Dividend income growth will slow in comparison with the past few years, and this will be reflected in a moderation in the rate of growth of capital income. Bank deposits currently make up about half of the estimated market value of household financial wealth, and so they will generate a steady stream of interest income assuming deposit rates remain in the region of about 2%. Proceeds from stock options and capital gains will continue to be important sources of household income in 2002 and 2003 but below the record levels of the last two years.

Despite rapid growth in real income, the forecast for consumption has been revised downward slightly compared with the autumn forecast. Consumers' confidence in their prospective financial situation remains quite strong even though their confidence in the general economic situation in Finland over the next twelve months has weakened. A temporary decline in confidence is not expected to have a significant impact on consumption, as the moderate outlook for interest rates and a further fall in the unemployment rate will reinforce the view of a continuation of economic growth.

The stock market fall and moderate developments in house prices are likely to still increase consumer caution with regard to consumer durable purchases in 2001, but thereafter a recovery in house prices should underpin consumer demand via the wealth effect. Since end-March 2000 household financial wealth has declined by nearly FIM 100 billion to under FIM 500 billion as a result of the fall in the value of household equity holdings. The household saving ratio is expected to remain at almost as low a level in 2001 as in 2000, but then to rise to 2% in 2002 and about 2.5% in 2003.

Slight slowdown in investment activity

Investment activity in 2001 will be sustained by firms' good profitability in 2000 and investment decisions taken in earlier periods. Latest survey data (Tendency Survey of the Confederation of Finnish Industry and Employers, 10 May 2001) suggest that firms are delaying their investment projects. Looking further ahead, investment activity is expected to gradually decline as corporate profitability weakens and demand levels off. The expected real short-term interest rate will remain relatively stable throughout the forecast period, and this will be a factor underpinning investment activity. Since public investment is assumed to grow only modestly, at an average annual rate of about 1%, the ratio of fixed capital formation to output will remain virtually unchanged throughout the forecast period.

In the construction sector, activity has slowed noticeably after a period of rapid growth. The sector has for long been operating at close to full capacity and the pace of new construction activity has been high. The total volume of construction grew by about 5% in 2000. The number of new residential building permits declined in the second half of 2000, and this has been reflected in a downturn in the numbers of new starts. The fall in house prices since autumn 2000 has reduced the profitability of residential investment and this will slow construction growth further.

Although house prices will hardly rise at all in 2001, there will be a further increase in construction costs this year. Moreover, as house prices are likely to continue rising at a slightly slower rate than construction costs over the rest of the forecast period, profitability in the construction sector will be lower than in the previous two years. On the other hand, real interest rates on new loans are expected to remain unchanged. Demand will also be bolstered by positive developments in household income and the opportunities this affords households for improving the standard of housing, as well as by continued migration to growth centres. The combined impact of these divergent factors is that residential investment does not increase in 2001, but starts growing at a moderate pace again in 2002 and 2003.

Box 3. Effect of exceptional factors on the saving ratio

Stock option income and capital gains are not treated as household income in the National Accounts but the tax paid on them reduces household disposable income. Although wage and salary earnings grew rapidly in 2000, there was only a modest increase in the National Accounts measure of household disposable income, mainly because of a marked increase in direct taxes. This, in turn, was partly due to the record high level of option income and capital gains and the taxes paid on them.

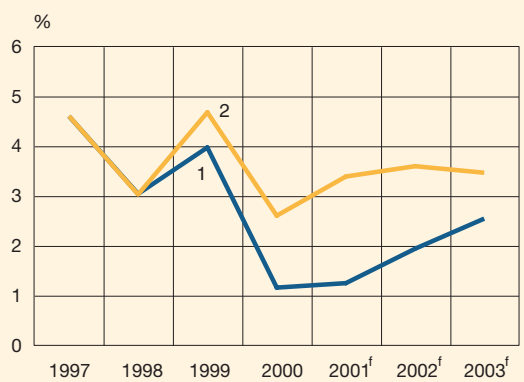
Option income and capital gains are expected to fall clearly in 2001–2003, but residual taxes payable on this income are estimated to increase by FIM 3.5 billion in 2001 (Table 3 and Chart 5). If taxes paid on the proceeds from options and capital gains are not deducted from household income, the fall in the saving ratio in 2000 is much smaller than the reported figure. Moreover, without the effect of these exceptional factors, the saving ratio rises by just under one percentage point already in 2001 to about 3.5%.

Table 3. Household sector: income, direct taxes and saving

	1998	1999	2000	2001	2002	2003
Disposable income, FIM billion	354.2	375.4	387.0	411.2	432.7	454.4
Percentage change	5.1	6.0	3.1	6.3	5.2	5.0
Disposable income, incl. stock option income and capital gains, FIM billion	365.9	397.7	417.0	424.2	444.7	466.4
Percentage change	7.0	8.7	4.8	1.7	4.8	4.9
Direct taxes, FIM billion	98.8	101.0	117.4	121.9	124.2	128.7
Percentage change	5.7	2.2	16.2	3.8	1.9	3.7
Direct taxes, excl. taxes and proceeds from stock options and capital gains, FIM billion	98.8	98.2	111.6	112.7	116.7	124.3
Percentage change	5.7	–0.6	13.6	1.0	3.5	6.6
Saving ratio, %	3.1	4.0	1.2	1.3	2.0	2.6
Saving ratio, excl. taxes on proceeds from stock options and capital gains, %	3.0	4.7	2.6	3.4	3.6	3.5

Sources: Bank of Finland and Statistics Finland.

Chart 5. Household saving ratio



1. National Accounts
2. Excl. taxes on proceeds from stock options and capital gains

f = forecast.

Sources: Bank of Finland and Statistics Finland.

Slower employment and productivity growth

Reflecting the weakening in economic activity, growth in labour supply is expected to slow to below 1% a year over the forecast period. Growth in labour demand is expected to be 1½% in 2001 and then to fall to below 1% a year in 2002 and 2003. Real GDP growth in excess of trend will help to sustain a further slow fall in the unemployment rate over the forecast horizon.

Both the employment rate and the labour force participation are expected to rise to some extent, but will still be below their 1989 peak levels at the end of the forecast horizon. The labour force participation is forecast to rise to 67.5% in 2003 and the employment rate to 69%. The rate of increase in the employment rate during the forecast period will be slower than in previous years, and any further improvement will be difficult without structural measures.

With the slowdown in economic activity, labour productivity growth is expected to slow from over 4% in 2000 to around 2½% a year over the forecast period. The introduction of flexible working practices, such as part-time work, is assumed to advance only slowly during the forecast period and this will impede employment growth. The relatively high increase in basic pay under the current centralized wage agreement will weaken the ability of firms and sectors to create new jobs, and so the forecast rise in wages is likely to be reflected in sluggish employment growth in sectors with below-average productivity.

Rapid earnings growth

The new wage settlements cover the two-year period 2001–2002. They provide for negotiated pay increases of 3.1% in 2001 and about 2.3% in 2002. Negotiated wage increases in 2003 are expected to be between 2 and 3%. The negotiated increases are the same in both the private and public sectors.

Growth in average wages is expected to remain fairly high at about 4.5% a year throughout the forecast period. The rise in average wages in the public sector will be about half a percentage point slower than in the private sector. Other factors, besides negotiated pay increases, contributing to rapid wage growth will be a tightening in labour market conditions and a rise in productivity. Rapid growth in average wages will also boost whole-economy earnings growth, which will be about 4% a year throughout the forecast period. Therefore wage drift will remain in the region of about 1% in 2001 – as in previous years – but will increase in 2002 and 2003. The increase in wage drift will be largely the result of a gradually tightening labour market, despite the slower pace of employment growth.

The share of private sector wages and social security contributions in value added will increase slightly over the forecast period. In the private sector, the income share of labour fell below trend in the early 1990s as a consequence of the severe recession in the Finnish economy, but has subsequently remained relatively stable.

Measured in terms of unit labour costs, domestic costs are expected to rise at a slightly faster pace than the EU average over the forecast period. Despite rapid growth in average wages in Finland, this will be partly offset by relatively faster productivity growth at the whole-economy level.

Substantial variation in inflation

The rate of increase in consumer prices in Finland accelerated in 2000 as a result of higher energy prices, which contributed one percentage point to inflation. Petrol prices, in particular, have continued to fluctuate widely. Higher petrol and other fuel prices have also had significant indirect effects on inflation. On the basis of oil futures prices, the price of crude oil is expected to fall gradually over the forecast period. Whilst inflationary pressures coming from imports are generally expected to moderate in the early part of the forecast period, rising industrial producer prices will continue to put upward pressure on consumer prices.

In addition to energy, housing costs have been another important source of inflation. In the latter part of 2000 higher mortgage interest rates provided the main contribution to the rise in housing costs, but their effect on inflation will diminish in 2001 along with the fall in market interest rates. A rise in prices of owner-occupied houses also contributed to the pick-up in consumer price inflation in 2000, but, with the downturn in house prices in autumn 2000, depreciation of the stock of owner-occupied housing has made a clearly negative contribution to inflation in

Box 4. Estimate of hours worked in 2000

According to preliminary National Accounts figures, the total number of hours worked declined by 0.8% in 2000. However, this estimate is affected by a change in the methods used in the labour force survey, as a result of which the figures for 2000 and 1999 are not strictly comparable. A fall in the number of hours worked in line with the preliminary data implies growth in labour productivity of some 7% in 2000 and a rise in average wages of 7%.

Using labour force survey time series that have retained their comparability, such as the number of employed persons, the Bank estimates that the number of hours worked increased by 1.6% in 2000. Thus, on this measure, labour productivity increased by 4.4% in 2000 and average wages by 5.4%. When estimated in this way the rise in average wages still exceeds the rise in the wage and salary earnings index in 2000. This is because of overtime pay and the sharp increase in bonuses and other compensation. Although the average working week shortened in 2000, it was still longer than the normal working week.

the early part of this year. House prices are expected to start rising at a gentle pace, so that the contribution of owner-occupied housing to inflation will be smaller in the future and the rate of increase in the consumer price index (CPI) will approach that in the Harmonized Index of Consumer Prices (HICP).[5]

Largely as consequence of higher energy prices and housing costs, consumer price inflation accelerated in the course of 2000 from a year-on-year rate of 2.2% in January to 4% in the late autumn. It has since moderated and was 3.0% in April 2001. The rapid rise in services prices during 2000 and in the early months of 2001 is partly due to wage increases. Health concerns associated with BSE and measures to prevent the spread of foot-and-mouth disease have generated new inflationary pressures, but these are not expected to be long lasting.

The HICP, the general measure of inflation used in the euro area, rose by 3.0% in Finland in 2000, the contribution of energy being more than one percentage point. So far this year the price of oil (Brent crude) has ranged between about USD 22 and nearly USD 30 per barrel. In line with the assumption based on oil futures prices, the oil price is assumed to fall to below USD 26 per barrel by the end of 2001 and then to fall steadily to USD 22 by the end of 2003. According to this projection, the oil price will already start to exert downward pressure on HICP inflation from the middle of 2001 onwards via the energy price component.

In 2000 services, which include the capital costs of owner-occupied housing, were a major factor behind the pick-up in inflation. Whilst housing services inflation is expected to slow a little in 2001, the rate of increase in prices of other services has accelerated again in the early months of this year, partly as a result of an increase in basic pay under the new wage settlements that took effect in February. Negotiated pay increases and wage drift, which is likely to increase towards the end of the forecast period as labour market conditions tighten, will add to inflationary pressures to some extent.

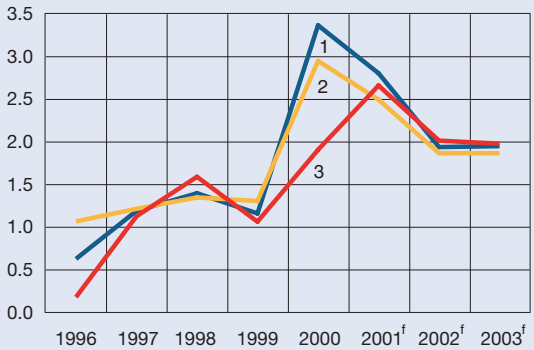
Overall, the rate of increase in consumer prices is expected to slow by around half a percentage point, from 3.4% in 2000 to 2.8% in 2001 (Chart 6). This will mainly be because of the projected decline in energy price inflation from over 11% in 2000 to approximately zero in 2001, which will also reduce HICP inflation by more than one percentage point. In 2002 and 2003 inflation is expect to settle at 2%, despite the assumption of a further decline in world oil prices. Inflation will be driven by unit labour costs and import prices, which are both forecast to rise at an average annual rate of about 2%.

The direct effect of changes in indirect taxes will be fairly small during the forecast period. The forecast nevertheless assumes that there will be some cuts in indirect taxes in 2003, which are expected to dampen the rate of increase in consumer prices by about 0.2 percentage point.

[5] HICP inflation differs from consumer price inflation in that it excludes certain items that may be treated in different ways in the national indices of euro area countries, such as the capital cost of owner-occupied housing (depreciation and interest payments), some transport taxes and spending on health care under sickness insurance schemes.

Chart 6. Inflation

Percentage change from previous year



1. Consumer price index (CPI)
2. Harmonized Index of Consumer Prices (HICP)
3. Harmonized Index of Consumer Prices, excluding energy

f = forecast.

Sources: Bank of Finland and Statistics Finland.

According to evidence from consumer confidence surveys, consumers' expectations of inflation twelve months' ahead have increased fairly steadily over the past two years or so. Data for spring 2001 show that consumers' inflation expectations have risen to about 3%, which broadly corresponds to the current rate of inflation. The speed with which inflation has picked up has been surprising, however, since only last autumn consumers' inflation expectations were about 2%. In the spring 2000 forecast the Bank of Finland projected consumer inflation of 2.8% for 2000 and in the autumn 2000 forecast it projected consumer inflation of 2.9% for 2001. Consumers seem to have reacted rather slowly to the rise in petrol prices, and in all probability they considered it to be of partly temporary nature because of the volatility of price movements. Underlying the increase in inflation expectations are surprise developments in energy prices as well as the rise in the prices of meat and substitutes and in wage costs. However, the increase in inflation expectations shown by consumer survey data is essentially an indicator of consumers' views about price developments in the short term. In the forecast it is assumed that the rise in inflation expectations is only transitory and that expectations will fall as inflation slows.

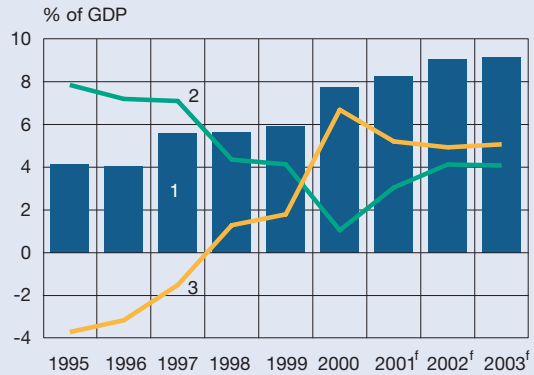
Trade surplus set to grow further

The trade surplus is expected to increase over the forecast period as a consequence of robust export demand, despite a slowdown in export growth in 2001 and a slight deterioration in the terms of trade. The surplus on the goods and services account will remain at above 10% of GDP throughout the forecast period.

The current account surplus is forecast to reach about 8.5% of GDP in 2001 and to rise to about 9% in 2002 and 2003 as a result of an increase in receipts in the income account. The income account is in deficit to the tune of about 2% of GDP, but the deficit is expected to shrink to about 1% of GDP. Growing in earnings on Finnish portfolio and direct investment assets abroad will reduce the deficit already in 2001 and further in 2002. Although dividends paid to non-residents by Finnish companies will still be high in 2001, they are expected to decline slightly in the following two years. Interest payments on government debt will also decrease. As the current account has been in surplus for many years now, Finland's net external debt (net international investment position excluding equity items) has declined markedly and will move into a net asset position during the forecast period.

The financial balance of both the public and private sectors will be in surplus during the forecast period (Chart 7). The current account surplus is due to Finland's continuing good economic performance. In the public sector its counterpart will be a further reduction in the central government's outstanding external debt and asset diversification by social security funds and in the private sector an increase in, inter alia, direct investment abroad. The corporate sector financial surplus is expected to widen to about 4% of GDP while the public sector surplus will settle at about 5% of GDP during the forecast period. By

Chart 7. Current account and financial balances of the private and public sectors



1. Current account
2. Private sector financial balance
3. Public sector financial balance

f = forecast.

Sources: Bank of Finland and Statistics Finland.

contrast, in the household sector investment will slightly exceed saving during the forecast period.

Slowdown in lending growth

Lending and deposit rates in Finland move in line with short-term market interest rates. The average rate on new loans is expected to rise from 5.4% to 5.8% during the forecast period, as changes in market rates will be reflected directly in lending rates. The margin between banks' lending rates and deposit rates is expected to remain broadly unchanged.

The fall in equity prices during the past year and uncertainty about future economic developments is likely to increase the popularity of bank deposits in 2001 as investors look for safer investments. But given the continued positive outlook for the economy, investments in products that are substitutes for deposits, such as equities and mutual funds, are expected to increase their share of household investment in the subsequent years, and growth of deposits will remain fairly slow.

Loans to the private sector grew by 7% in 2000 and the rate of growth is expected to slow to 4–6% during the forecast period. Despite some weakening in corporate profitability, the sector has a sizeable surplus. In 2001 loans to non-financial corporations are expected to decrease from the previous year, and the rate of growth will remain subdued over the rest of the forecast period.

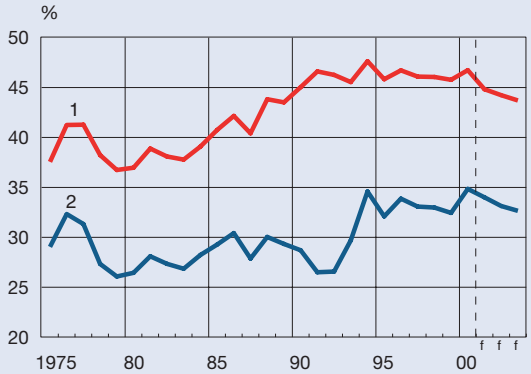
The annual rate of growth of loans to households slowed to 8% in early 2001. The annual rate of growth in the stock of housing loans has slowed to just over 10% from its peak of about 16% in summer 1999. Activity in the housing market calmed down in the latter part of 2000, even in the growth centres, but as far as the whole country is concerned the fall in house prices is likely to be short-lived. Contributing to this will be the assumed fall in market interest rates, which will lead to a slight improvement in the financial position of the household sector. Reflecting the rise in house prices and moderate increase in residential investment over the forecast period, the annual growth of loans to households is expected to settle at about 7%.

Central government finances will remain in surplus

The fiscal policy stance can be described as fairly expansionary in 2001 and slightly restrictive in 2002 and 2003. Although the general government surplus will decline noticeably from the exceptionally high level reached in 2000, it will nevertheless remain in the region of 5% of GDP throughout the forecast period. Despite tax cuts in 2001 and 2002, the surplus in central government finances is expected to settle at around 2.5% of GDP as a result of relatively rapid growth in the tax base and a fairly moderate increase in spending. There will be a small deficit in local government finances while the surplus in the social security funds will remain at 3% of GDP.

Income and wealth tax receipts increased by a third in 2000 from the previous year. Income and

Chart 8. Tax ratios in Finland, 1975 – 2003



1. Taxes and social security contributions, % of GDP
2. Household taxes and employees' social security contributions, % of taxable income

f = forecast.

Sources: Bank of Finland and Statistics Finland.

wealth taxes paid by households were swelled by taxes levied on stock option income and capital gains on equity sales, as well as by an increase in the wage bill. Underlying the growth in corporate tax receipts was continued good profitability. Receipts were further boosted by an exceptionally large amount of supplementary taxes collected in connection with taxation for the previous years and by taxes on capital gains associated with corporate restructurings.

Growth in direct taxes paid by households is expected to slow during the forecast period, as taxes on earned income will be lowered and the effect of exceptional factors, such as option income, will diminish. The cuts in earned income taxes will be implemented mainly in 2001 and 2002 whereas in 2003 it is assumed there will only be an adjustment of tax tables for inflation. Together, the tax cuts and inflation adjustments will reduce taxes paid by households by some FIM 10 billion in central government taxation and by FIM 1.5 billion in local government taxation. Corporate tax receipts will decrease in 2001 as the effect of the exceptional factors at work in 2000 disappears. In the subsequent years the growth of corporate tax receipts will return to a rate corresponding to the forecast growth in corporate profits.

Indirect tax receipts are likely to increase only a little in 2001, as lower demand for fuels will reduce revenue from fuel taxes and there will also be a decline in receipts from excise duties on alcohol and motor tax. In 2002 the growth in taxes on products is expected to pick up again. By contrast, the tax cuts assumed for 2003 will reduce receipts from excise duties on alcohol and tobacco, in particular, as well as motor tax receipts. These measures will also reduce VAT revenue.

The overall tax ratio – taxes and social security contributions as a percentage of GDP – is forecast to fall from 47% in 2000 to 44% in 2003 (Chart 8). Despite the cuts in earned income taxes, the average tax rate faced by households will fall only slightly. This is because, as the level of earning increases, the average tax rate will rise as a result of the progressivity of taxes. Indirect labour costs will decline a little during the forecast period as a consequence of a lowering in the unemployment insurance contribution rate.

The rate of growth in primary public spending (expenditure excluding interest payments) is expected to increase during the forecast period. Contributing to the faster rate of growth in public consumption will be rising wages and an increase in the number of employees, particularly in the local government sector. It will also be reflected in a marked increase in central government grants to municipalities, which are forecast to increase by nearly a fifth (more than FIM 5 billion) from last year's level. Central government expenditure is likely to remain broadly within spending limits as current transfers to households and the Social Insurance Institution will decrease along with rising employment and no discretionary changes are assumed in social benefits. Unemployment benefits paid by social security funds will decline whereas pension expenditure will increase as a result of a substantial rise in the pension index in 2001. Public investment will increase only slowly. Although the local government sector as a whole will be slightly in deficit, there will be large differences in the finan-

cial positions of individual municipalities. Overall, the ratio of public expenditure to GDP will fall further during the forecast period; interest payments are expected to decline by about one percentage point in relation to GDP.

A combination of budget surpluses and rapid economic growth will keep central government debt on a downward trend. The debt-to-GDP ratio is forecast to stand at 34% at the end of 2003. Though outstanding debt has fallen by a half from the levels prevailing in the recession years of the 1990s, it is still well above pre-recession levels. The target set in the Government programme to bring down the debt-to-GDP ratio (privatization proceeds are not included in the calculation) to below 50% will be achieved in 2001. The general government debt-to-GDP ratio (Maastricht definition) will decline more slowly than central government debt, as the earnings-related pension funds will continue to run down their investments in government bonds. The general government debt-to-GDP ratio (Maastricht definition) is forecast to stand at 34% at the end of 2003, almost the same as foreseen in the September 2000 update of Finland's stability programme.

Uncertainties surrounding the forecast: is there a risk to price stability in Finland?

Some of the risks to the economic outlook highlighted in the autumn forecast have materialized. Growth prospects have deteriorated rapidly in the wake of the US economic downturn and slowdown in the growth of world trade. These developments also have implications for growth performance in the euro area economy. In Finland, capacity constraints and lack of skilled labour in some sectors of the economy are likely to become growth-limiting factors during the forecast period. Inflation has been driven by oil prices, higher services prices and to some extent a rise in food prices. Growth is now expected to be slower than previously forecast – noticeably so in 2001 – but the inflation forecasts have hardly been changed at all. The same applies to the uncertainties surrounding the forecast: growth could turn out to be even slower than forecast whereas inflation could be higher.

Oil prices and the exchange rate could continue to exert greater upward pressure on inflation than has been forecast. The expected slowdown in inflation rests strongly on the assumption that energy prices will fall and that the price disturbances affecting food production will disappear. It is further assumed that the weakening in the euro's exchange rate will have only a minor impact on prices. If the oil price were to remain at USD 26 per barrel, this alone would raise consumer price inflation by 0.2 percentage point more than forecast in both 2002 and 2003.

Consumers' inflation expectations are now at their highest level since collection of such data started in 1995. While these expectations are largely based on past price developments, they also provide an indication of the perception among consumers that producers and distributors are quick to raise prices and also of the lack of competition in some sectors. Although slower economic growth and a slower fall in unemployment will lessen price pressures, from the price stability viewpoint there still seems to be scope for increasing competition in product markets.

The current collective agreements and a clearly slower rate of decline in unemployment are likely to ensure that the rise in labour costs remains fairly moderate in 2001 and 2002. Should inflation prove to be higher than forecast in 2001, for example because of upward pressure from fuel prices, and the index clause contained in the agreements is triggered, this would have adverse consequences for employment and price stability. A gradual tightening in labour market conditions in the presence of substantial structural unemployment will increase wage pressures. These pressures could be crucial in 2003 when the current agreements expire and the time comes to review the continuation of the policy of wage moderation.

According to the forecast, the growth prospects for Finland are still fairly positive, despite the slowdown in economic activity. Such an outcome is by no means certain, however, if the recovery of the US economy is delayed. This would clearly worsen the growth outlook for the world economy and thus also the Finnish economy. But the implications for economic growth in Finland and the euro area as a whole would only be really significant if the growth prospects for the US economy in the longer term were judged to be more modest than has been widely held to be the case in recent years, a view that is based on the perceived impact of the 'new economy'. A lasting change in the growth prospects for the US

economy would quickly lead to a sharp economic slowdown in Finland. This scenario would probably also involve a stronger euro and slower inflation.

Further tax cuts are needed

In recent years robust economic growth and relative stringency in central government spending have led to a marked improvement in public finances and in central government finances, in particular. The central government budgetary position has strengthened to the extent that there will be further fairly sizeable surpluses over the next few years, despite tax cuts and the gradual disappearance of a number of exceptional factors that have boosted revenue.

The positive developments in central government finances nevertheless have to be seen against a background of a still strikingly high level of taxation. The fact that, even after the tax cuts included in the Government's programme have been implemented, the average household tax rate will still be at the exceptionally high level reached during the recession years of the 1990s is not a propitious outcome from the point of view of growth and employment. When the Government's programme was drawn up it was not possible to set the size of the cuts in markka terms in accordance with actual earnings growth. Although income tax scales have been lowered, an increasingly large proportion of wage earners have moved into higher tax bands because their earnings have risen and have therefore been taxed more heavily.

A further reduction in the tax wedge is essential if there is to be a substantial improvement in structural unemployment and a rise in the employment rate. At the same time steps must be taken to prepare for the budgetary consequences of an ageing population by strengthening the general government fiscal position. One of the key challenges in central government finances in the near term will be how to set expenditure at a level that will also allow debt reduction in conditions where there is a significantly lower tax burden than at present and slower economic growth than in recent years.

In the second half of the 1990s Finland became accustomed to rapid economic growth, which to a large extent was driven by ICT exports. Although a continuation of positive growth surprises of this kind is quite possible in the future, it is more likely that growth will be slower than in recent years – as envisaged in the forecast – in which case the decline in unemployment will be even slower than hitherto. Economic growth could also turn out to be weaker than forecast. Slower employment growth will call for even more determined action to address, for example, incentive problems and to raise the retirement age. Elsewhere in the euro area the more widespread use of 'atypical' individual employment contracts (including part-time work) has led to a substantial increase in employment. Structural measures are also needed to mitigate the problems associated with population ageing.

The prospect of slower growth also shows that the policy aimed at reducing central government debt and avoiding new categories of permanent public spending has been well-founded. If growth does turn out to be slower than forecast, the 'buffer' funds built up over the past few years will have a vital role to play. The general government fiscal position would be considerably worse than forecast if corporate profitability and employment were to weaken substantially at the same time as the saving ratio is rising. If, in addition, the deterioration on the revenue side were to be accompanied by an increase in government spending, the reduction in central government debt could come to a halt. In particular, there would be mounting pressures to increase government grants to municipalities, since their ability to maintain existing levels of service provision would diminish as economic growth slows. Even though government grants are forecast to increase substantially, there will still be a small deficit in local government finances. There is also a danger that municipalities will raise local tax rates, in which case the tax burden will become even heavier. All in all, a weaker-than-forecast outturn in public finances would complicate the task of coping with the long-term challenges to spending and public finances (including those related to population ageing).

5 June 2001

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

The Finnish financial markets are currently stable and prospects are good for continued stability. Banks are in a strong financial position as a result of excellent profits in 2000. Banks' profitability is expected to remain good, albeit not at the current record-high level, partly due to inevitable increases in loan losses.

Along with the pronounced structural changes that have occurred in the Finnish financial markets, there has been a moderate increase in financial institutions' strategic and operating risks. In the short run, however, a greater threat than that of potential domestic crises is posed by possible disturbance spillovers (shocks) from international financial markets, albeit the Nordic financial markets that are key from Finland's viewpoint are now stable. The turbulence in Turkey's financial markets is the most recent example of an external shock. Uncertainty concerning US economic performance is further exacerbating market anxiety.

It is via regulation of the international financial markets that efforts are made to respond to changes in the markets. Banks' capital requirements are currently in the process of significant revision, both globally and in the EU area. The proposed capital adequacy formulae are aimed at taking actual risks into account in a more detailed manner than before.

Developments in international financial markets

With prospects for economic growth weakening, there has been an increase in uncertainty in the international financial markets. This uncertainty is reflected in a sharp increase in price volatility eg in the stock and bond markets. During the period March 2000 to the start of April 2001, the value of IT company shares declined throughout the world. The US Nasdaq index fell by nearly 70% during the period while the HEX all-share index, which is heavily influenced by Nokia, fell by nearly 60% (Chart 1). Since the start of April 2001, share prices have risen moderately, despite the fact that companies' financial results have been weaker on average than in the previous year. It is nonetheless too early to say whether share prices have bottomed out yet.

The uncertainty in the international financial markets is closely linked to uncertainty about the course of the US economy. The risk is that the US economy will be pushed into recession by a cutback in investment, due to companies' poor financial results, combined with a dampening of households' propensity to consume, due to the wealth effect of declining share prices and to generally less optimistic expectations. The increased uncertainty is also apparent in larger risk premia associated with high-risk loans. Bankruptcies and loan losses have also increased. The US Federal Reserve has tried to prevent an excessively rapid decline in demand and to create positive expectations via an exceptionally fast lowering of its key interest rate, by two and a half percentage points since the start of the year.

As Japan's economic prospects have dimmed, fears have grown that the difficulties connected with its structurally fragile financial markets will worsen.

[1] This figure covers all bank lending to companies that are bankrupt, nearly bankrupt or in need of close monitoring (ie loans in categories 2,3 or 4). The corresponding figure for Finland during the worst years of the banking crisis was about 10% (calculation methods are not exactly the same, however).

Chart 1. Stock Indices

4 Jan 1999 = 100

1. HEX all-share index
2. Nasdaq Composite index

Sources: HEX and Bloomberg.

The situation is exacerbated by a lack of transparency in its financial markets. According to the most recent estimates of Japan's Financial Services Agency, Japanese banks' nonperforming loans amount to about 22% of their lending stock.[1] In April the Japanese government announced a new emergency economic package aimed at reviving the banking sector and the economy. As regards the effectiveness of the proposed measures, market reactions have been tempered by a history of incomplete and feeble implementation of previous stimulation packages. A deeper-than-expected recession in the United States would be of serious concern to Japan under the present circumstances. A worsening of Japan's plight would impact particularly the emerging Asian economies.

The crises experienced by Turkey and Argentina have reduced investors' confidence in the emerging economies, which are always highly sensitive to economic developments in the industrial countries. During April, the Brazilian, Turkish and Indonesian currencies in particular depreciated significantly. The weakened outlook for the emerging economies derives partly from a decline in US imports.

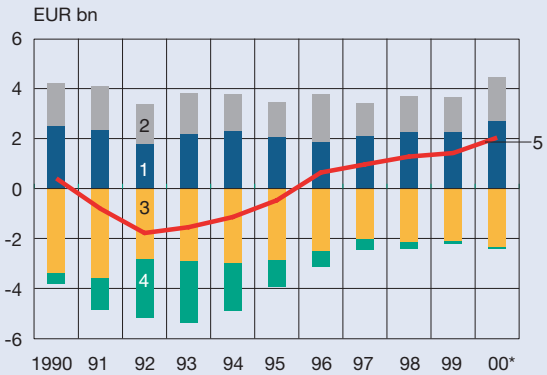
Current situation and outlook for the EU area

Although overall conditions in EU-area financial markets appear to be stable, there are differences between countries. Bank lending to the public continues to grow at a fairly high, albeit decelerating, rate (9.6% p.a. in February 2001). The highest growth rates for lending stock have been recorded by Ireland, Portugal and Greece. In Greece the growth rate has increased largely in connection with membership in the monetary union and the resulting decline in the level of interest rates. Growth rates for lending are also above average in the United Kingdom, Netherlands and Spain, whereas they have remained relatively moderate in Germany and Belgium.

EU-area banks' lending margins have finally begun to widen, after a long period of narrowing. Because banks' lending rates are not usually adjusted immediately when market rates change, it is still too early to say whether banks have actually tightened lending conditions by expanding the lending margin or whether the widening derives from falling market interest rates. The decline in market rates has also led to a narrowing of deposit margins and the margin between banks' lending and deposit rates, ie the total interest rate margin, has narrowed slightly since October 2000.

The composite EU banking sector is in good condition. Weakening economic conditions reduce banks' profitability only after a lag in time. Banks in some countries have nonetheless already made additions to their loan loss reserves. Credit risks appear to be the largest in the real estate and telecommunications sectors. Banks' claims on emerging countries vary

Chart 2. Financial results: deposit bank groups



1. Net interest income
2. Other income
3. Operating expenses and depreciation
4. Loan and guarantee losses
5. Operating profit

*Data for 1997–2000 are not fully comparable with earlier data, due to numerous restructurings.

Source: Financial Supervision Authority.

substantially across the EU countries. External risks are most significant in Latin America and Turkey. However, claims of EU-area banks on Asian countries have decreased.

Outlook for the Finnish financial markets

Both the current situation and the outlook for Finnish banks appear to be stable. Bank lending to the public is growing at a below-average rate for the EU area (5.2% p.a. in March 2001). The slow growth is largely explained by the fact that companies have raised only small amounts of new loans from Finnish banks while borrowing more from abroad and non-bank financial institutions. The stock of bank lending to companies grew by just 0.3%[2] p.a. in March 2001. Finnish households have continued to borrow actively from banks (growth rate 7.8% p.a. in March 2001), albeit clearly at a more subdued pace than a year ago. The easing in the housing market has dampened households' demand for loans.

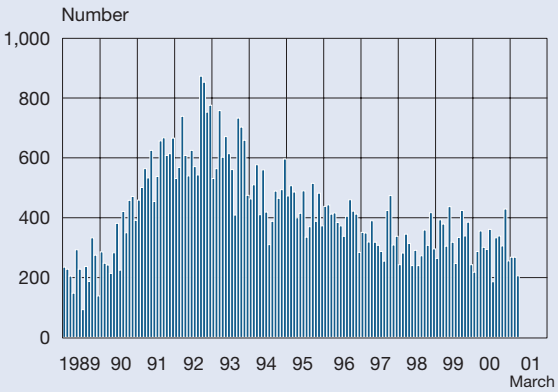
Banks' profitability was especially good in 2000, and there are no signs of significant changes in the offing (Chart 2). The banks' capital position is also strong, due to excellent profitability and a low level of loan losses. However, banks' profitability could be undermined by an anticipated decline in market interest rates and possible tightening of competition for deposits, which would lead to a reduction in net interest income, as well as by slower growth of other income and rising costs. Another threat to profitability is posed by gradually increasing loan losses. These are currently at an exceptionally low level, due to early additions to reserves and recoveries of loan write-offs. Net loan losses in 2000 amounted to only about 0.1% of the stock of bank lending. A slowdown in economic growth would probably mean that a larger portion of lending would not be serviced. Losses on new lending become visible only after a lag of several years. For instance, there has not yet been any significant change in the number of company bankruptcies (Chart 3).

Finnish banks have been quite successful in recent years in reducing their direct ownership of shares and real estate, as well as the related risks. However, the banks' indirect exposures may have increased in connection with cross-sector mergers, as insurance companies have significant holdings in shares and real estate. Much effort is now being put into the development of techniques by which financial conglomerates can manage these risks.

Overall, the Finnish economy and financial system are presently in a notably better position to withstand a crisis than was the case a decade ago, partly because of significantly lower levels of indebtedness

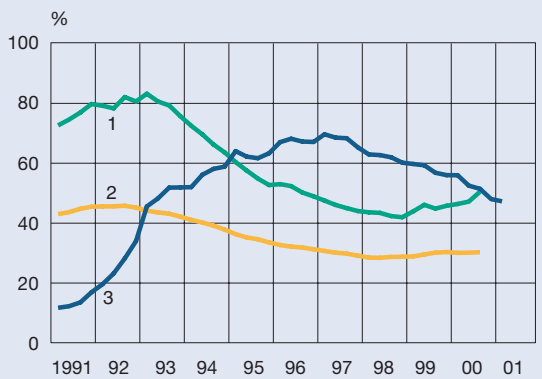
[2] Figure adjusted in connection with statistical revision.

Chart 3. Corporate bankruptcies instituted



Source: Suomen Asiakastieto Oy.

Chart 4. Debt-GDP ratio by sector



1. Corporate (excl. housing companies)
2. Household
3. Central government

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

in the corporate and household sectors and significantly less exchange rate risk (Chart 4). Stable conditions in the EMU environment help to reduce uncertainties as to financing costs and hence provide an incentive for companies to invest. The more stable environment also reduces banks' credit risks.

A more serious threat than domestic crises are disturbances that may be transmitted via the international financial markets. The risk of cross-border contagion of disturbances has increased with increasing integration. Closer ties between nations, on the other hand, alleviate shocks originating from domestic factors, because the effects dissipate as they spread (because of the close ties) over a wider area.

The most recent example of an external shock is the turbulence in the Turkish financial markets. Turkish banks, which are heavily in debt to foreign countries, ran into problems after the lira had to be floated and then depreciated by about 25% in February. The IMF has taken the lead in efforts to calm the situation in Turkey. Finnish banks also have claims on Turkey, but a significant portion of these can be con-

sidered low-risk claims, due eg to government guarantees.

For the euro area, the start of 2002 will mark the start of a period (two months at most) during which a changeover to euro banknotes and coins will take place. In Finland the cash changeover from markkaa to euro must be completed during the two-month period because the Finnish markka will no longer be legal tender after 28 February 2002. The Bank of Finland, however, will continue to redeem markka banknotes and coins for ten years following cessation of legal-tender status, ie until 29 February 2012. Such a large-scale operation always entails risks, but efforts are being made to alleviate these eg via back-up systems and a comprehensive campaign to inform the public. The cash changeover is not expected to pose a threat to financial stability in Finland.

Structural changes and strategic risks

Banks and insurance companies have responded to tightening domestic and foreign competition by forming mergers and strategic alliances. With the increasing pressure for change in the financial markets, operational and strategic risks have moved to centre-stage.

Nordea is continuing to develop its group structure. In the first stage, Merita Bank, Christiania Bank og Kreditkasse, Nordbanken and Unibank become subsidiaries of Nordea Companies Finland (formerly MeritaNordbanken). Nordea Companies Finland will be converted from a holding company to a company engaged in banking, and this company will merge with Merita Bank. The asset management and investment bank units of all four of these banks will be transformed into two groups that will be subsidiaries of holding companies that are wholly owned by Nordea AB (publ) in Sweden. The group's casualty, life and pension insurance companies will be formed into two subsidiary groups of Danish parent companies. It is estimated that the group restructuring will take 18 months. The combining of different operations, adjusting to corporate cultures of different countries, and bridging of legislative differences present formidable challenges for the group's management.

At the start of the year the insurance company Sampo, Leonia Bank group and Mandatum Bank began operating as Finland's first significant financial conglomerate, and in April the group took the name Sampo Group. The group has adopted a strategic focus on long-term savings vehicles, such as life insurance products, asset management and funds. The markets for these products have been among the fastest growing in Finland in recent years. Synergy economies via the distribution network are expected to improve the group's efficiency (incl. cross-selling possibilities). It is intended that the task of combining the offices of Sampo, Leonia and Mandatum will be completed during the current year. The key questions that are still open for Sampo Group are related to finding a foreign partner, the form of cooperation with that partner, and a possible reduction in the government's present 43% stake in the group. Sampo's offer of about EUR 2.6 billion to buy the Norwegian Storebrand insurance company is presently under consideration by Norwegian authorities and shareholders of Storebrand.

The basis for the strategy of the OKObank group is revamping of operations and expanding market share in those core banking activities in which the group has had recent successes, which is enabled by an improved capital position. Partners for nationwide cooperative efforts and alliances are being sought across sectoral borders. For example, an agreement has been made on initial-stage cooperation with Sonera, under which OP-Kotipankki and telecom company Sonera Plaza will set up a joint venture. Cooperation has also been started with the leading retail chain, Kesko, in connection with the so-called K-accounts. On the other hand, no progress has been made towards the planned cooperation with the Pohjola insurance Group. From the perspective of the OKObank group, the key issue is how these forms of cooperation will fare in competition with tighter forms.

Securities markets

The centralization of book entry registers for shares in autumn 2000 provided a foundation for the development of clearing and settlement of share trades. During autumn 2000 and spring of 2001, the Finnish Central Securities Depository (APK) developed the present clearing system and tested alternative solutions for a new system. The key requirement of the new system is continuous gross settlement of share

trades, along with the present once-daily batch-processed net settlement, and it could be operational in the latter half of 2002.

After the share registers were centralized, the due-date settlement rate (percentage of trades settled, according to the rules, three days after trade date, ie at T+3) rose in the latter part of 2000 to nearly 96%. The capacity to effect a share loan at the HEX on the morning of the settlement day – available since the start of the year – enables brokers to more effectively reduce the number of trade-related delivery failures. The due-date settlement rate for share trades in fact peaked at 97.3% in February, and experience in recent months indicates that it has stabilized at a high level.

In European stock exchanges, central counterparty (CCP) services have become more widespread, which has facilitated settlement of trades, particularly in blue chip shares. With CCP, the stock exchange or clearing house assumes a position between the original parties – buyer vis-à-vis seller and seller vis-à-vis buyer – and guarantees settlement of trades according to agreed timetables. The importance of the service increased particularly after establishment of the Euronext exchange, because it enabled the combining of the CCPs of Belgium, France and the Netherlands into a single company Clearnet. The large market makers in particular consider these services important because they reduce capital requirements and ensure anonymity of trading counterparties. The stock exchanges in other Nordic countries have coaxed the HEX to cooperate in this and other areas. At least the London Clearing House (LCH) and Clearnet offer similar services, even to marketplaces operating outside of their respective home countries.

Payment systems

The number and total value of cross-border payments handled in the TARGET system – a large-value payment system maintained by EU-area central banks – increased during the early part of the year. In March the daily average number of payments was 44,000 and their total value was EUR 510 billion. The number and value of payments effected via EURO1, which is a cross-border payment system maintained by the Euro Banking Association (EBA), increased slightly in the early part of the year. In February the daily average number of transactions was 110,000 and the corresponding value was EUR 210 billion. Because of continually increasing volumes, the importance of smooth functioning of payment systems for the whole financial system has grown.

The Bank of Finland and Financial Supervision Authority studied Finnish banks' settlement risks associated with currency trading by means of a questionnaire and on-site visits in 1997 and a follow-up in 2000. The 1997 study revealed that these settlement risks rose (also in Finland) to a level that could, in certain circumstances, pose a threat to the whole financial system. The follow-up study indicated that settlement risks have clearly declined in Finland, as a result of both the banks' own actions and the changeover to the euro. Since the changeover to the euro, the amount of currency trades has declined by about 20%, partly due to the cessation of markka markets and because foreign banks manage their euro-denominated liquidity via the large financial centres of Europe.

In 1997 it became clear that there was some overlapping of the larger foreign-bank counterparties of Finnish commercial banks, which increases contagion risk in a crisis situation. The common counterparties were large international and Nordic banks. During the last three years, the banks have lowered their limits on currency-trading settlement risks by 30–50%, depending on the particular bank. As a result, the banks now have fewer large exposures. They also have fewer counterparties in common and more of their own counterparties than was the case three years ago. The maximum potential risk position vis-à-vis a single counterparty has been reduced by about 50% in the last three years. The Bank of Finland and Financial Supervision Authority continue to monitor the situation.

Planning has long been underway for the international CLS Bank (CLS = Continuous Linked Settlement), which will substantially reduce banks' settlement risks in currency trading. The possible start-up of CLS Bank at end-October 2001 creates some pressure because it means that the EU central banks' TARGET payment system should then be available for handling transfers of covering funds each morning under tight time limits.

Recently, some new methods of making retail payments have been introduced. For instance, the first mobile payment system was launched in Finland in

the spring. New systems that include both deposits and e-money pose challenges to supervisors, because existing definitions and supervisory principles do not directly apply to them. On the other hand, it is widely felt that new developments should not be subjected to unnecessary impediments. In any case, the authorities must be able to guarantee adequate levels of security and operability of new systems that come into general usage.

Financial stability and the development of regulation and supervision

Structural changes in the financial markets, technological progress and product innovation are forcing financial market authorities to consider whether regulation and supervision are up to date. Authorities have indeed responded to these market-induced challenges, in both international fora and in their own countries.

Under pressures stemming from recent financial crises, changes in banking, and innovations in the financial markets, both the EU and G10 countries' Basel Committee on Banking Supervision are in the process of revising banks' capital requirements. A second consultation round was launched on the EU's proposal for a new capital adequacy framework in January 2001. The EU commission is expected to propose a new directive around the end of this year. It is intended that the directive be approved sometime in 2003 and put into effect at national level at the start of 2004. The new rules emphasize banks' own systems for measuring credit risk, banking supervisory review process and market discipline. As regards lending to companies, the capital requirements would be based on four risk categories rather than (the current) one.

With the increase in mergers between banks and insurance companies, authorities have been forced to examine whether the operations of financial conglomerates might entail certain risks that are not encountered by banks and insurance companies operating separately. The risks of financial conglomerates are discussed in a memorandum issued in January 2001 by a joint committee of the Financial Supervision Authority, Insurance Supervisory Authority and Bank of Finland. The committee concluded that even though the probability of a crisis that would seriously damage the whole group is small, the costs of such a crisis could be huge because of systemic consequences. To a certain extent, risk-taking can be controlled via regulations also at the financial-group level. The possibilities of regulatory/supervisory arbitrage and serious conflicts of interest can jeopardize group operations, and for this reason regulation should entail a risk-based supervisory framework.

The EU Commission on 26 April 2001 issued a proposal for a directive on financial conglomerates. The aim is to establish common stability norms for EU supervisors of financial groups and thus promote financial stability. The proposal covers the definition of a financial conglomerate, coordinating supervisor, and prevention of double counting of own funds. Studies are also being done in Finland on the need for changes in legislation on supervision of financial groups. A working group on the matter set up by the Ministries of Finance and Social Affairs and Health will submit its report to the ministries in June.

E-money is not yet very widely used. But, in the absence of effective regulation, wide use of e-money might pose a threat to financial stability if firms that issue e-money use funds collected from the public for making risky investments. The European Parliament and EU Council issued a directive on e-money (2000/46/EU), which entered into effect in September 2000. The directive deals with e-money issuers as regards start-up and operations as well as stability-related supervision of their activities. The directive, which unifies legislation on e-money within the EU, is to be implemented in national legislation by 27 April 2002.

A committee on banking services set up in 1999 by the Ministry of Finance, which worked inter alia on implementation of the e-money directive in Finland, completed its work at the end of last year. The committee proposed that the Credit Institutions Act be amended so as to extend its scope to include general payments transmission and e-money issuance when these are engaged in as business activities. It was proposed that provisions be added to the Act on new types of credit institutions and payment intermediaries, whose operations would be limited to general payments intermediation and e-money issuance and closely related activities, as well provisions on the requirements that non-credit institutions must meet if they intend to accept repayable-on-demand funds from the public. One of the aims of the new

provisions would be to increase the availability of banking services.

An agreement to cooperate in supervisory activities was signed in April between the ECB and EU-area central banks, which oversee payment systems, and the banking supervisors of the EU countries. The primary aim of the agreement is to promote cooperation between central banks and banking supervisors in the oversight of large-value payment systems in the EU area and to ensure the reliability and stability of payment systems and participating credit institutions.

The development of securities market supervision continued in international fora. Recommendations on settlement systems made by a joint committee of the G10 countries' Committee on Payment and Settlement Systems (CPSS) and the International Organization of Securities Commissions (IOSCO) were open for comments until 9 April. These recommendations may provide the principles for future oversight of securities settlement systems. The committee intends to publish its final report before the end of 2001.

22 May 2001

Key words: financial system, stability, financial markets, banking sector, securities markets, payment and settlement systems

Developments in retail payment systems

by **Harry Leinonen**, Adviser to the Board
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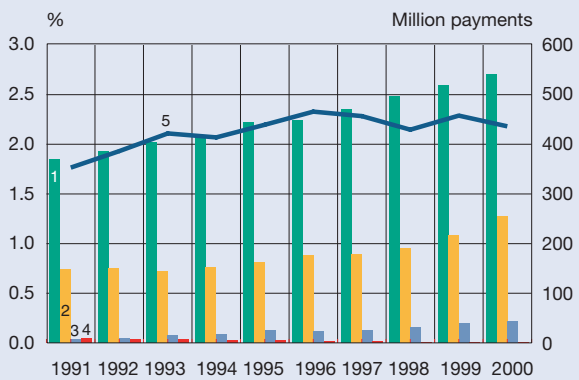
Banks face three notable challenges in developing retail payment systems: integration of bank and customer systems, use of new technologies to improve the efficiency of payment systems, and international standardization and integration of banking systems.

Retail payments – routine settlement of invoices and purchases by consumers and firms – are clearly the dominate type of transaction handled by payment systems in terms of numbers of transactions. On the other hand, wholesale payments, ie money market, securities system and interbank settlements, are considerably more important in terms of aggregate value.

In recent decades, retail payments in Finland have increasingly changed over from cash to giro transfers and debit cards (Chart 1). The use of cheques has essentially vanished. This trend is driven by the practicality and cost-effectiveness of new payment instruments. Functions once performed manually and based largely on paper are now completely automated. For customers, the switch makes things easier and affords a small reduction in forgone interest earnings, as compared to the use of physical cash. Finnish banks usually charge lower fees for executing payments based on self-service than for those requiring staff assistance.

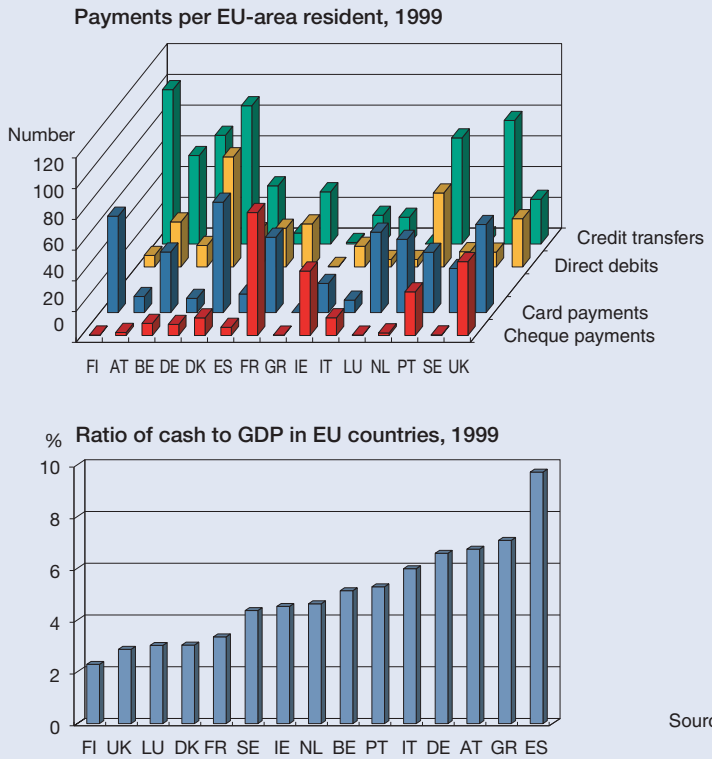
Chart 1. Retail payments in Finland



1. Credit transfers (right-hand scale)
2. Debit card payments (right-hand scale)
3. Direct debits (right-hand scale)
4. Cheque payments (right-hand scale)
5. Ratio of cash held by the public to GDP (left-hand scale)

Source: Finnish Bankers' Association.

Chart 2. Payment practices in different countries



Source: European Central Bank.

International situation

Finland is a pioneer in advanced payment systems (Chart 2), and today electronic banking services are widely used. This is certainly not the situation everywhere. In other countries, national systems have developed with different emphases and at different speeds. Thus, while all countries rely on the same basic payment modes, their relative importance and technical sophistication may vary considerably. This inconsistency arises from differences in the organizational structures of banking sectors, prevailing payment arrangements, willingness of customers to accept change, prevalence of information technology, regulatory issues, and the technical infrastructure itself. Such national differences currently constitute the main obstacle to achieving efficiency in international payments. Indeed, only as regards credit card payments, have clear international standards and practices been established.

Development trends and future challenges

Electronics-based solutions and integration with customer systems have recently been the dominant themes in the development of payment systems. There has also been a notable shift from physical storage media (eg hardcopy records and magnetic tape) to

entirely network-based transactions. Moreover, the significance of international payments has grown along with global integration. In Finland's case, stage three of EMU implies a high degree of international integration in the coming years. Increasing use of the Internet is reinforcing this trend. The Internet already takes little note of national borders, which may eventually loose their significance for electronic commerce. The role of the Internet in electronic commerce, trading systems and associated payment transfers continues to gradually increase.

The main challenges ahead in development of retail payments systems are

– effective integration of customer systems with bank payment systems
– exploitation of new technologies to improve the efficiency of bank payment systems
– international standardization and integration of banking systems.

Effective integration with customer systems

Finnish banks are among the world's leaders in integration with customer systems. All large, medium-sized and even most small corporate customers handle payments automatically with their bank over networks. An ever increasing number of private customers also handle their payments online via home PCs or even mobile phones. The automation level in Finland is probably the highest in the world – 88% of all banking transactions are handled in self-service mode, mainly via the Internet (Chart 3).

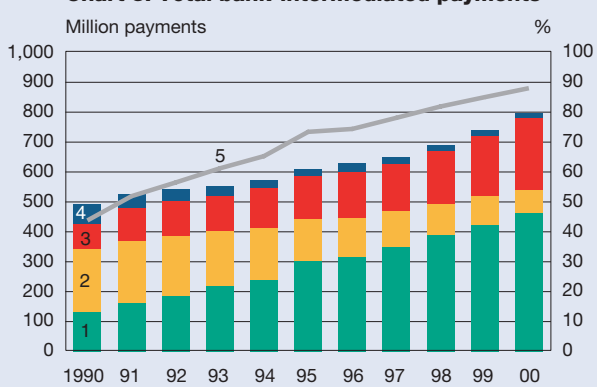
The main technical factors in integration with customer systems are

– uniform and clear data communication standards
– universal messaging standards that enable direct transmission of messages from customer systems to banks in electronic form
– universal messaging standards for receipt of payment that can be transmitted directly into company accounting systems (eg in Finland the bank statement also serves as an accounting record)
– payment identification data, ie a reference code whereby invoice issuers/customers can reliably identify transfers in their own systems
– standardized security systems that ensure protection of customer-to-bank and bank-to-bank transactions.

Finnish payment systems[1] already entail these requisites and, in conjunction with effective marketing campaigns and good support from customers, they have played a productive role in developing effective payment systems in Finland.

[1] Details and statistics on Finnish payment systems are found at the Finnish Banking Association's website (www.pankkiyhdistys.fi).

Chart 3. Total bank-intermediated payments



1. Electronic credit transfers (left-hand scale)
2. Paper-based credit transfers (left-hand scale)
3. EFTPOS transactions (left-hand scale)
4. Vouchers and cheques (left-hand scale)
5. Percentage of electronic payments (right-hand scale)

Source: Finnish Bankers' Association.

Box 1. Will wireless devices revolutionize payment systems?

Will new payment systems arise with the convergence of technologies? Today we see the emergence of powerful chips with built-in secure identification, strong encryption and data handling possibilities, as well as industry initiatives such as Bluetooth, which seeks to allow fast radio-frequency communication over very short distances (eg room-to-room) among all sorts of electronic devices. Moreover, there is the ever-greater presence of digital mobile devices that incorporate a user-activated chip, a keypad and a display, and operate in wireless networks with ever increasing capacity and speed. There is also wide agreement on international mobile standards. Indeed, the typical GSM handset includes features that already allow it to function as a debit card or cash if the services are available.

What could be easier and more secure than pulling out your phone, letting it communicate with the checkout-stand computer to get an itemized purchase and sum. All you would do is push a button on your phone to approve the payment. In Web-enabled phones, you can go online, find a hotel in another country and pay for the reservation all in a single transaction and for the cost of a local call. You could also use your phone to repay a small loan from a friend by selecting the payment function on the mobile phone and keying in your friend's bank account number and the sum, and pushing 'pay'. All this it technically feasible today. But is the threshold to wide acceptance too high? Are the benefits too minor to justify abandoning traditional payment methods?

Internationally, however, the degree of integration with customer systems is much lower. Perhaps the greatest challenge to the banking industry is how to achieve an international standard that supports further integration with customer systems. Major benefits in payment systems can clearly be realized through effective, wide-ranging customer integration.

Effects of technology

The application of technology to payment systems constantly generates new opportunities: multipurpose smart cards, sophisticated encryption and identification systems, a growing selection of services available on wireless devices, and higher network speeds. Based on these new technological possibilities, we see a range of experiments with new payment modes, eg e-cash, payment by email, virtual wallets, and payments by mobile phone.

New technologies enable all parties to a transaction to be instantaneously and simultaneously available, regardless of physical distances that separate them (from a few centimetres to thousands of kilometres). The key to all this is a secure network. Payments should be executed without delay, because in a real-time environment all delays generate costs.

Even though the requisite information for making a payment remains the same, inputting the data for the transaction continues to be simplified. But advanced payment systems must also ensure that the customer's money be available to him. This, in turn, requires that the security of the payment system be sufficient to absolutely ensure that the customer (and no one else) always has access to his own funds. The principle of account-to-account funds transfers does not change with new technologies, since monetary value is still transferred from payer's to receiver's account. This concerns all payment service products (eg giros, debit cards, direct debiting). In an electronic environment, all money is account-based and all computer accounting (from chip cards to mainframes) involves determining how many monetary units are in a particular account.

Finnish banks have developed new real-time Internet-based payment services, including Nordea's Solo system, OKOBank's *kultaraha* payment system and Sampo Bank's NetBank. These banks have also issued Avant electronic cash cards for making payments via Internet.

Internationally, customers seeking to pay for something online typically must turn to a major credit card issuer such as Mastercard or Visa. With the increase in the use of Internet and online shopping,

comes the challenge to banks of maintaining their position as significant providers of payment services.[2]

International standards for payment systems and convergence

Compared to the relatively sophisticated national-level systems, international giro transfers are still surprisingly inefficient, often involving manual operations and data conversion to different formats at several stages. There is still no internationally accepted account numbering system; transfers are usually routed on the basis of recipient's name, address and bank branch. There is also no standardized international reference (standardized remittance) data; in fact, only a few countries even have domestic reference systems. There are no common standards – electronic or paper-based – for sending or receiving customers' international payment orders or invoices.

Several standards have been proposed, but none enjoy sufficiently or support to gain broad international acceptance. The leader, perhaps, is the SWIFT network and SWIFT standards, which are generally used in international payment traffic between banks. These standards are relatively loose and still require several manual (or semi-manual) steps when a customer payment order is transmitted from sender to receiver. The interbank settlement method presently used for cross-border payments is quite intricate. Future systems will need to be more efficient and uniform.[3]

The creation of standards has a great deal to do with technical development. Standards make interconnection of systems feasible, they allow software providers to develop off-the-shelf solutions eg for accounting and payroll programs with payment systems interfaces, and they entail synergy vis-à-vis marketing efforts of different organizations and suppliers. The wider the acceptance of common standards, the

[2] For further information on developments in payment systems and payment via Internet and mobile phone, see eg the websites of Finnish banks, Avant, Swift, Mastercard, Visa, Nokia, and Sonera.

[3] A more thorough review of the state of payment systems generally and international development may be found in Bank of Finland Discussion Paper 17/2000 'Re-engineering payment systems for the e-world ' by Harry Leinonen.

Box 2. Key elements of international standardization

An **international account number** is needed for efficient routing of payments. For example, IBAN (International Bank Account Number) is an international account-number standard currently being implemented within Europe. It is based on an international prefix and the domestic bank account number. When the user inputs the IBAN, a bank directory can automatically provide other basic bank-related information. This represents a major advance over the current situation internationally: payment where routing is weak and remains comparable to earlier clerk-assisted transfers by phone where calls are routed based on the name and address of the receiver.

An **international reference number** is needed for automatic identification of payments in customer systems. This is the most important piece of information in terms of integration with customers.

The basic payment messages (for sending and receiving payments) between customers and banks and standardization of the information they contain creates a basis for a uniform network-based customer interface and thus increases the opportunities for the customer to input most of the transaction himself. New standards need to be based on the latest Internet technology and to combine the presentation of information in a visual format with data fields. Payment standards based on Extensible Mark-up Language (XML) include the Open Financial Exchange (OFX) solution promoted by US developers and the Electronic Payment Instruction (ePI) standard under development by the ESCB European bank standards committee.

Bank-to-bank messaging (SWIFT MT103+) in international payment transfers is currently being implemented. These payment messages are more precisely defined than earlier and support automated processing.

Box 3. Core elements of infrastructure development

A **decision-making body** that resolves which standards will be used, as well as processing rules and infrastructure components. This organization would also work to ensure commitment from all parties and coordinate implementation of new features and solutions. This may also be a group of decision-making bodies handling tasks appropriate to their designated areas.

A **payment system network** through which payments are transferred directly between banks on the basis of a common international account numbering system. The payment system network should be open to all parties authorized to engage in payment transfers. Such a system could be built through extension of SWIFT's new interactive communication services SWIFTNet.

A **security and ID solution** that allows identification of parties, ensures the authenticity of payment orders and protects users from system abuse and fraud. One promising solution is the open public-key infrastructure (PKI) for secure business-to-business Internet transactions. Such secure systems require, however, a transaction authorization unit/centre that grants authorizations and administers the system.

An **interbank settlement system** that transfers funds (settlements) to cover payments between banks in a real-time network environment. Central banks will likely play a major role in development of real-time settlement systems.

more effectively customers and banks are served in international and domestic payment operations.

A good example of creating effective standards that take advantage of new technologies, such as embedded microprocessor chips and security solutions to support payment via the Internet, is the joint international effort of credit card companies and bank debit card issuers.

The objective should be to develop standards at bank-to-customer and bank-to-bank levels so that these interface seamlessly with each other.

An efficient approach to developing infrastructure

Payment transfers require a common infrastructure that combines systems, structures and service providers to create an overall functional payment system. While in the process of developing a new infrastructure, it is difficult to evaluate which of all new approaches are most promising or how difficult it will ultimately be to implement them. Further, every solution and standard comes with proponents arguing that their own idea is superior.

Promoters of new payment systems also face scale effects and the classic 'chicken or egg' conundrum. Obviously, the more widely used the payment mode, the more advantageous it is. In the initial phase, however, it is difficult to get a novel payment technology to market precisely because it is not used anywhere, and this in turn makes it hard to sell to potential users. Moreover, because nobody uses it yet, potential payment receivers remain reluctant to invest in the system.

There is a natural resistance to change. First, there are the transition costs of changing while maintaining redundant, overlapping systems. Moreover, when banks introduce more efficient systems, there are investment costs at the same time that fee income from customers is normally shrinking. Finally, those who benefit most from the old system's existence can be counted on to defend their positions.

The challenge then is to create a development process efficient enough to implement an infrastructure that takes into consideration the constraints imposed by the need to foster cooperation among individual banks and customers, to give suppliers competitive opportunities and to meet the reliability demands set for the system. As a rule, systems should be both open and standardized. The pricing of every step in the processing of a payment should be transparent. A decision process is also needed to guide the implementation of the new infrastructure, so that it promotes full use of the new technology and ensures adequate commitment among all parties. In ad-

dition, there are the technical requirements: a functional network, a transaction routing mechanism, security systems and an interbank settlement method for concrete transmission/transfer of payment transactions. Because Internet technology changes many aspects of payment transmission, top priority should be given to improving the development process itself to ensure effective development over the long run.

The role of the central bank and other authorities in development of systems and services

If for any reason (eg a lack of competition or cooperation) failures occur in the development of payment systems, society pays the price. The pressure on officials to promote effective development is the greater, the greater the extent to which existing systems lag behind desirable and feasible developments.

Officials have a duty to oversee the state of payment systems, and to support and study the possibilities of new alternatives. They need to publish their findings, make recommendations and set development targets for the market. On the other hand, there need to be substantial deficiencies in the market mechanism before authorities will undertake to issue guidelines and regulations or draft legislation. Further, they need strong justification before they intervene in an effort to improve the situation.

Central banks have played a major role in offering payment services, in providing the processes that support the use of physical cash, and in establishing interbank settlement systems. All these functions need to be developed in accordance with evolving market needs. Authorities can also act as venture capitalists in promoting new infrastructure when other market participants lack the wherewithal or interest to make the initial investment. The creation of a common payments infrastructure that supports the EU's single market and electronic commerce requires cooperation from all sides – and possibly a more active role on the part of authorities – to launch the next stage of development.

Alternative paths of development

Development seems likely to happen in waves that burst forth when pressures for change reach a certain level and overcome the threshold of forces holding to the status quo. In such situations, we can expect significant and rapid shifts that may result in substantial changes in the division of labour in respect of payments systems. Traditional service providers unwilling to avail themselves of the possibilities of technology will have difficulties in maintaining their positions against aggressive newcomers. For example, digital watches and calculators caused a major change in market shares in the 1970s. If banks wish to continue to act as parties to payment transfers, they must be ready to exploit new technological opportunities. Central banks will also need to develop and more effectively implement new technologies in their services.

In the next few years the following three scenarios seem most likely:

– the banking sector reaches a common understanding on developing payment systems and creates a new payment systems infrastructure based on banking services and new technology
– bank cooperation fails to produce a new infrastructure and competitors create a new payment system infrastructure that wins official approval
– development driven by market forces is too slow and social pressures force officials, particularly central banks, to create a new more effective payment systems infrastructure, partly by using their regulatory power.

Development is rarely so straightforward. It seems reasonable to expect a combination of these three scenarios with shifting focus and pace.

12 May 2001

Key words: payment systems, e-payments, mobile-phone-assisted payments

The new economy in Finland

by **Jukka Jalava**
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The Finnish economy has grown very rapidly since the recession of the early 1990s, when Finnish GDP declined by more than a tenth between 1990 and 1993. During and after the recession the Finnish economy has experienced far-reaching structural change. It has manifested itself through exceptionally rapid growth in the manufacture of electronic equipment (the Nokia phenomenon) and a near doubling of multi-factor productivity in the market sector. As a result, the average annual GDP growth rate increased from 2.8% in 1975–90 to 4.9% in 1995–99, the third highest rate in the European Union (after Ireland and Luxembourg). This article discusses various features of structural change in the Finnish economy in the 1990s. These changes are linked to the recent debate on the so-called new economy.

The new economy is by definition an economy where businesses have learnt to take advantage of both the ICT revolution and the globalization of business activities in ways that enhance growth and improve productivity. There has also been a shift to low inflation. The new economy can influence the economy in various ways. First, we can speak of a new economy if the production of goods and services in the ICT (information and communication technology) industries expands rapidly. Secondly, the new economy may be evident as the increased contribution of ICT capital to economic growth. Thirdly, ICT can have spill-over effects.

Table 1. Share of ICT industries in the value added of market production, %

1975	1980	1985	1990	1995	1999*
3.7	4.2	5.3	5.8	8.0	13.0

* Preliminary estimate.
Source: Statistics Finland.

Although investment in ICT has literally exploded since the mid-1970s, it wasn't until the late 1990s that a step-up in the growth rate of US GDP took place. According to Oliner and Sichel (2000), this faster economic growth is due to a rebound in the growth rate of labour productivity. In fact, there was an increase of two percentage points in the real output of the non-farm business sector and a one percentage point increase in labour productivity. Oliner and Sichel attribute two-thirds of this step-up in labour productivity to the joint influence of the production and use of ICT, with use being the dominant factor.

Other advanced countries lack such evidence of the impact of the new economy. No increase in the growth rate of labour productivity is discernible in Finland, reflecting the negative impact of non-ICT capital. Indeed, labour productivity growth slowed in the latter half of the 1990s compared with earlier periods. Nevertheless, nearly half of the 6% average annual growth of value added in Finnish non-residential market production[1] in 1995–99 can be traced to the production and use of ICT (Jalava and Pohjola, 2001).

Production of ICT goods and services

According to the OECD, the average share of ICT industries in value added in OECD countries was 6.8% in 1998. As can be seen in Table 1, this share has long since been surpassed in Finland. Here the ICT industries are defined as encompassing manufacture of electrical and optical equipment (ISIC 30,

[1] Market production is the production of goods and services sold at economically significant prices. This is in contrast to non-market production, which is performed by general government and non-profit institutions serving households and mostly financed through taxes or income transfers.

31, 32 and 33), telecommunications (ISIC 642) and computer and related activities (ISIC 72). Growth has been quite remarkable in the ICT industries. Whereas average growth in market production resulted in a sixfold increase in gross value added between 1975 and 1999, there was a twenty-one-fold increase in the ICT industries.

This rapid growth has led to a quite significant increase in the contribution of ICT industries to the growth of value added in market production, as can be seen from Table 2. Most of the change has taken place quite recently, since in 1997 the contribution was still 1.6 percentage points but in 1999 already 2.8 percentage points. Electronic and optical equipment has been the top performer, with volume growth of 30 % in 1999 compared with 25 % for the ICT industries on average.

Table 2. Output contribution of ICT production in market production

	1975–90	1990–95	1995–99*
Output growth	3.2	–0.7	6.0
Contribution of ICT industries	0.3	0.5	2.0

* Preliminary estimate.
Source: Statistics Finland.

Use of ICT

The impact of the use of ICT capital on economic growth can be ascertained using standard neoclassical growth accounting, that is, by decomposing output growth into the contributions of labour, capital and multi-factor productivity. To be able to discern the specific growth contribution of ICT capital, the capital input is divided into ICT capital services and other capital services. Ten types of assets are distinguished, including the three ICT assets (hardware, software and communications equipment)[2]. As a measure of labour services, hours worked adjusted for labour quality (measured by the level of education) is used. Multi-factor productivity is the residual growth rate of output that is not explained by the growth rate of the inputs. Therefore multi-factor productivity is sometimes referred to as the measure of our ignorance.

Following Finland's severe economic recession in the early 1990s, there has been a structural shift in non-ICT capital from extensive to intensive growth. Extensive growth means growth achieved through investment in capital equipment, whereas intensive growth means that growth is achieved through productivity. Only ICT capital's growth contribution has increased, being 0.7 percentage point in 1995–99, despite the fact that ICT capital accounted for only 9% of the non-residential productive capital stock in 1999. The growth contribution of labour improved too. The positive growth contribution of non-ICT capital vanished in the late 1990s, making growth even more intensive than before. This reflects the fact that capital was used rather inefficiently in Finland in the past decades and that a considerable improvement in capital productivity has taken place since the recession. On the other hand, multi-factor productivity was the main engine of economic growth in Finland over the whole observation period, as can be seen in Table 3, and it almost doubled in the period 1995–99.

It is also possible that ICT investments have led to spill-overs from industries with rapid productivity growth to less productive industries.[3] A rough estimate can be obtained of the ICT industries' impact on total multi-factor productivity by using their output shares as weights. Thus almost one percentage point of the average annual growth of 4.2% in multi-factor productivity in 1995–99 derives directly from the ICT industries, although this still leaves more than three percentage points unaccounted for.

[2] Since Finnish National Accounts data are not available for gross fixed capital formation in hardware and telecommunications, the analysis is based on the ICT expenditure data published by the World Information Technology and Services Alliance and the International Data Corporation.

[3] In order to address this question properly, the KLEMS growth accounting framework would have to be utilized (see Aulin-Ahmavaara and Jalava, 1999). The KLEMS (the letters stand for capital, labour, energy, materials and services) framework takes into account the intermediate consumption of industries, and output instead of value added is used as a measure of output. Productivity measurement based on value added is justifiable only if the industry's production function is neutral with respect to intermediate consumption. How labour and capital are actually combined often also depends on the intermediate goods used.

Table 3. Contributions to real output in market production 1975–99[1]

	1975–90	1990–95	1995–99*
Output growth	3.2	-0.7	6.0
Contributions			
ICT capital	0.2	0.3	0.7
Hardware	0.1	0.2	0.4
Software	0.1	0.1	0.1
Communications equip.	0.0	0.1	0.1
Other capital	0.8	-0.7	-0.4
Hours worked	-0.4	-2.9	1.3
Labour quality (education)	0.2	0.2	0.3
Multi-factor productivity	2.2	2.3	4.2
Income shares			
ICT capital	1.7	5.0	5.6
Hardware	0.5	1.5	1.7
Software	0.6	2.4	2.4
Communications equip.	0.5	1.1	1.5
Other capital	33.9	33.8	38.8
Labour	64.4	61.3	55.6
Growth rates			
ICT capital	16.5	7.2	12.4
Hardware	29.7	15.1	28.1
Software	12.9	2.7	5.6
Communications equip.	9.9	9.1	10.2
Other capital	2.8	-2.1	-1.1
Hours worked	-0.7	-4.5	2.3

[1] Figures may not add up to the totals because of averages and rounding.

* Preliminary estimate.
Source: Jalava and Pohjola (2001).

Recently, the OECD (2001) has compiled a survey of the growth contributions of ICT in selected advanced countries. Most countries show signs of an increase in the contribution of ICT capital – at least in relative if not absolute terms – to output growth in the late 1990s. In the United States the share of ICT capital in total capital services is now already more than 50%. In both Australia and France it is over 40% while in Germany, Italy and Japan it is 30% or more. The results are very interesting, since Australia, which is not a major producer of ICT, has reaped huge benefits from successful deployment of ICT whereas Japan, which is a leading producer of hardware, has not experienced an absolute increase in ICT's growth contribution. From this comparison it must be concluded that successful use of ICT in production is of paramount importance.

Slowdown in labour productivity

Labour productivity is the ratio of output to hours worked, ie a measure of how productively labour is used to produce output/value added. There are four sources of labour productivity growth. The first source is ICT capital deepening, ie an increase in ICT capital services per hour worked, and the second other capital deepening. The third component is an improvement in labour quality (measured by the level of education), which is defined as the difference between the growth rates of labour services and hours worked. The fourth source is a general increase in multi-factor productivity.

Unlike the United States, Finland did not experience an increase in labour productivity growth in the latter part of the 1990s. Table 4 shows labour productivity in Finland decomposed into the contributions of capital deepening, labour quality and multi-factor productivity. The results are somewhat surprising, since labour productivity experienced a slowdown after the recession despite rapid growth in the productive stock of ICT capital. This is due to the negative influence of other capital deepening. The contribution of ICT capital deepening is still positive and nearly twice as large as it was in the period 1975–90. In 1990–95 labour productivity grew exceptionally rapidly, which is explained by the economy moving out of recession and the momentary peak that this caused, something which micro-level studies have found to include evidence of 'creative destruction'.

Concluding remarks

The new economy isn't tangible in Finland in the same way it is in the United States, where there was a step-up in labour productivity growth in the latter part of the 1990s. In Finland the exceptionally fast increase in multi-factor productivity growth has been the main engine behind growth of both total output and labour productivity. Although the use of ICT already contributes significantly to the growth of the Finnish economy, the focus is still on the production of ICT, where the productivity gains have been enormous but confined to a narrow sector. Perhaps Finland should try to use ICT even more efficiently so that the benefits would spread more widely. Furthermore, in or-

Table 4. Contributions to labour productivity in market production 1975–99[1]

	1975–90	1990–95	1995–99*
Labour productivity	3.7	3.9	3.5
Contributions			
ICT capital	0.3	0.6	0.5
Hardware	0.1	0.3	0.4
Software	0.1	0.2	0.1
Communications equip.	0.0	0.1	0.1
Other capital	1.0	0.7	–1.3
Labour quality (education)	0.2	0.2	0.3
Multi-factor productivity	2.2	2.3	4.2

[1] Figures may not add up to the totals because of averages and rounding.

* Preliminary estimate.
Source: Jalava and Pohjola (2001).

der to obtain a better understanding of Finland's economic success in the 1990s, we need to find out the reasons underlying the doubling in multi-factor productivity.

The rapid increase in productivity in the second half of the 1990s, combined with moderate increases in average earnings, have resulted in a decrease in labour's income share. As in many other industrial countries, the new technology has resulted in a shift in the functional income distribution in favour of capital. Together with sparing use of capital spending, the productivity increase has improved the profitability of Finnish companies to levels seldom seen before. The improvement in profitability is a reflection of the structural change that has occurred in the economy and is therefore probably here to stay.

1 June 2001

Key words: new economy, ICT, economic growth, growth accounting, productivity

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Item

Publication of the Bank of Finland

The Bank of Finland Annual Report 2000 has been published. The Report contains sections on monetary policy, economic developments and implementation of monetary policy in the euro area, economic developments in Finland and other central bank activities in 2000, as well as the Bank of Finland´s financial statements and accompanying notes. The statistical appendix contains various data on the Eurosystem and the Bank of Finland. Vammala 2001. 130 pp. ISSN 1239-9345 (print), ISSN 1456-579X (online).

The Eurosystem's monetary policy instruments

18 May 2001

Key interest rates

The main refinancing operations are the principal monetary policy instrument used by the Eurosystem[1]. Changes in the interest rate applied in the main refinancing operations signal the stance of the Eurosystem's monetary policy and have a major impact on the shortest money market rates. 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. Since then the minimum bid rate has been changed three times. Effective 15 May 2001, the minimum bid rate is 4.50%. 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 11 May 2001, the interest rate on the Eurosystem's marginal lending facility is 5.50% and the overnight interest rate on the deposit facility 3.50%.

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

[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.

exceptional circumstances and by decision of the Governing Council of the ECB, the ECB may execute fine-tuning operations in a decentralized manner.

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

Standing facilities

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

With effect from the beginning of 2001, the group of institutions in Finland subject to the minimum reserve requirement was extended to include all institutions, in addition to deposit banks, that are authorized to operate as credit institutions. The purpose of this change was to bring the definition of institutions subject to the minimum reserve requirement into line the practice applied in other euro area countries. A list of the institutions subject to the Eurosystem's minimum reserve requirement is available on the ECB's website (https://mfi-assets.ecb.int).

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 collat-

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

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Abstracts

Series E

Models of Currency Crises with Banking Sector and Imperfectly Competitive Labor Markets

Jian-Guang Shen
E:21

■ Key words: currency crisis, banking sector, Stackelberg game, wage bargaining, the Finnish crisis.

This study extends the standard currency crisis theory (especially the second-generation models) by adding and emphasizing strategic interactions of agents in anticipating currency crises. The models in this study have a fairly elaborate and extensive micro-based structure, covering the household, firm, bank and central bank. Domestic interest rates are determined in a Stackelberg game where the bank is the leader and the firm the follower. The central bank's exchange rate decision is a function of private sector expectations on the exchange rate and international interest rates. Under certain world interest rates the pegged exchange rate can be sustained, as domestic fundamentals are compatible with the external monetary environment. Under other world interest rates, varying expectations on exchange rates can result in more than one equilibrium exchange rate. In addition, the higher the world interest rate, the higher the equilibrium devaluation rate.

In the latter part of the study, the wage rate is endogenously determined in a bargaining framework and fiscal policy in the form of infrastructure investment is introduced. The interaction between fiscal policy and the wage bargaining process is incorporated into the basic model framework. The trade union's bargaining power and marginal labor disutility, as well as fiscal expenditure can also play a role in the exchange rate policy. The different time sequence of actions of the trade union and business sector makes a difference in the equilibrium exchange rates. Under certain conditions, the interaction between trade union and fiscal authority can break the 'wage-devaluation' spiral.

Discussion papers

An assessment of alternative lender of last resort schemes

Risto Herrala
1/2001

■ Key words: liquidity, lender of last resort, banking, central banking, governance

We sketch a theoretical framework for comparing the properties of funded LOLR schemes. We construct an idealized lender of last resort and investigate how it formulates policy under alternative public and private governance structures. The alternatives are a (first-best) social utility maximizer that can dictate participation, and three voluntary schemes: a public lender of last resort, a mutual clearing house that formulates policy by voting, and a profit maximizing private LOLR scheme. We compare the policies formulated by these institutions from the viewpoint of social desirability. Our model targets the debate on free banking, in particular the issue of whether private institutions would fare well as lenders of last resort.

In our model, the first-best LOLR scheme always covers the whole banking sector and offers full insurance to the participants. We find that voluntary schemes succeed relatively well as lenders of last resort in situations where recipients of LOLR assistance can repay LOLR loans with interest. In this

case, the LOLR can use interest rate policy to make the scheme attractive to banks of every quality and thus create incentives for comprehensive entry. In private schemes, policy tends to be distorted if the private scheme is the only possible scheme. However, competitive forces lead private institutions to approach the first-best outcome, which is the only contestable outcome.

The end result changes when we investigate a situation in which banks' ability to repay LOLR loans is limited. When lending is associated with losses for the LOLR, good quality banks will tend to stay out of the LOLR scheme and participation in voluntary schemes will always fall short of the first-best outcome. A compulsory scheme (such as a central bank that can impose a reserve requirement on banks) has an advantage over voluntary schemes.

The New Basel Accord: some potential implications of the new standards for credit risk
Esa Jokivuolle – Karlo Kauko
2/2001

■ Key words: The New Basel Accord, capital adequacy requirements, credit crisk, banking stability

This paper discusses some potential implications – both intended and unintended – of The New Basel Accord, which is to be finalized by the end of 2001. Our focus is on the reforms of the rules for determining minimum capital requirements for credit risk. The discussion is divided into effects at the level of an individual bank, effects on the structure of the financial markets, and macroeconomic implications. We present a survey of potential effects rather than a profound analysis of any of them. Therefore conclusions are inevitably preliminary, and in many cases they are likely to be controversial. Although the new capital accord as a whole is a major improvement on many properties of the current framework, our aim is to find potential problems that might need to be considered in the implementation and application of the new rules. Overall, the new accord will be largely an experiment, many of the consequences of which remain to be seen.

Actual and perceived monetary policy rules in a dynamic general equilibrium model of the euro area
Mika Kortelainen
3/2001

■ Key words: EDGE, rational expectation, DGE models, nominal rigidites

We present a dynamic general equilibrium model with some nominal rigidities and calibrate it to euro area data. The most important features of the model include consumption/saving decisions according to Blanchard's stochastic lifetimes approach; valuation of private financial wealth according to the present value of capital income; overlapping Calvo wage contracts in the labour market; and a neoclassical supply side with Cobb-Douglas technology. The model is developed for use in analysing differences between perceived and actual monetary policy rules, which is then done as a means of evaluating the macroeconomic benefits of credibility in monetary policy. General properties of the model are analysed with a variety of simulation experiments.

Stabilisation bias in monetary policy under endogenous price stickiness
Martin Ellison
4/2001

■ Key words: price stickiness, monetary policy, stabilization bias

This paper investigates the consequences of introducing endogenous price stickiness into a standard monetary policy model. We find that the modification reduces the optimal degree of inflation stabilization to which the central bank should commit. The reason is that less inflation stabilization encourages firms to review their prices more frequently. The economy becomes more flexible and the Phillips-curve tradeoff is improved, making it easier for the central bank to control inflation. This reduces, and may even reverse, the stabilization bias that is present in models with exogenous price stickiness and that recommends that the central bank generally commit to tighter stabilization of inflation than it would in a discretionary policy regime.

Equilibrium unemployment with credit and labour market imperfections
Erkki Koskela – Rune Stenbacka
5/2001

■ Key words: wage and loan bargaining, compensation systems, equilibrium unemployment

We study the role of labour and credit market imperfections in the determination of equilibrium unemployment. In the credit market, loan contracts are negotiated between financiers and firms, both of which have bargaining power, while firms and organized labour bargain over the base wage. The sequential labour and credit market negotiations are assumed to take place on the condition that the firm is committed to the use of performance-related profit sharing in addition to the negotiated base wage. It is shown that, in the presence of profit sharing, intensified credit market competition will raise equilibrium unemployment, because it induces wage-enhancing effects that cause an increase in the outside option available to union members. Equilibrium unemployment, which is also an increasing function of firms' bankruptcy risks, is however independent of the extent of credit market imperfection, provided that the compensation system is unrelated to firms' profits or that there is a monopoly union in the labour market.

The role of macroeconomic shocks in banking crises
Jarmo Pesola
6/2001

■ Key words: financial deregulation, indebtedness, shock, loan loss, banking crisis

The macroeconomic reasons for the recent banking crises in the Nordic countries are analysed using an econometric model estimated with panel data from the 1980s and 1990s. Two alternative dependent variables are used: the ratio of banks' loan losses to lending and enterprise bankruptcies per capita. The explanatory variables are the lagged dependent variable, lagged percentage change in GDP, an income surprise variable combined with lagged aggregate indebtedness, a real interest rate surprise variable combined with lagged aggregate indebtedness, and a deregulation dummy. The innovation in this paper is the use of surprise variables based on macroeconomic forecasts.

According to the results, high indebtedness combined with negative macroeconomic surprises contributed to the recent banking crises in Sweden, Norway and Finland. Also the effects of the preceding financial liberalization and lending boom on bankruptcies and loan losses can be traced in the results. The econometric testing did not indicate direct effects of the exchange rate or the terms of trade on the banking crises.

Denmark did not suffer a banking crisis because the macroeconomic surprises were smaller there and the initial debt burden was lighter than in the other Nordic countries. This was the result of, among other things, earlier financial deregulation, which was conducted in a fairly balanced way, and a different economic policy regime, as Denmark belonged to the ERM.

Does monetary union reduce employment?
Anssi Rantala
7/2001

■ Key words: monetary union, employment, labor unions, open-economy spillovers, central bank conservatism

We use a two-country monetary model with unionized labor markets and open-economy spillovers to study the macroeconomic consequences of the formation of a monetary union. It is shown that the monetary regime affects the trade-off between real consumer wages and employment faced by the unions. Consequently, the equilibrium employment is endogenous and depends on the monetary regime. In particular, a switch from a floating exchange rate regime to a monetary union improves employment, provided that the degree of central bank conservatism is sufficiently high, whereas with low degrees of conservatism employment falls. Inflation is higher in a monetary union with all finite degrees of central bank conservatism. In addition, we consider an asymmetric fixed exchange rate regime as an alternative starting position for a monetary union. All results are derived assuming that labor unions are

only interested in employment and real wages (not directly inflation) and that all structural parameters of the model remain unchanged when a monetary union is established.

Fixed rate tenders and the overnight money market equilibrium
Tuomas Välimäki
8/2001

- Key words: money market tenders, overnight rate of interest, averaging, central bank operational framework

This paper presents a general equilibrium model of the determination of equilibrium in the interbank market for overnight liquidity when the central bank uses fixed rate tenders in its liquidity provision. We consider three alternative liquidity policy rules. First, the central bank may provide the bid amounts in full. Alternatively, the central bank can scale back the bid amounts pro rata with the individual bids. For the latter case, we consider two target options for the central bank: liquidity or an interest rate. We show that the expected overnight rate remains more tightly in the hands of the central bank if the full allotment procedure or a pure interest rate targeting rule is used than if liquidity targeting is used. We also demonstrate how optimal bidding in tender operations varies considerably according to which procedure is chosen by the central bank.

BOFIT Discussion Papers

Dollarization in Lithuania: An Econometric Approach
Igor Vetlov
1/2001

- Key words: dollarization, transition economy, currency board, unit roots, cointegration, vector error-correction

The paper analyses the factors driving dollarization in Lithuania during the period from December 1992 to August 2000. Starting with a brief overview of the major economic and political developments in Lithuania, the study attempts to model the process of dollarization by applying rigorous time series analysis. In particular, it investigates the long- and short-run properties of the relationship between the dollarization ratio and interest rates paid on domestic and foreign currency deposits. The study identifies a relatively stable cointegrating relationship between variables, whereby the dollarization ratio is negatively related to the interest rate spread. In the constructed vector error correction model, the deviations from the long-run relationship are found be significant for the dynamics of all three variables. Overall, the model explains the development of dollarization rather well. Simple specification of the model is possible when interest rates reflect the major economic and political events relevant to the process of dollarization.

Quasi-fiscal operations of central banks in transition economies
Malgorzata Markiewicz
2/2001

- Key words: Quasi-fiscal operations, transition economy, and transparency

This paper reviews issues associated with quasi-fiscal operations (QFO) of central banks in a sample of countries in Central and Eastern Europe and the former Soviet Union. The concern is the problem of transparency in fiscal and monetary accounts when the central bank undertakes quasi-fiscal operations and the government falls short of providing full coverage of fiscal operations. QFO can also jeopardize monetary policy designed to maintain price stability. A simple framework is developed to estimate the extent of QFO. In some cases, the magnitude of QFO is significant in indicating underestimation of fiscal deficit figures. We claim that the lack of transparency in fiscal accounts of transition countries warrants serious concern.

Accession Countries' Comparative Advantage in the Internal Market: A Trade and Factor Analysis
Ville Kaitila
3/2001

■ Key words: EU, eastern enlargement, comparative advantage, factor intensity

We analyse trade between Central and Eastern European (CEE) countries and the European Union during 1993-1998 using three methods. First, we calculate the share of intra-industry trade to determine the extent to which two countries trade in similar products. Second, we calculate similarity indices to determine the extent to which the structure of the exports of two countries is similar to a third country. Third, we calculate the revealed comparative advantage of CEE countries in the EU internal market and analyse the results in a two-dimensional space showing relative labour-skills and capital-intensity. We also depict how the factor intensity of comparative advantage has changed since 1993. With this last approach, we find that the comparative advantage of various CEE countries have developed in quite different directions. Some countries have evolved comparative advantage in industries requiring much skilled labour, while others have moved in the opposite direction. This differentiation is also reflected in degrees of capital intensity. A few CEE countries have not shifted in this two-dimensional space.

Fiscal competition in a transition economy
Laura Solanko
4/2001

■ Key words:tax competition, fiscal competition, transition

The paper analyses fiscal competition for mobile capital between identical regions in a transition country. A framework similar to Keen-Marchand (1997) is used to analyse welfare effects of regional competition. It is shown that in very early transition when the share of the old sector is overwhelming, consumers in a transition economy may be better off in a competitive equilibrium. The decision-makers, however, would prefere to coordinate their fiscal policies.

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 5,171,302 (31 December 1999) and an average population density of 17 per square kilometre. The largest towns are Helsinki, the capital, with 551,123 inhabitants, Espoo 209,667, Tampere 193,174, Vantaa 176,386 and Turku 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. All the Nordic countries joined the Shengen area on 25 March 2001.

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 623 (EUR 105) billion in basic values in 1999, 1.3% was generated in agriculture, hunting and fishing, 2.4% in forestry, 27.3% in industry, 5.7% in construction, 12.4% in trade, restaurants and hotels, 9.3% in transport and communications, 3.5% in finance and insurance, 17.6% in other private services and 20.5% by producers of government services. Of total employment of 2.3 million persons in 1999, 6.1% were engaged in primary production, 27.5% in industry and construction and 66.4% in services.

In 1999 expenditure on the gross domestic product in purchasers' values amounted to FIM 722 (EUR 121) billion and was distributed as follows: net exports 8.2% (exports 37.5%, imports –29.3%), gross fixed capital

formation 19.1%, private consumption 50.4% 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 25,056.

Foreign trade. EU countries absorb the bulk of Finnish merchandise exports. In 1996–2000 their average share was 55.5%. Over the same period, Finnish exports to other European countries (including Russia) accounted for 18.5% and to the rest of the world for 26.0%. During the same period the regional distribution of Finnish merchandise imports was quite similar to that of exports: EU countries accounted for 58.3%, other European countries for 17.4% and the rest of the world for 24.3%.

In 2000 the share of forest industry products in total merchandise exports was 27.1%, the share of metal and electrical products 55.7% and the share of other goods 17.2%. Raw materials and intermediate goods and energy together accounted for 53.1% of merchandise imports, capital goods for 24.0% and durable and non-durable consumer goods for 22.9%.

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 two) 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 May 2001). Finland has three major groups of deposit banks with a total of about 1,550 branches. In addition there are six smaller banks and banking groups. The commercial banks have a total of 17 foreign branches, subsidiaries and associate banks and 16 representative offices abroad. There are 40 savings banks, a group of cooperative banks (244) and 42 local cooperative banks. In addition, 7 foreign banks have branches and 8 foreign banks have representative offices in Finland.

Financial markets. The total stock of domestic credit amounted to FIM 745.3 (EUR 125.3) billion at end-September 2000 and was broken down by lender group as follows: deposit banks 56%; insurance companies 6%; pension insurance institutions 17%; other credit institutions 11%; central and local authorities and social security funds 10%.

In the money market, the total value of instruments outstanding was about FIM 153.0 (EUR 25.7) billion at end-March 2001; bank certificates of deposit accounted for 60% of the total and Treasury bills, commercial paper and local authority paper for the rest.

At end-December 2000 there were 108 companies on the Main List, 32 on the Investors' List and 17 on the NM List of the HEX, Helsinki Exchanges. At end-March 2001 total market capitalization was FIM 1,206.3 (EUR 202.9) billion for the Main List, FIM 7.2 (EUR 1.2) billion for the Investors' List and FIM 4.4 (EUR 0.74) billion for the NM List. Domestic bonds and debentures in circulation at end-March 2001 amounted to FIM 301.9 (EUR 50.8) billion; government bonds accounted for 80% of the total. Share turnover on the HEX, Helsinki Exchanges amounted to FIM 1,351 (EUR 227.2) billion in 2000. In January-March 2001 share turnover amounted to FIM 372.2 (EUR 62.6) billion.

VISITING SCHOLARS PROGRAMME

BANK OF FINLAND

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

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

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

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

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

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

Persons interested in applying are invited to send

– a brief research proposal concerning either of the two areas

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

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Helsinki, Finland
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phone +358 9 183 2594, email Jouko.Vilmunen@bof.fi

SUOMEN PANKKI • FINLANDS BANK

Balance sheet of the Bank of Finland, EUR million

Assets		2001 23.2.	30.3.	27.4.	25.5.
1	**Gold and gold receivables**	462	463	463	463
2	**Claims on non-euro area residents denominated in foreign currency**	8 484	8 497	8 585	8 638
2.1	Receivables from the IMF	700	711	696	780
2.2	Balances with banks and security investments, external loans and other external assets	7 783	7 785	7 889	7 858
3	**Claims on euro area residents denominated in foreign currency**	729	814	769	856
4	**Claims on non-euro area residents denominated in euro**	0	0	0	0
4.1	Balances with banks, security investments and loans	0	0	0	0
4.2	Claims arising from the credit facility under the ERM II	–	–	–	–
5	**Lending to euro area credit institutions related to monetary policy operations denominated in euro**	2 050	1 288	300	501
5.1	Main refinancing operations	1 650	888	100	301
5.2	Longer-term refinancing operations	400	400	200	200
5.3	Fine-tuning reverse operations	–	–	–	–
5.4	Structural reverse operations	–	–	–	–
5.5	Marginal lending facility	–	–	–	–
5.6	Credits related to margin calls	–	–	–	–
6	**Other claims on euro area credit institutions denominated in euro**	4	4	4	4
7	**Securities of euro area residents denominated in euro**	–	–	–	–
8	**General government debt denominated in euro**	–	–	–	–
9	**Intra-Eurosystem claims**	768	768	768	768
9.1	Share in ECB capital	70	70	70	70
9.2	Claims equivalent to the transfer of foreign currency reserves	699	699	699	699
9.3	Claims related to the issuance of ECB debt certificates	–	–	–	–
9.4	Claims related to TARGET and correspondent accounts (net)	–	–	–	–
9.5	Claims related to other operational requirements within the Eurosystem	–	–	–	–
10	**Other assets**	593	632	616	560
Total assets		13 090	12 465	11 505	11 789

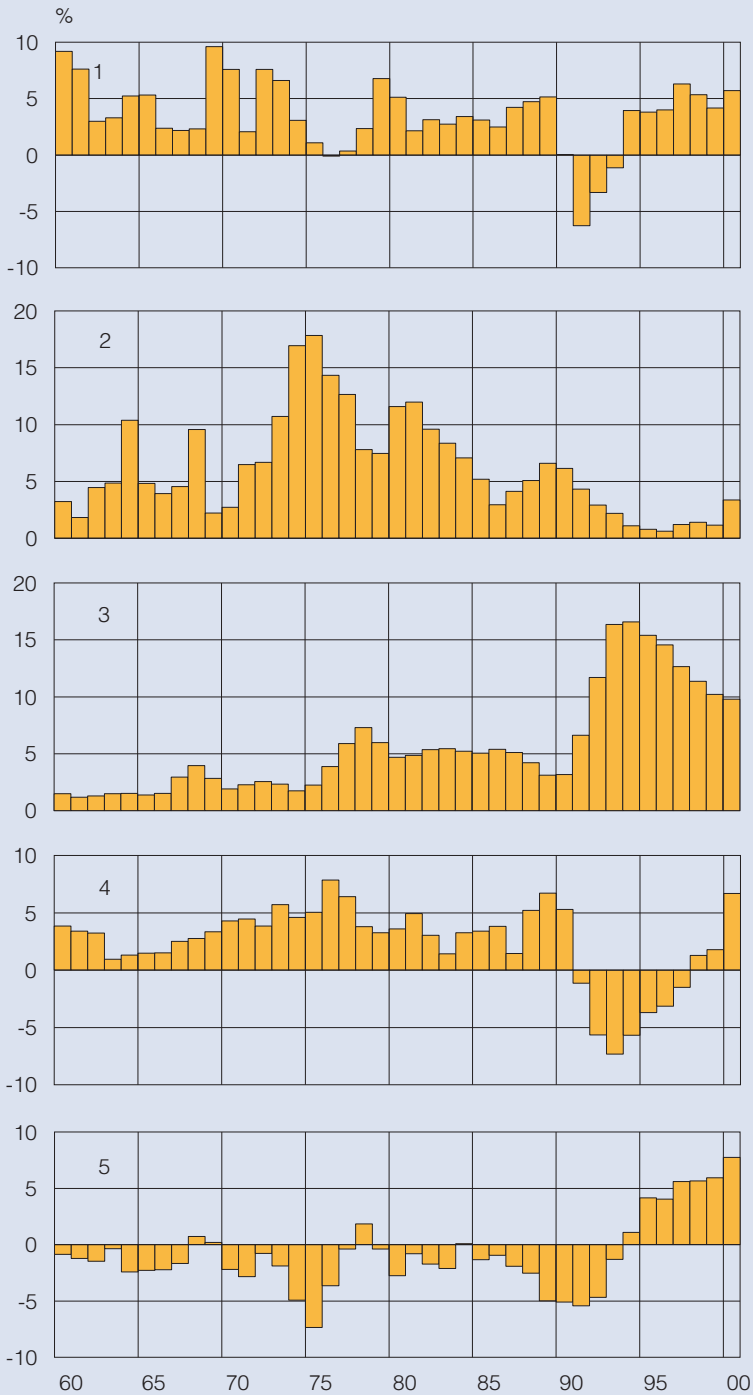
Totals/sub-totals may not add up because of rounding.

Liabilities

		2001			
		23.2.	30.3.	27.4.	25.5.
1	**Banknotes in circulation**	2 598	2 585	2 663	2 688
2	**Liabilities to euro area credit institutions related to monetary policy operations denominated in euro**	1 643	3 022	1 703	1 953
2.1	Current accounts (covering the minimum reserve system)	1 520	3 022	1 703	1 953
2.2	Deposit facility	122	–	–	–
2.3	Fixed-term deposits	–	–	–	–
2.4	Fine-tuning reverse operations	–	–	–	–
2.5	Deposits related to margin calls	–	–	–	–
3	**Other liabilities to euro area credit insitutions denominated in euro**	–	–	–	–
4	**Liabilities to other euro area residents denominated in euro**	1	1	1	1
4.1	General government	–	–	–	–
4.2	Other liabilities	1	1	1	1
5	**Liabilities to non-euro area residents denominated in euro**	24	92	131	153
6	**Liabilities to euro area residents denominated in foreign currency**	–	–	–	–
7	**Liabilities to non-euro area residents denominated in foreign currency**	122	87	110	137
7.1	Deposits, balances and other liabilities	122	87	110	137
7.2	Liabilities arising from the credit facility under the ERM II	–	–	–	–
8	**Counterpart of special drawing rights allocated by the IMF**	201	204	204	206
9	**Intra-Eurosystem liabilities**	3 137	1 065	1 274	1 183
9.1	Liabilities related to promissory notes backing the issuance of ECB debt certificates	–	–	–	–
9.2	Liabilities related to TARGET and correspondent accounts (net)	3 137	1 065	1 274	1 183
9.3	Liabilities related to other operational requirements within the Eurosystem	–	–	–	–
10	**Other liabilities**	89	204	213	264
11	**Revaluation account**	1 070	1 129	1 129	1 129
12	**Capital and reserves**	4 205	4 076	4 076	4 076
Total liabilities		13 090	12 465	11 505	11 789

Charts

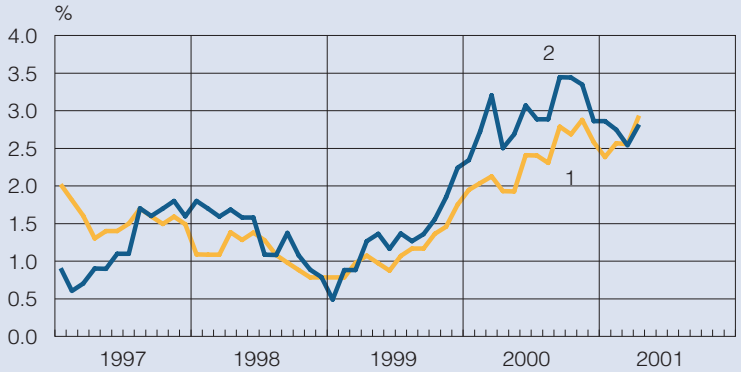
1. Finland: key economic indicators



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

Sources:
Statistics Finland and
Bank of Finland.

2. Price stability in the euro area and Finland

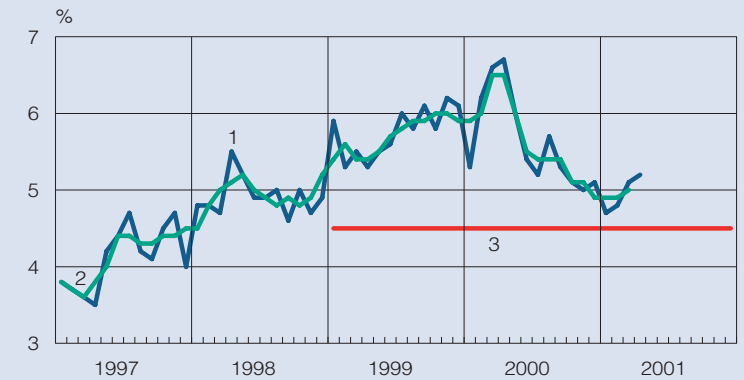


Harmonized Index of Consumer Prices, 12-month percentage change

1. Euro area countries
2. Finland

Sources:
Eurostat and Statistics Finland.

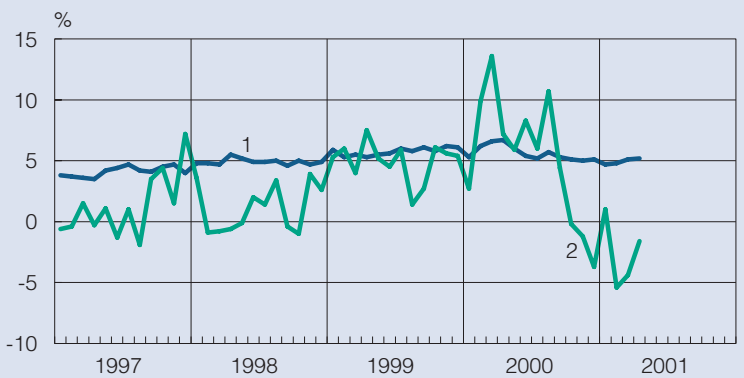
3. Monetary aggregates for the euro area



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

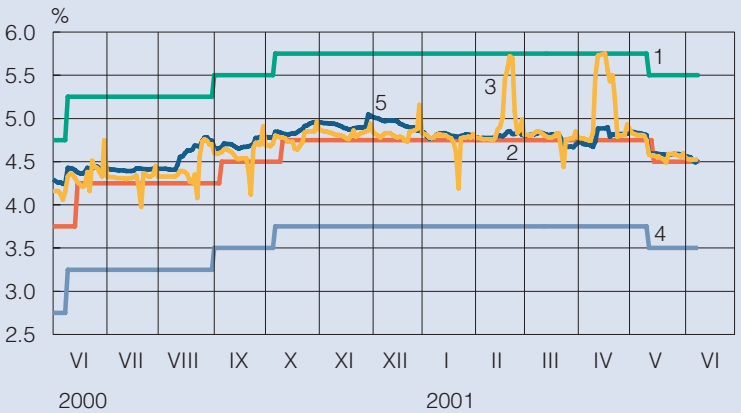


12-month percentage change

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.

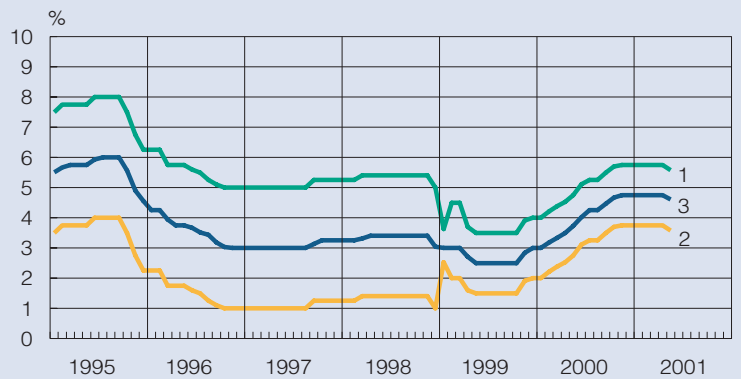
5. Eurosystem interest rates and money market rates



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

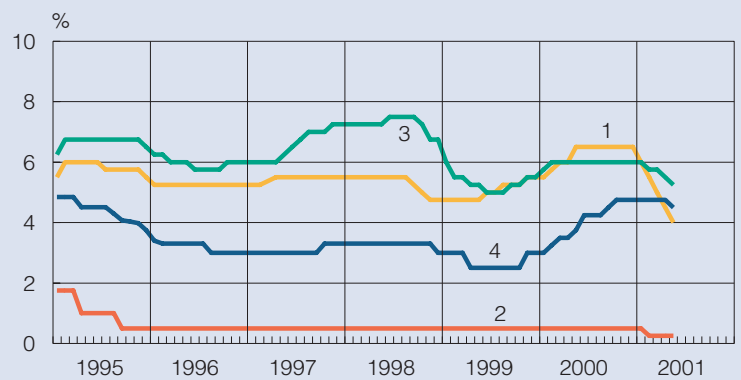


Bank of Finland interest rates until end-1998

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.

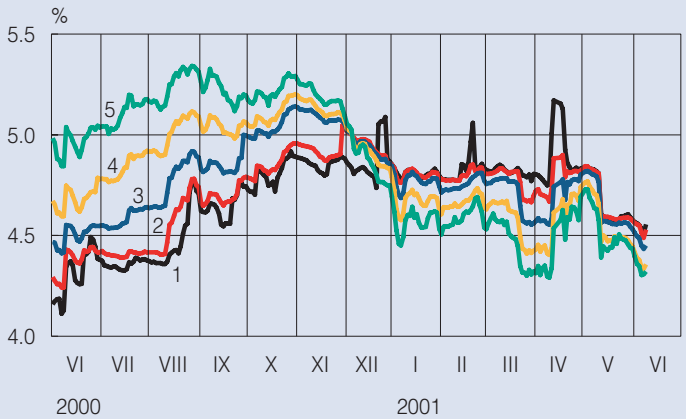
7. Official interest rates



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.

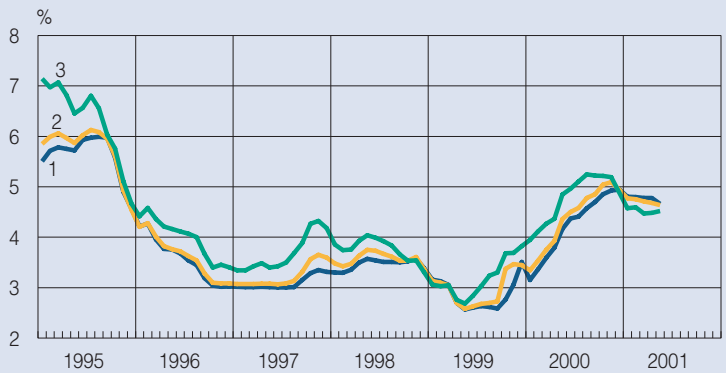
8. Euribor rates, daily values



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

Source: Reuters.

9. Euribor rates, monthly values

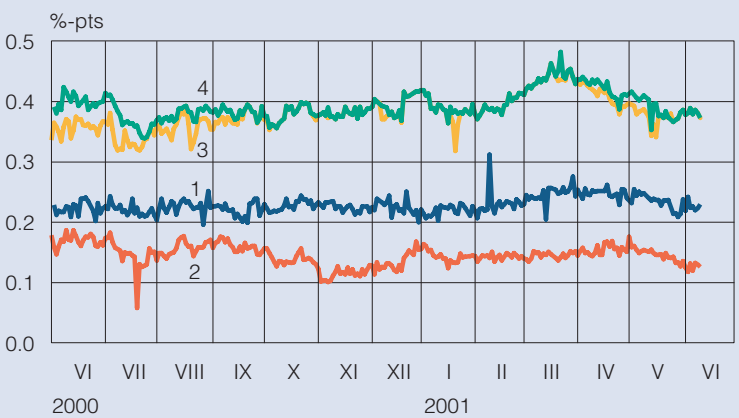


Helibor rates until end-1998

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

Source: Reuters.

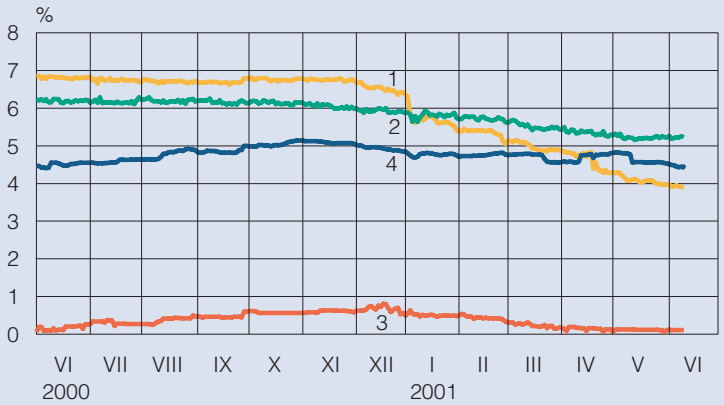
10. Differentials between ten-year yields for Germany and selected euro area countries



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

Source: Reuters.

11. International three-month interest rates, daily values

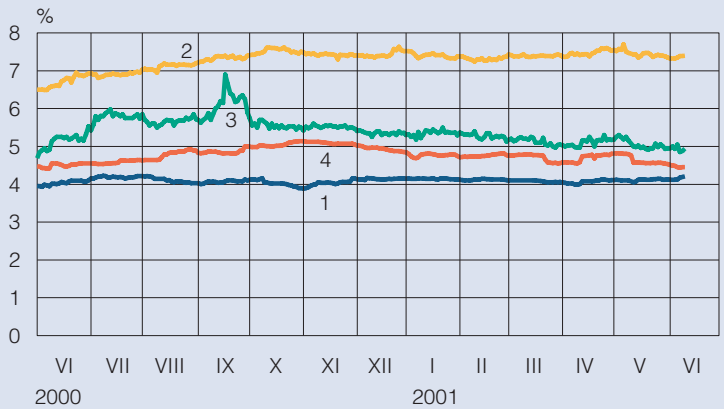


Interbank rates

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

Source: Reuters.

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

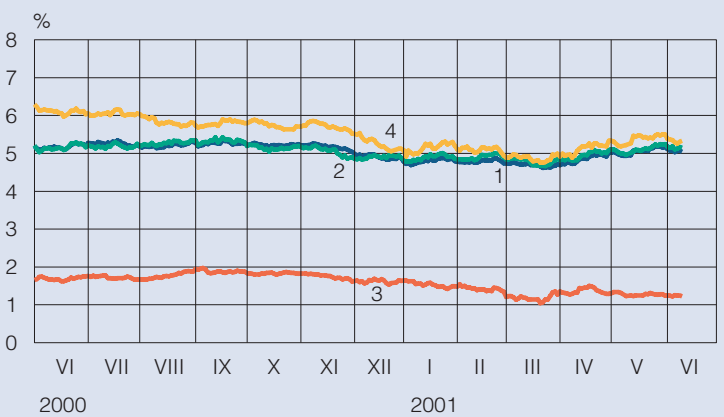


Interbank rates

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

Source: Reuters.

13. International long-term interest rates, daily values

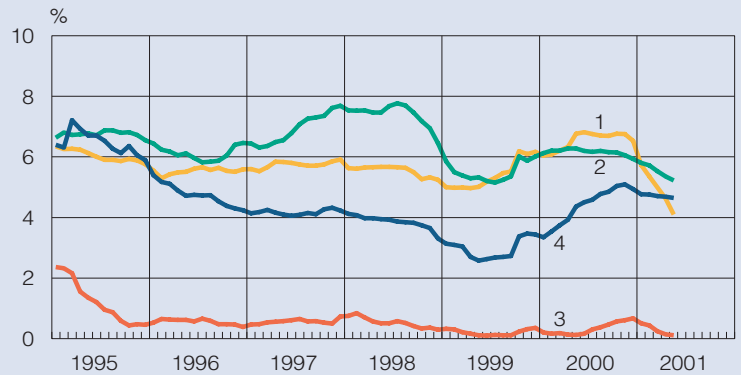


Yields on ten-year government bonds

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

Source: Reuters.

14. International three-month interest rates, monthly values

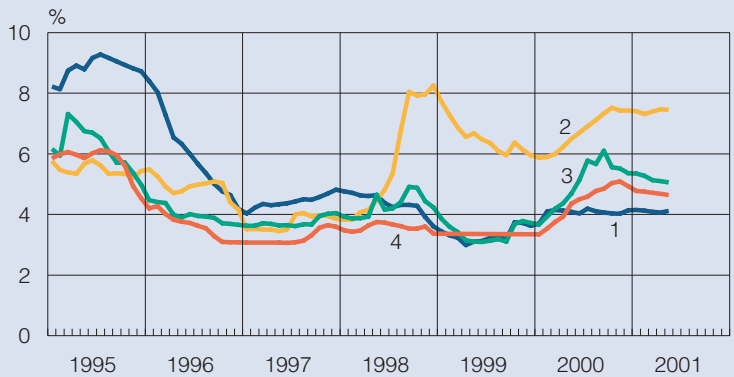


Interbank rates

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

Source: Reuters.

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

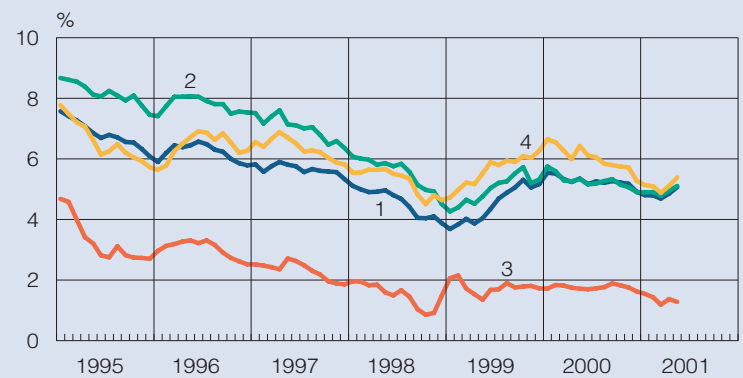


Interbank rates

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

Source: Reuters.

16. International long-term interest rates, monthly values

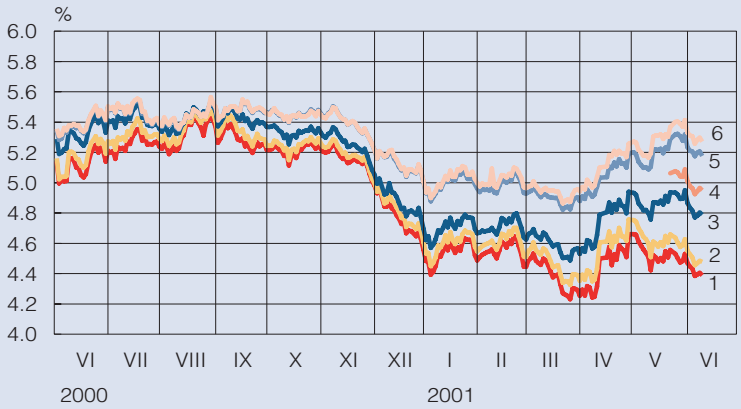


Yields on ten-year government bonds

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

Source: Reuters.

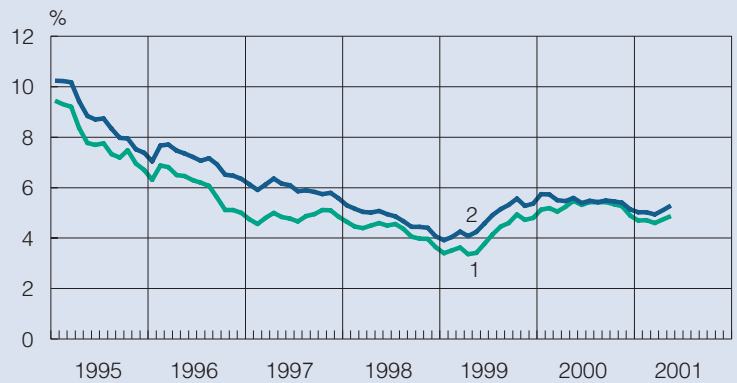
17. Yields on Finnish benchmark government bonds



1. Bond maturing on 12 November 2003, 3.75%
2. Bond maturing on 15 March 2004, 9.5%
3. Bond maturing on 18 April 2006, 7.25%
4. Bond maturing on 4 July 2007, 5%
5. Bond maturing on 25 April 2009, 5%
6. Bond maturing on 2 February 2011, 5.75%

Source: Reuters.

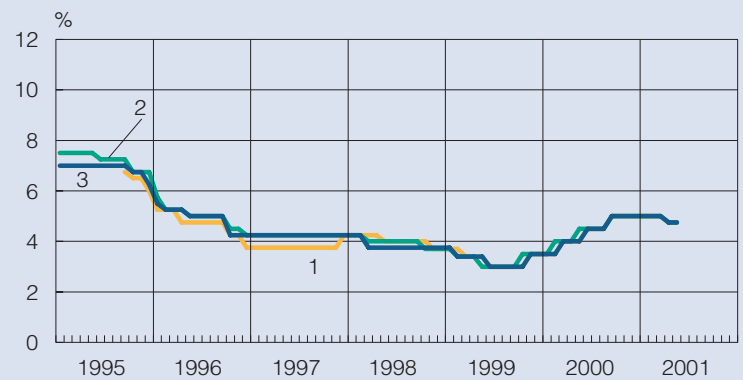
18. Yields on five and ten-year Finnish government bonds



1. 5 years
2. 10 years

Source: Reuters.

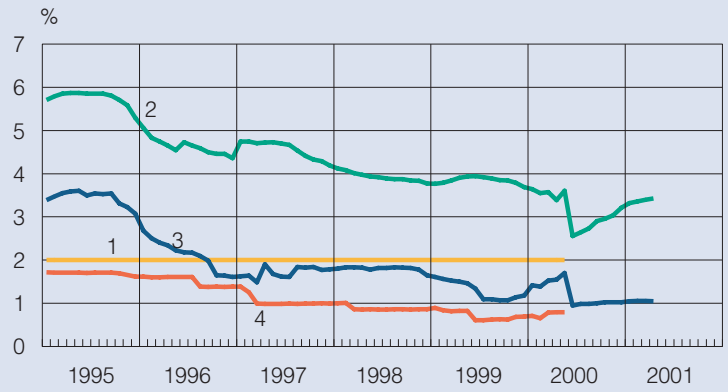
19. Bank reference rates in Finland



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

Source: Banks.

20. Bank deposit rates in Finland

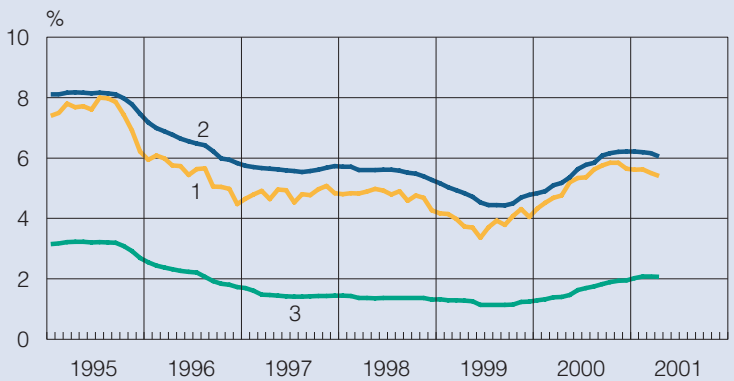


The tax treatment of deposits changed on 1 June 2000.

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.

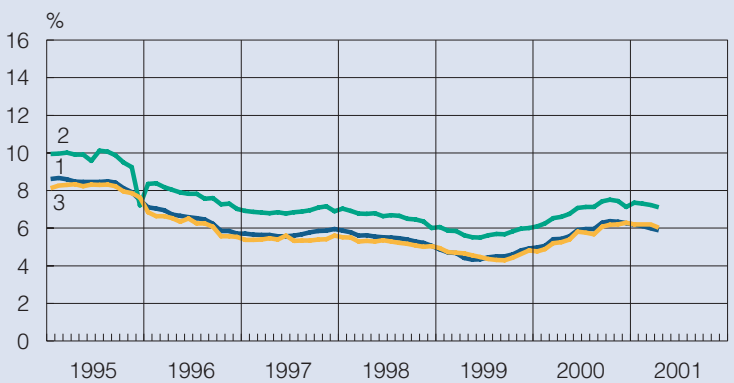
21. Bank lending and deposit rates in Finland



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

Source: Bank of Finland.

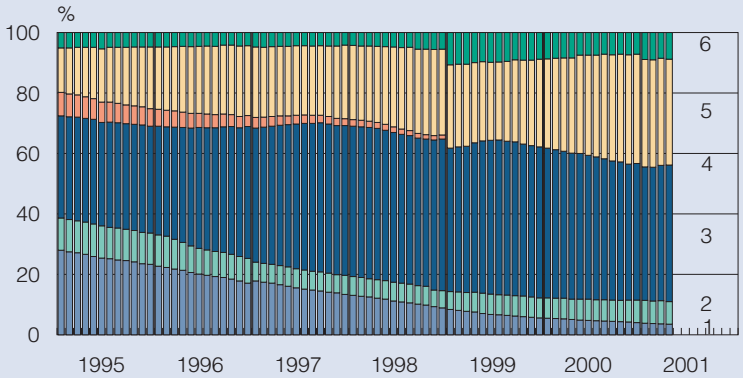
22. Interest rates charged by Finnish banks on new lending to households



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

Source: Bank of Finland.

23. Stock of bank lending in Finland

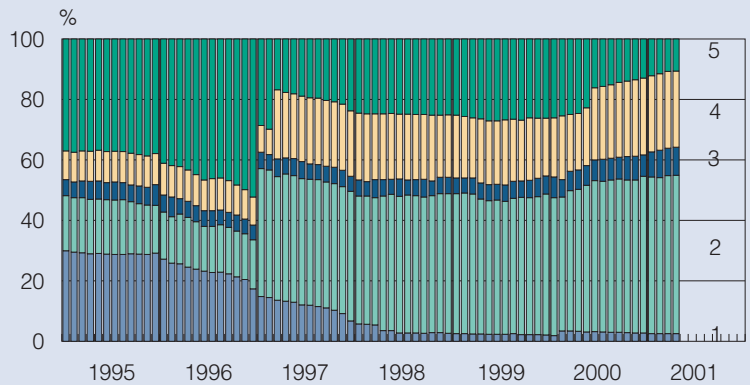


Interest rate linkages, percentages

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

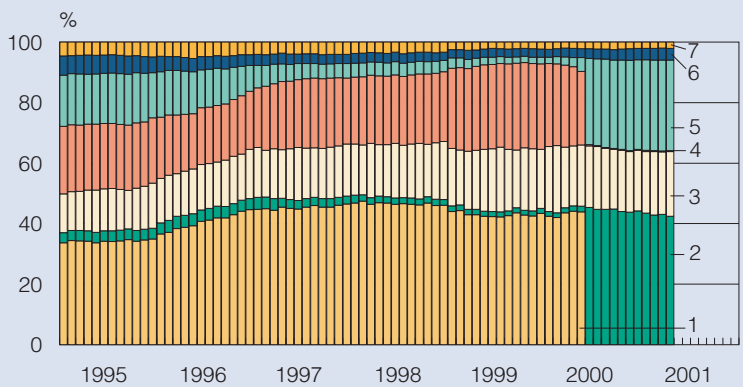


Interest rate linkages, percentages

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

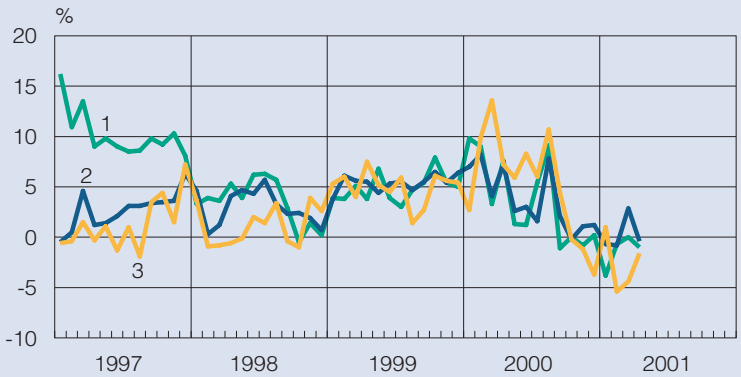


The tax treatment of deposits changed on 1 June 2000.

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

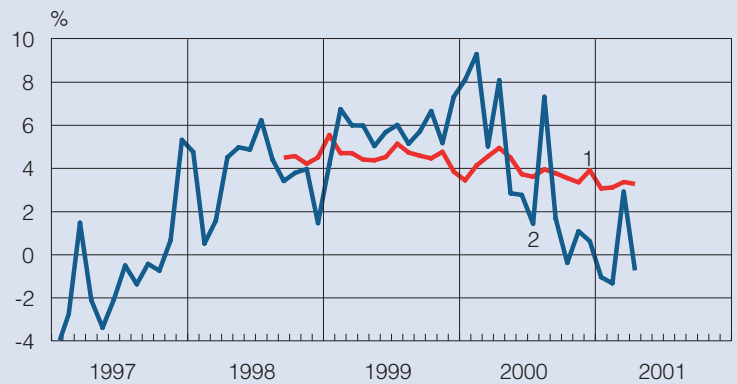


12-month percentage change

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

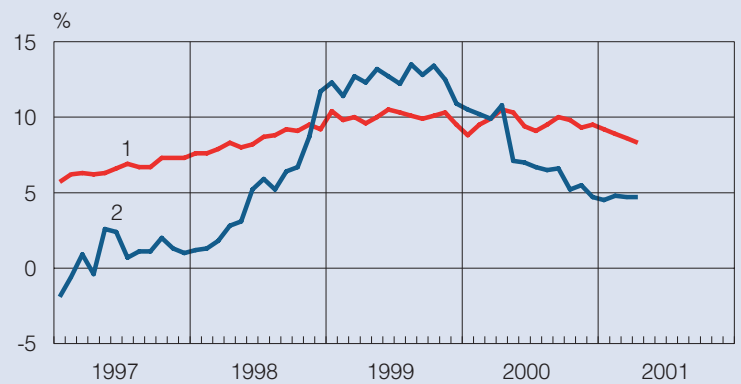


12-month percentage change

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

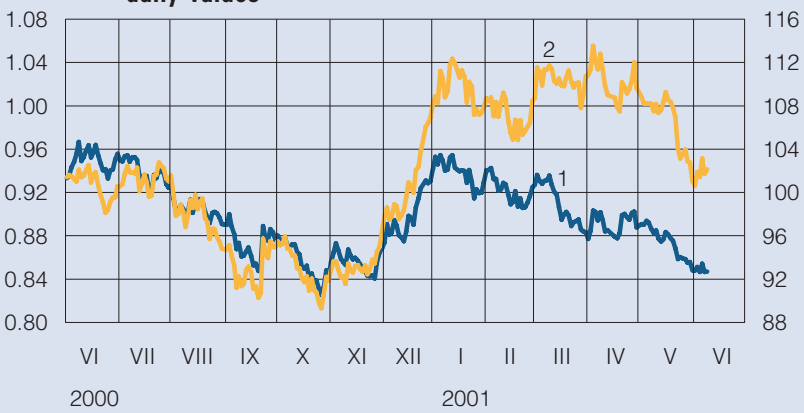


12-month percentage change

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

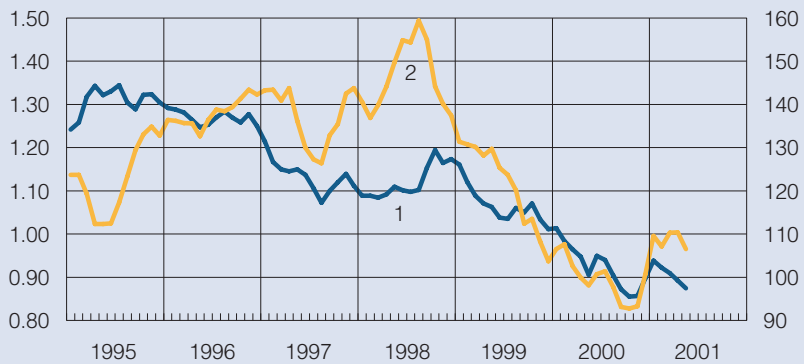


Rising curve indicates appreciation of euro

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



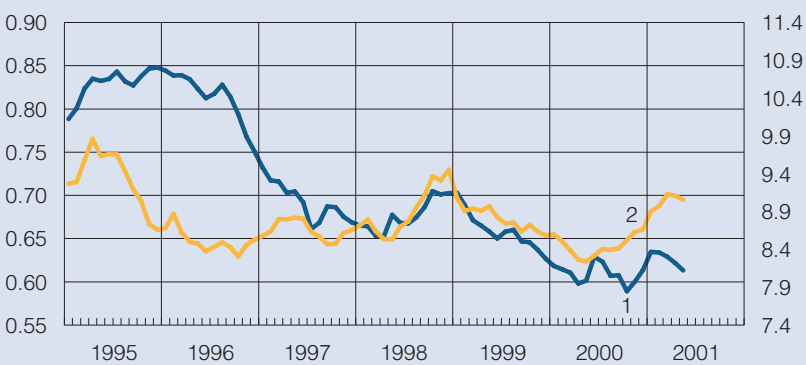
(ecu exchange rate until end-1998)

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 the Swedish krona



(ecu exchange rate until end-1998)

Rising curve indicates appreciation of euro

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

Sources: European Central Bank and Reuters.

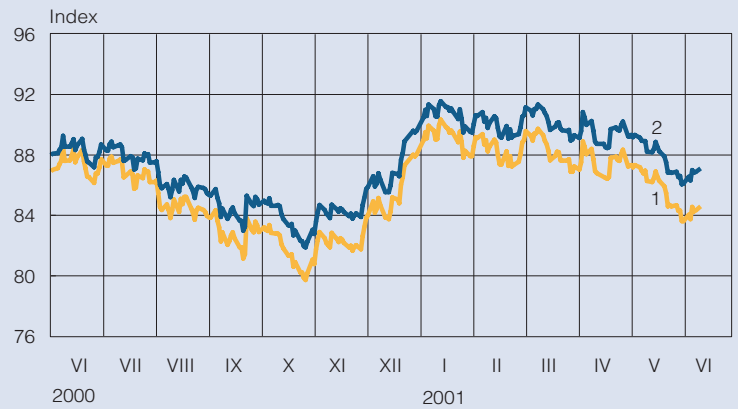
32. Euro exchange rates against the Scandinavian currencies

Rising curve indicates appreciation of euro

1. Value of one euro in Swedish kronor
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

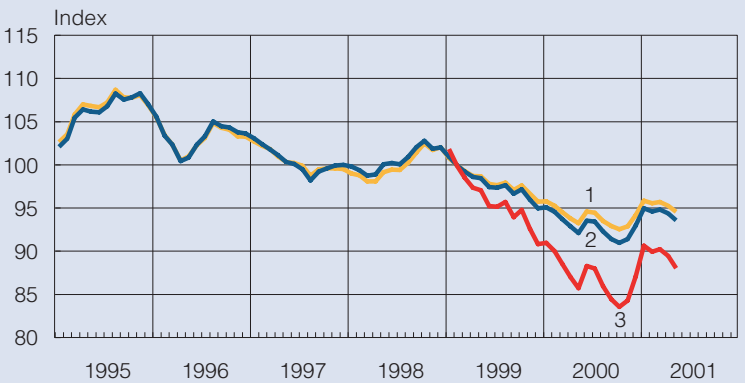


1999 Q1 = 100
An upward movement of the index represents an appreciation of the euro / a weakening in Finnish competitiveness

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

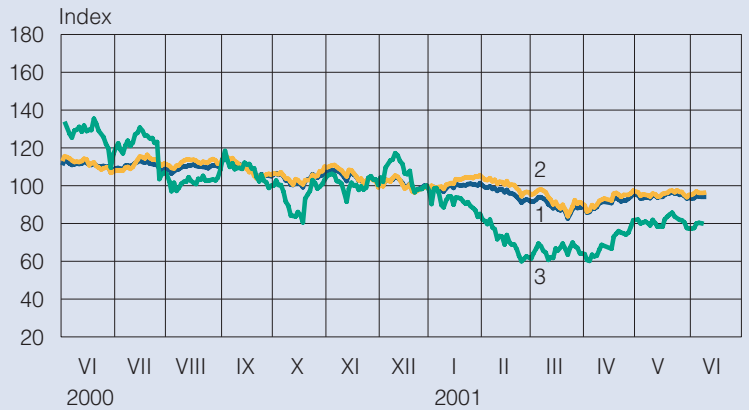


1999 Q1 = 100
An upward movement of the index represents a weakening in Finnish competitiveness

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

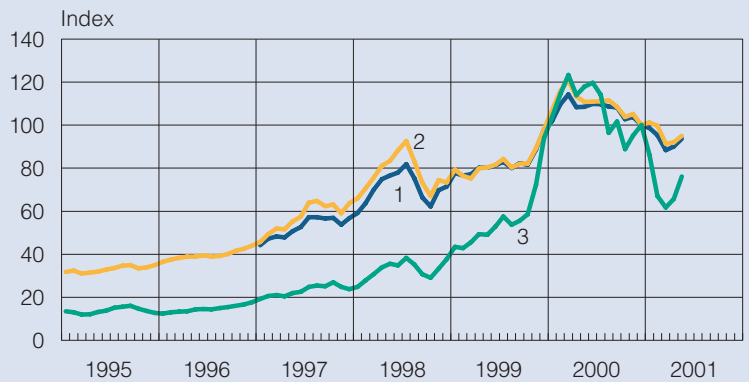


29 December 2000 = 100

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

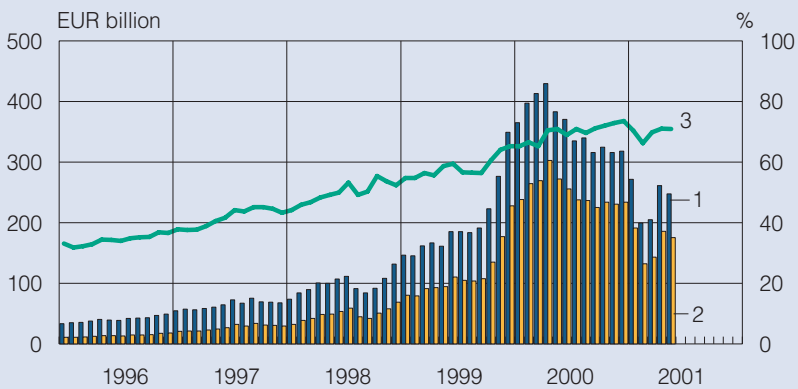


30 December 2000 = 100

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.

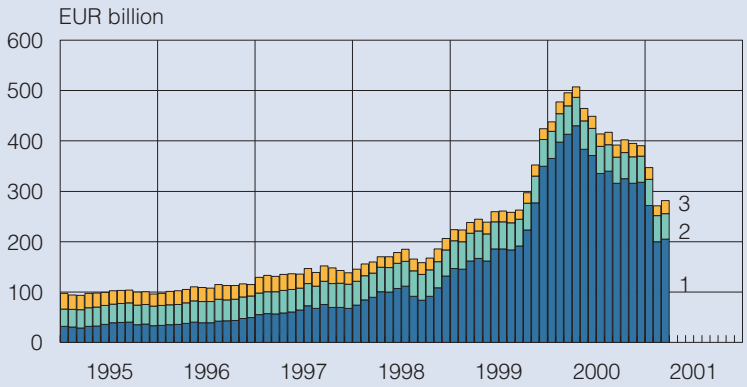
37. Listed shares in Finland: total market capitalization and non-residents' holdings



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 (APK).

38. Securities issued in Finland

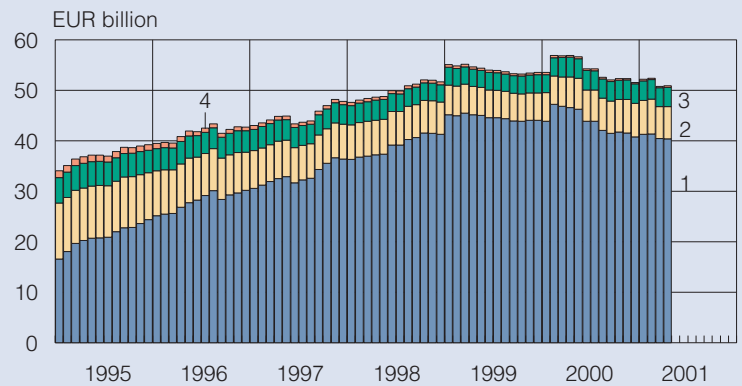


End-month stock

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

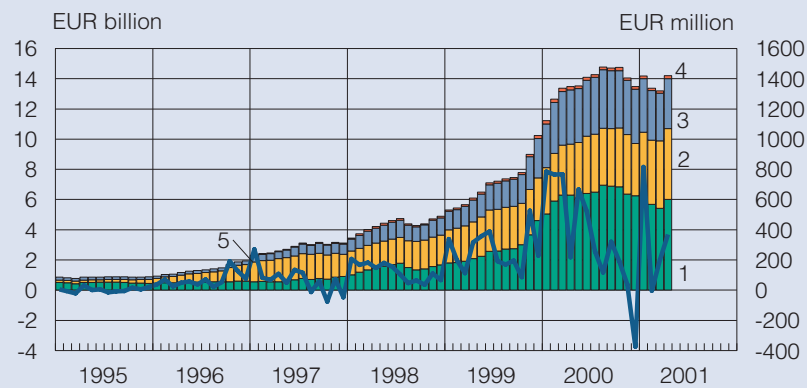


End-month stock

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

Source: Statistics Finland.

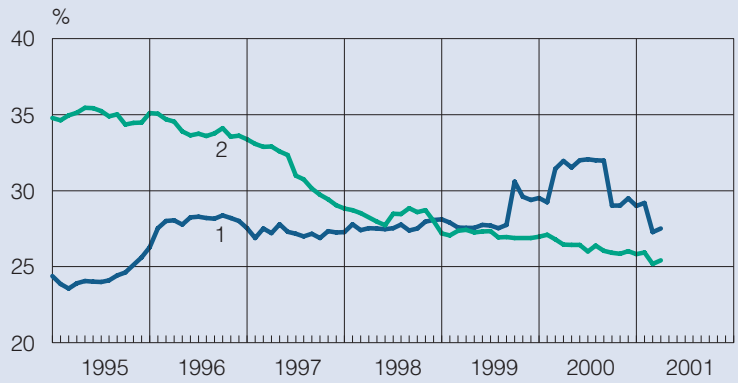
40. Mutual funds registered in Finland



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

Source: HEX Helsinki Exchanges.

41. Central government revenue and expenditure in Finland

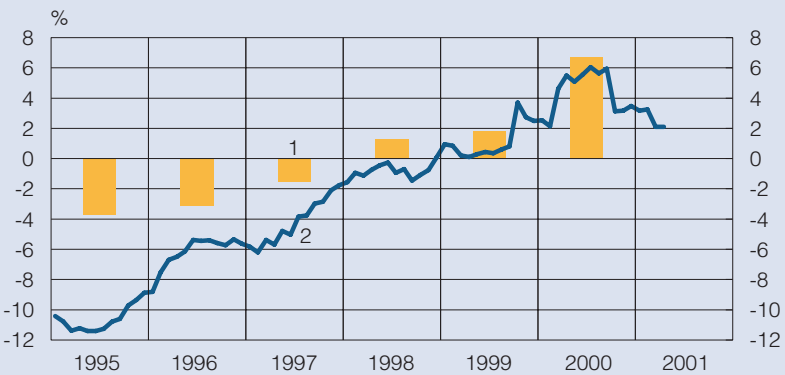


Excluding financial transactions
12-month moving totals, % of GDP

1. Revenue
2. Expenditure

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

42. Public sector balances in Finland

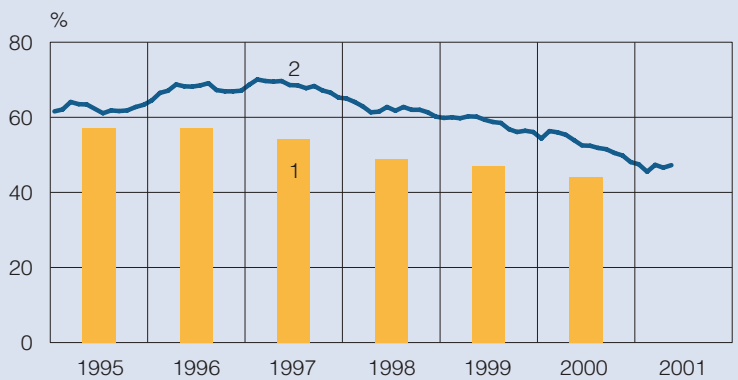


% of GDP

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

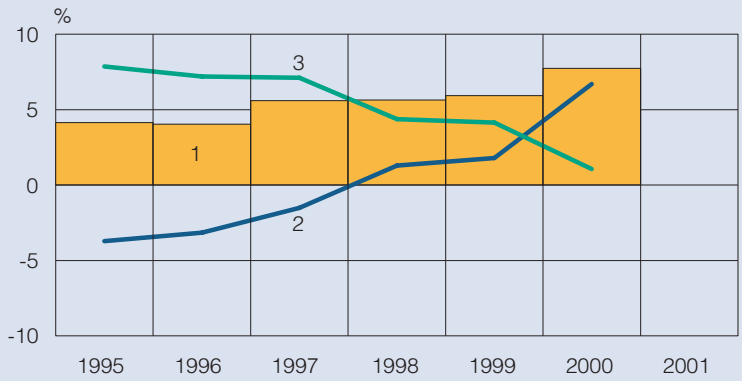


% of GDP

1. General government debt
2. Central government debt

Sources: Statistics Finland and
State Treasury.

44. Net lending in Finland by sector

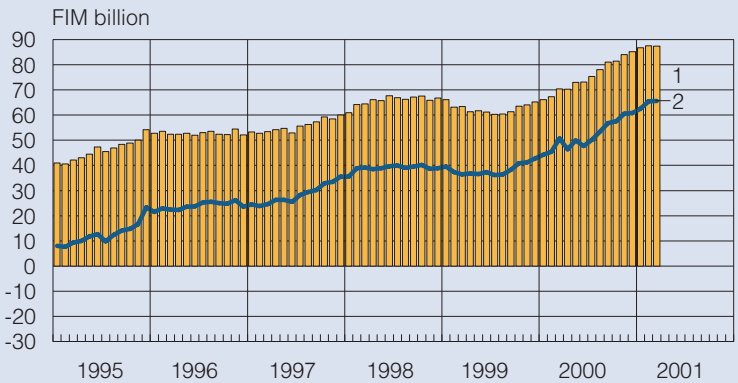


Main sectoral financial balances, % of GDP

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

Sources: Bank of Finland and Statistics Finland.

45. Finland: goods account and current account

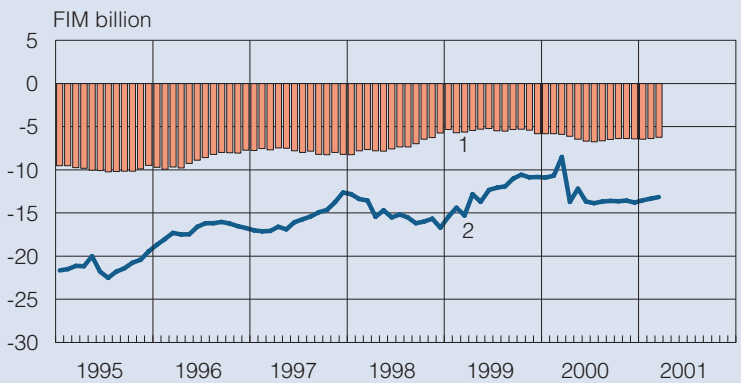


12-month moving totals

1. Goods account, fob
2. Current account

Source: Bank of Finland.

46. Finland: services account and income account

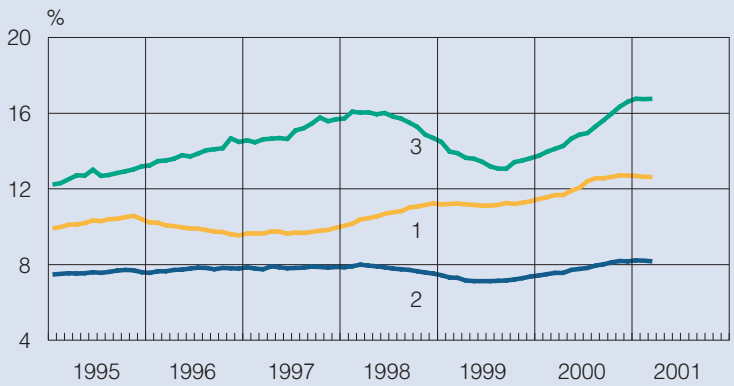


12-month moving totals

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

Source: Bank of Finland.

47. Regional distribution of Finnish exports

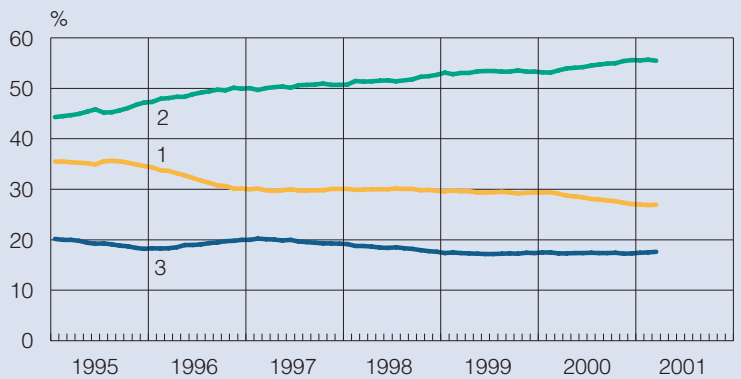


12-month moving totals,
% of GDP

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

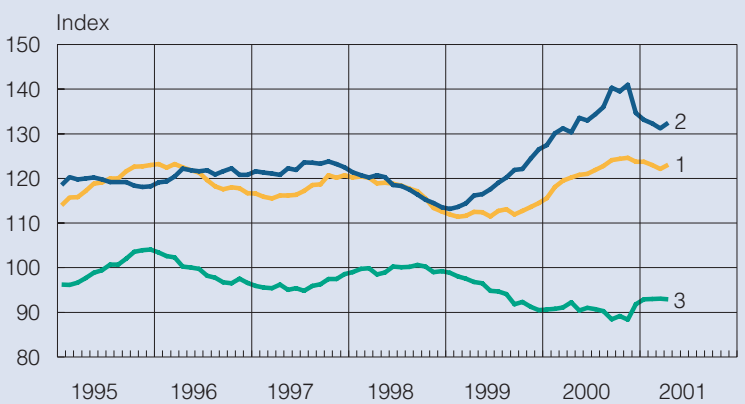


12-month moving totals,
percentage of total exports

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

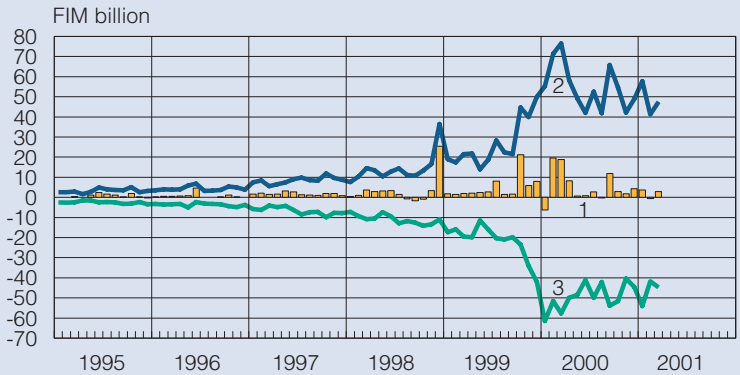


1990 = 100

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

Source: Statistics Finland.

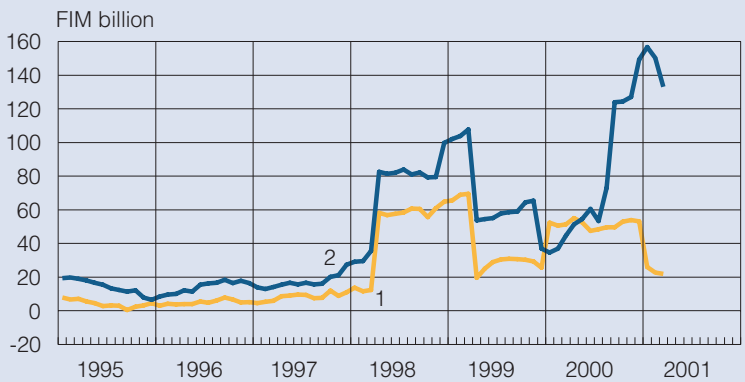
50. Non-residents' portfolio investment in Finnish shares



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

Source: Bank of Finland.

51. Finland: direct investment

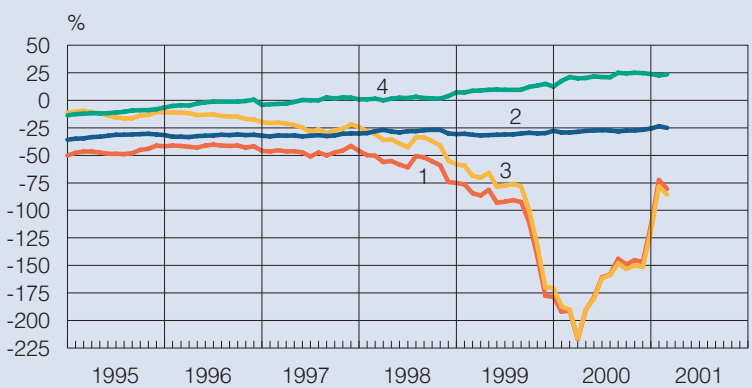


12-month moving totals

1. In Finland
2. Abroad

Source: Bank of Finland.

52. Finland's net international investment position

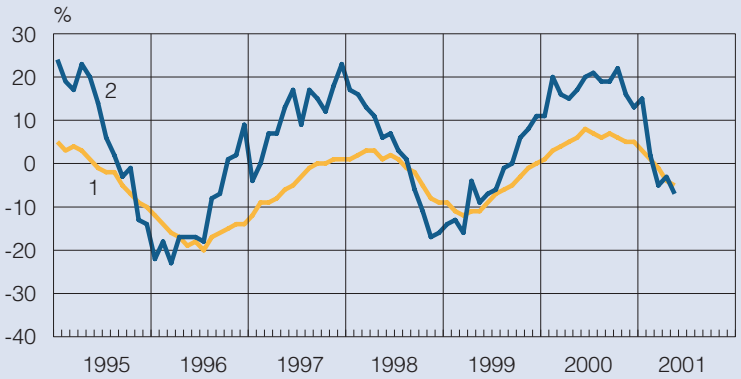


% of GDP

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.

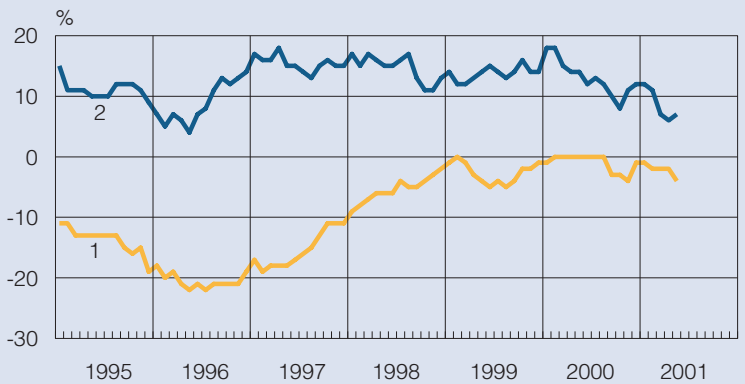
53. Industrial confidence indicator in the euro area and Finland



1. Euro area countries
2. Finland

Source: European Commission.

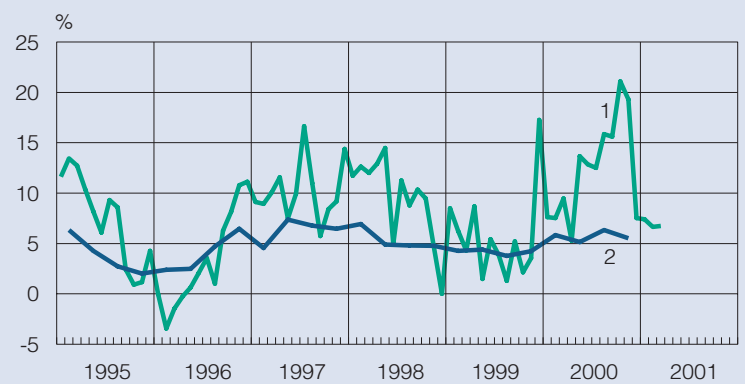
54. Consumer confidence indicator in the euro area and Finland



1. Euro area countries
2. Finland

Source: European Commission.

55. Finland: GDP and industrial production

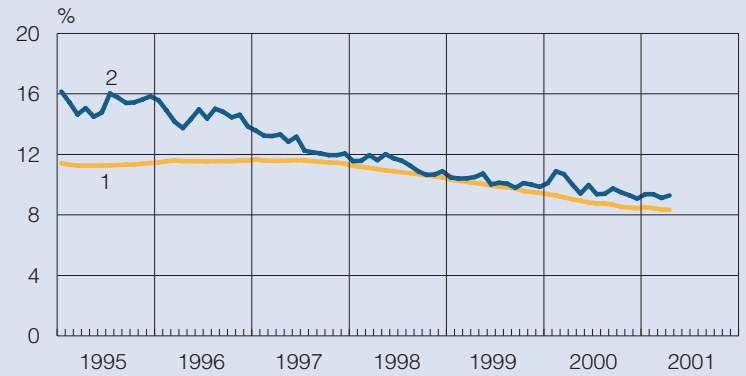


Percentage change from previous year

1. Industrial production
2. Gross domestic product

Source: Statistics Finland.

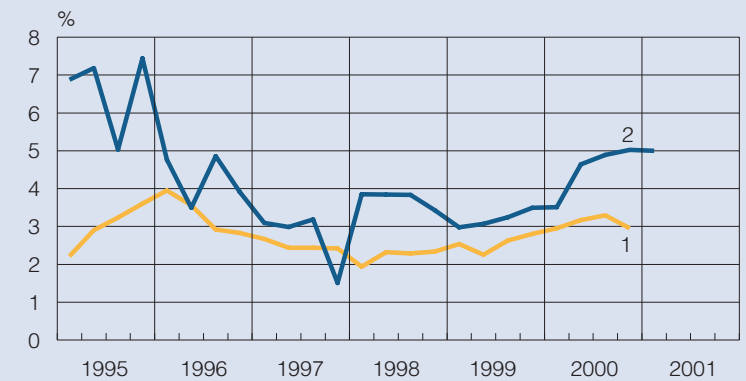
56. Unemployment rate in the euro area and Finland



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

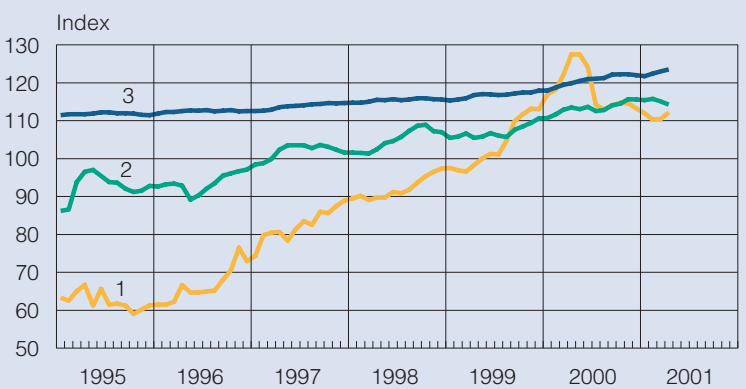


Percentage change from previous year

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 m^2)
2. Stumpage prices
3. Consumer prices

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

Organization of the Bank of Finland

1 May 2001

Parliamentary Supervisory Council

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

Anton Mäkelä, Secretary to the Parliamentary Supervisory Council

The Board

Matti Vanhala
Governor

Matti Louekoski
Deputy Governor

Sinikka Salo
Member of the Board

Heikki T. Hämäläinen, Secretary to the Board

Departments and other units

Antti Suvanto
Economics

Pentti Pikkarainen
Market Operations

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