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Monetary policy and economic outlook

Will growth in Russia continue?

Differences in the euro area: a wavelet approach

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EUROSYSTEMET

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Monetary policy and economic outlook

1 December 2005

The world economy has continued to grow at a brisk pace but growth rates still vary considerably across countries. Economic growth in the United States remained strong in the third quarter of 2005 and the economic effects of the hurricanes are likely to remain minor. Euro area growth is recovering gradually. Signs of accelerating inflation are present in all the major economic regions. The Finnish economy has been supported by strong private consumption.

World economic expansion was well on track in autumn 2005 (Chart 1). This was also reflected in a general recovery of industrial confidence from the temporary downturn in spring (Chart 2). Growth has continued to vary considerably across individual economic regions. US growth remained brisk in the third quarter of the year and the economic growth effects of the hurricanes on the Mexican Gulf coast in August–September are expected to be limited and temporary. In Asia, Chinese economic prosperity has not showed any signs of slowing down, while the outlook for Japan is also fairly bright. In contrast, recovery of euro area growth has been sluggish, with depressed growth in the United Kingdom.

There are some signs of accelerating inflation in the main economic regions (Chart 3), partly in response to the sharp increase in fuel prises following in the wake of the United States hurricanes. The indirect effects of elevated oil prices on other product prices have remained relatively modest so far. The risks of accelerating inflation are, however, building up. In response, the Federal Reserve has further tightened its monetary policy stance and the ECB raised its key interest rate to 2.25% at the beginning of December. This was the first change in the ECB key interest rate since June 2003.

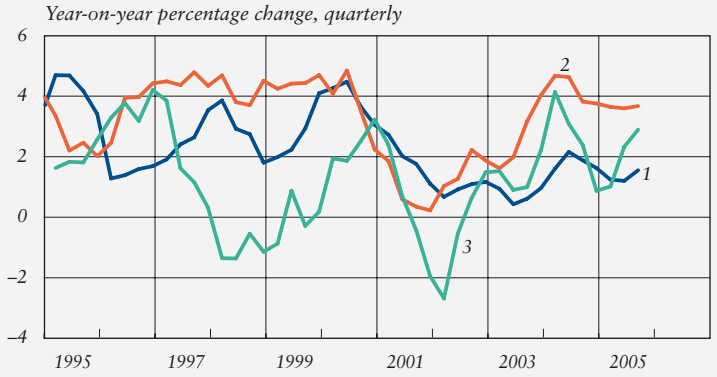
The robust expansion of the world economy notwithstanding, the downside risks to the economic outlook have not disappeared. Recent forecasts by international organisations have especially focused on the large current account imbalances. The United States' huge current account deficit remains one of the major risks to the world economy. Also the uncertainty surrounding oil prices continues to overshadow global growth prospects.

While euro area growth is recovering gradually, there are still not many signs of private consumption picking up, as growth has largely depended on export demand. The structure of euro area growth, however, still varies considerably across individual countries. Growth in domestic demand is slow in the largest euro area country, Germany, whereas domestic demand is strong in many smaller economies, including Finland. Current account trends also show differences by country as the current account for the euro area, which is close to balance, masks the huge surpluses or deficits of individual countries.

Economic growth in Finland continued to be relatively sluggish in the third quarter of 2005 despite the recovery of forest industry output from the downturn caused by the labour

Chart 1.

GDP

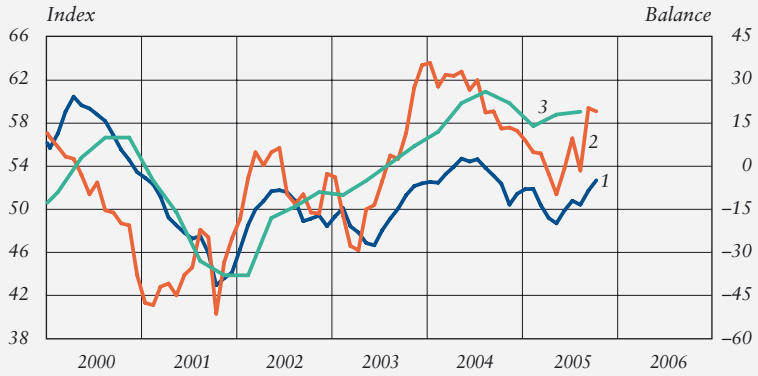


1. Euro area
2. United States
3. Japan

Sources: Eurostat, Bureau of Economic Analysis (BEA) and Economic and Social Research Institute (ESRI), Japan.

Chart 2.

Manufacturing confidence indicators

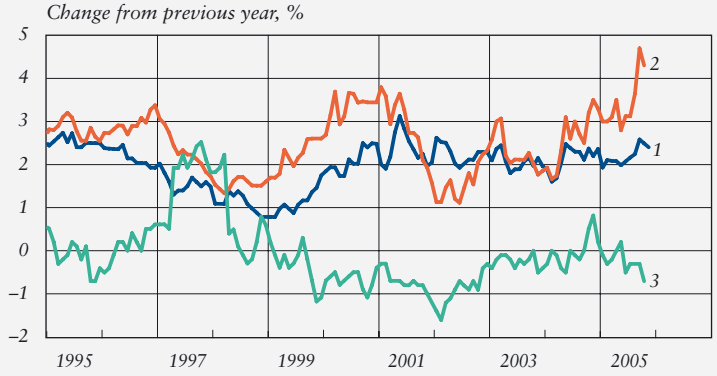


1. Euro area purchasing managers' index (left-hand scale)
2. US purchasing managers' index (left-hand scale)
3. Japan's Tankan index* of large manufacturers (right-hand scale)

** Structural change in Dec 2003.*
Sources: Reuters, ISM and Bloomberg.

Chart 3.

Consumer prices



1. Euro area
2. United States
3. Japan

Sources: Eurostat and OECD.

dispute in late spring and early summer. Growth in private consumption has, nevertheless, continued to be strong. The rate of inflation is still slower in Finland than in the euro area overall, mirroring for example the effect of growing globalisation and further increasing competition on domestic price formation in many product groups.

Oil prices remaining high

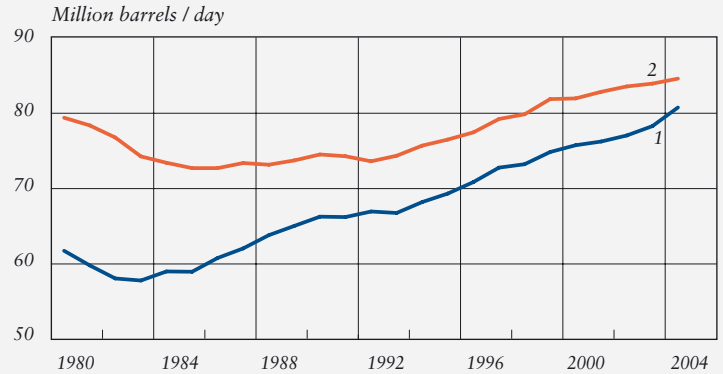
The price of crude oil rose substantially in response to the hurricanes witnessed in the United States in late summer and early autumn. The price of vehicle and heating fuels refined from crude oil, however, increased even more in relative terms because of the temporary reduction in US oil refining capacity following the hurricanes. Crude oil and fuel prices have later returned to pre-storm levels, but the price of oil, as well as oil futures, has remained high. The price of oil futures is a reflection of market participants' views of continued high oil prices in the future. These views have been fuelled by concerns over the adequacy of the oil production and refining capacity in the context of increasing oil consumption. The oil refining capacity has, for a long time already, been growing clearly more slowly than the volume of the world's oil consumption (Chart 4).

Robust economic growth causes oil prices to rise.

The sustained increase in oil prices over the past couple of years has been largely borne out by robust economic growth, which has bolstered the demand for oil especially in the emerging Asian economies, the United States and some other countries. This is part of the explanation for the effects of oil price rises on the global economic development turning out to be smaller than feared. Furthermore, industrial countries in particular have improved their energy consumption efficiency since the oil crises of the 1970s and 1980s. The higher income of the oil producing nations has also

Chart 4.

Global oil consumption and refining capacity



1. Crude oil consumption
2. Crude oil refining capacity
Source: BP Oil Review 2005.

Private consumption boosting US economic growth.

been reflected in growing imports, which have boosted euro area exports in particular.

The minor growth effects of higher oil prices are also explained by the fact that the indirect effects of oil price rises on other product prices and wages have remained moderate so far. This has been fostered by sound and credible monetary policy, keeping the inflation expectations of economic agents moderate. Moderate inflation expectations have, in turn, contributed to continued low long-term interest rates.

Continued brisk growth in the United States

Robust economic growth continued in the United States in the third quarter of 2005. Annualised growth was a good 4% up on the previous quarter, suggesting that the effects of the hurricanes witnessed in August–September will remain smaller than expected.

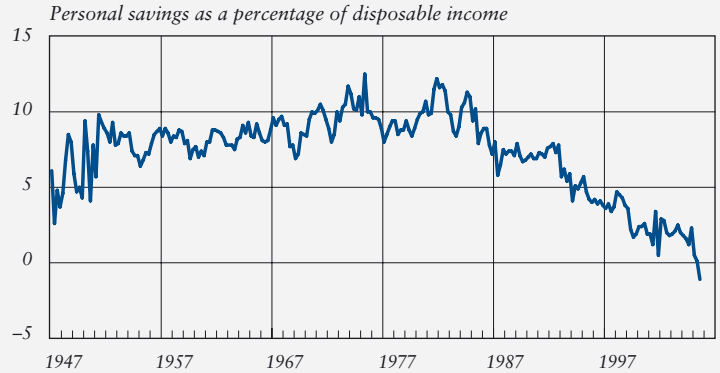
US growth has been supported above all by strong private consumption, especially in the third quarter of 2005 when growth was largely dependent on private consumption. Investments have also increased at a relatively brisk pace, supported by positive corporate performance. The negative net export effect on economic growth has declined in response to slower import growth.

In the course of 2005, private consumption has been underpinned by rising household wage income in particular, whereas the tax reliefs introduced a few years ago have lost importance in this regard. The increase in wage income has coincided with an improvement in the labour market situation. Growth in the number of employed, however, came to a halt in September–October but this is likely to be a temporary downturn caused by the hurricanes.

Private consumption has also been fuelled by household indebtedness. In 2005, this was for example seen in a stronger increase in private consump-

Chart 5.

US household saving ratio



Source: U.S. Bureau of Economic Analysis.

tion than in disposable income. Hence, households have saved less and less of their income and the United States household saving ratio turned negative in the third quarter of this year for the first time since the Second World War (Chart 5). In other words, household debt-based consumption was higher than household income in the period concerned. This is not a sustainable situation in the long run. It also carries with it a higher risk of a sudden slowdown in the rate of private consumption growth as households increase their savings. Such developments could for example be related to the reversal of the recent rapid rise in the prices of housing. Over the past few years, the pronounced increase in the value of housing wealth has been one of the factors contributing to households' willingness to take out debt.

The rate of inflation clearly accelerated in the United States following the hurricanes. This acceleration is, however, likely to remain temporary, considering that the indirect effects of the oil price rises on other product prices seem to have been moderate so far. There have been some signs of a higher rate of wage increases in line with the improvement in the labour market situation but the Fed's rate rises have kept the inflation expectations of economic agents fairly moderate.

US economic growth is envisaged as slowing gradually in the near future when the rise in private consumption recedes in step with an increase in household savings. The economic outlook may, however, be gloomier than expected, considering that the risks related to the imbalances of the economy have not disappeared. The large current account deficit has not started to shrink, nor is a rapid improvement in general government finances to be expected, considering the additional burden imposed on the federal economy by the expenses incurred in the clean-up operations after the season's hurricane disasters.

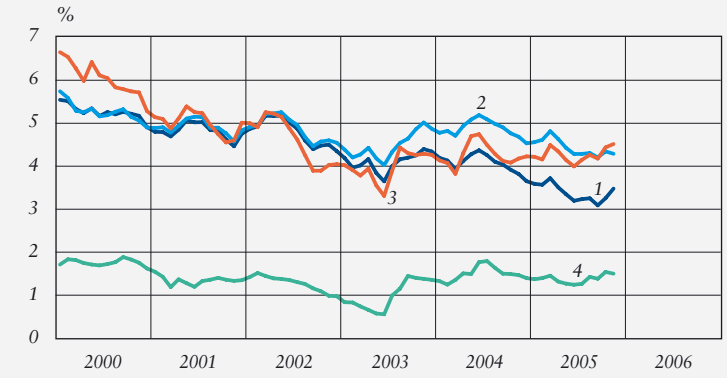
Long-term and short-term rates still at historical lows.

Long-term interest rates and dollar both rising

Long-term interest rates have turned upwards in all the main economic regions in autumn (Chart 6). Short-term rates have risen in the United States in particular as the Federal Reserve has further raised its key policy rate (Chart 7). Short-term rates also showed an upward trend in the euro area in autumn in response to mounting expectations of an ECB interest rate rise. However, viewed historically, both long-term and short-term rates are still at a relatively low level. Information available in the financial markets suggests that the recent rises in US and euro area long-term interest rates have been motivated by expectations of higher real interest rates rather than inflation expectations. Market participants' confidence in sustained economic growth thus seems to have strengthened. This is also seen in small yield spreads between corporate bonds and government bonds and hence favourable financing conditions for companies.

Chart 6.

International long-term interest rates



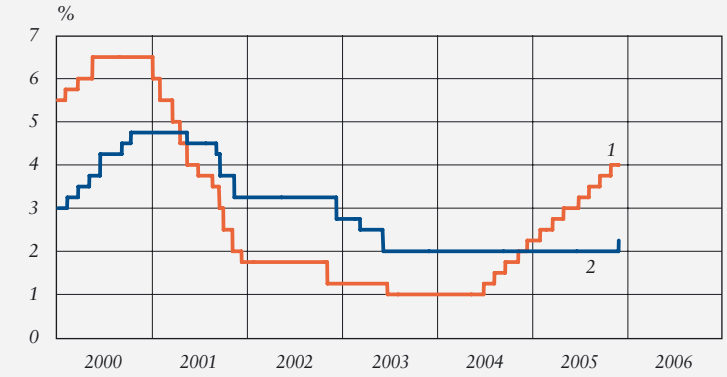
Interest on 10-year government bonds

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

Source: Reuters.

Chart 7.

Policy rates

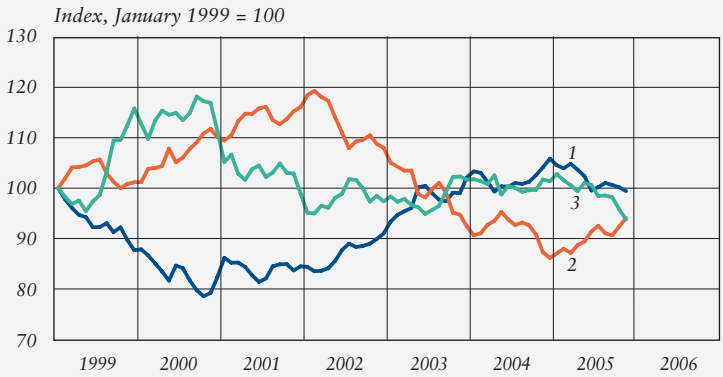


1. *United States: Fed funds target rate*
2. *Eurosystem: main refinancing rate / minimum bid rate*

Source: Reuters.

Chart 8.

Trade-weighted exchange rate indices



1. *Euro area*
2. *United States*
3. *Japan*

Sources: European Central Bank and Bank of Finland.

In the foreign exchange markets, the US dollar has continued to appreciate vis-à-vis the other major currencies (Chart 8). The US dollar has most apparently benefited from the continued Fed's rate rises and market confidence in the country's economic expansion. The euro has depreciated almost solely against the dollar, and there have been no major changes in the euro area trade-weighted currency index since the summer.

Developments in share markets have been relatively favourable in 2005 in response to sound corporate performance and low interest rate levels. US share prices have, nevertheless, stagnated, whereas the companies in the euro area seem to have benefited from the favourable export situation. The recovery of the Japanese economy has, in turn, been reflected in a pronounced upturn in share prices. Nevertheless, the uncertainty surrounding future corporate performance and fears of inflation building up in the market caused a downturn in share prices in particular in the euro area and the United States in October. This downturn seems to have been of a temporary nature and share prices have turned up thereafter.

Strong growth in China, depressed growth in Japan

Economic growth in Japan was relatively brisk in 2005. Growth nevertheless slowed somewhat in the third quarter but annualised growth remained close to 2% compared to the previous quarter and 3% from a year earlier. The economy has benefited from the recovery of household spending and investments, while, at the same time, companies have showed a climate of improved confidence. In the future, Japan's exports are likely to gain from the depreciation of the yen and the sustained robust expansion of the Chinese economy. There are some signals that the deflation haunting the country for years will now be reversed, and the Japanese central bank therefore expects a gradual increase in consumer prices.

Economic growth has been slow in the euro area but signs of recovery have emerged recently.

Economic growth in China has showed no signs of slackening. In the third quarter of 2005, at above 9% year-on-year, growth thus continued to be very brisk. Economic growth has continued at a rate of above 9% for a couple of years, especially supported by strong exports and investments. The rapid growth and increase in the price of crude oil notwithstanding, the rate of inflation in China has been slowing in autumn. This is for example related to the fact that transmission of oil price increases to consumer prices has been impaired by fuel price regulation.

Euro area growth recovering

Growth in the euro area was torpid in early 2005. The increase in domestic demand was modest with net exports still suffering, to some degree, from the earlier appreciation of the euro despite the relatively strong export drive. In late summer

and autumn, the economic indicators of the euro area started to improve, however, with the business outlook in particular making a marked recovery. The recovery of industrial confidence is probably due to the strong export drive in the euro area and the close of the inventory adjustment in the early part of the year. The depreciation of the euro in the early part of the year, together with robust global expansion, has boosted euro area exports.

Current account trends varying considerably across euro area countries

There have been few signs of a recovery in domestic demand, and in private consumption in particular, in the euro area. Household confidence has remained relatively weak nor do other indicators suggest any rapid pick-up in private consumption. The euro area labour market situation has also been slow to improve. Domestic demand in the euro area has been dampened especially by the modest economic growth in Germany in the current year. The uncertainty surrounding German labour markets and political situation seems to have further impaired growth in domestic demand and served to sustain prudent savings behaviour.

Preliminary data indicate that euro area growth accelerated in the third quarter of 2005 to around 2.5% on the previous quarter, annually adjusted. Growth was supported by favourable export developments, although the growth structure continues to vary from country to country. Euro area growth is expected to continue at a more rapid pace than in the first half of the year as domestic demand also starts to pick up. Domestic demand is underpinned for example by continued favourable financing conditions. In 2005 the rate of overall economic growth will, however, stay clearly below 2%.

The European Commission's autumn 2005 forecast suggests that the general government deficit for the euro area will remain close to 3% of GDP in 2005, as in the year before, and that general government debt will increase to close to 72% of GDP. Judging from the draft budgets of member countries and the Commission's forecast, there is no marked improvement in sight for 2006, either. Five euro area countries, ie Germany, France, Italy, Greece and Portugal, are currently subjected to the Excess Deficits Procedure. In their recommendation of December 2004, the EU Council urges Germany and France to reduce their deficits below the 3% reference value this year already. According to the Commission's forecast, this is not going to happen, with especially Germany not even coming close to the target. The key objective of the new German government is to squeeze the deficit below 3% by 2007. The aim is to improve the general government fiscal position for example by increasing the value added tax rate at the beginning of 2007.

Current account trends vary across euro area countries

The subdued increase in euro area investments has been one of the main reasons behind the weak economic development of the euro area in recent

years. The value of investments has, nevertheless, broadly matched the value of indigenous savings in the euro area, with the current account for the euro area close to balance. In this respect, developments in the euro area have differed considerably from the other main economic regions, considering that the US current account posts a clear deficit, with that of Japan running a sizeable surplus.

The current account balance notwithstanding, the financial situation has varied across euro area sectors. While the household sector has generated more savings than investments, with the financial account of the sector thus posting a surplus, the financial accounts of the corporate and public sectors have been in deficit.

Current account trends show major differences across euro area countries (Chart 9). In Germany, where weak domestic demand has been counterbalanced by strong exports, the current account posts a clear surplus. In Spain, in contrast, where domestic demand has grown at a rapid pace, the current account remains in significant deficit. Greece and especially Portugal experience the weakest situation in terms of financial structure. The large current account deficits of these countries reflect the financial account deficits of both the public and the private sector.

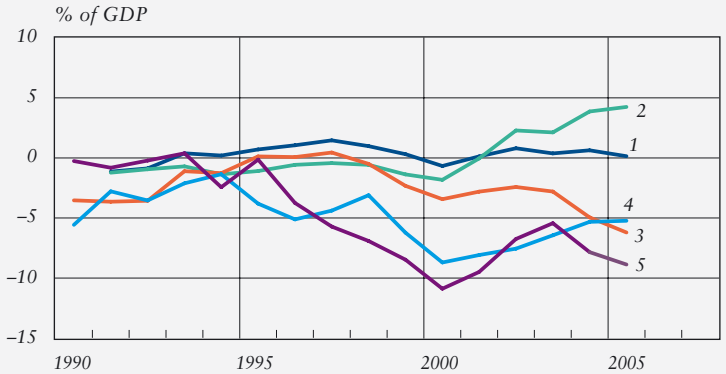
Euro area inflation accelerated

Euro area inflation has accelerated.

The rate of inflation in the euro area (measured by the Harmonised Index of Consumer Prices, HICP) accelerated to close to 2.5% in autumn. As in the United States, the pick-up in euro area inflation has primarily been associated with higher energy prices. The effect was especially pronounced in September when energy inflation jumped as a consequence of the United States hurricanes. The hurricanes caused destruction to the oil refining capacity that has run scarce to begin with and, in response, fuel prices rose sharply also in the euro area.

Chart 9.

Current account trends in selected euro area countries



1. Euro area
2. Germany
3. Spain
4. Greece
5. Portugal
Source: OECD World Economic Outlook, spring 2005.

The indirect effects of higher energy prices on the prices of other goods seem to have remained relatively limited so far. The rate of wage increases has also remained moderate in the euro area, but the risks of accelerating inflation are, however, building up. At the current juncture, euro area inflation is not likely to fall below 2% over the next few months.

The rate of monetary growth in the euro area has further accelerated in 2005, with abundant liquidity in the economy. These developments have coincided with a rapid increase in lending volumes, particularly in housing loans to households. The rate of increase in the volume of corporate loans has also picked up, probably in anticipation of a gradual revival of corporate investment.

In response to the upside risks to price stability building up, the ECB Governing Council raised the key interest rate by 0.25 percentage points to 2.25% at their meeting in early December. This was the first interest rate change in 2.5 years. The decision of the ECB Governing Council will contribute to keeping euro area inflation expectations at levels consistent with price stability.

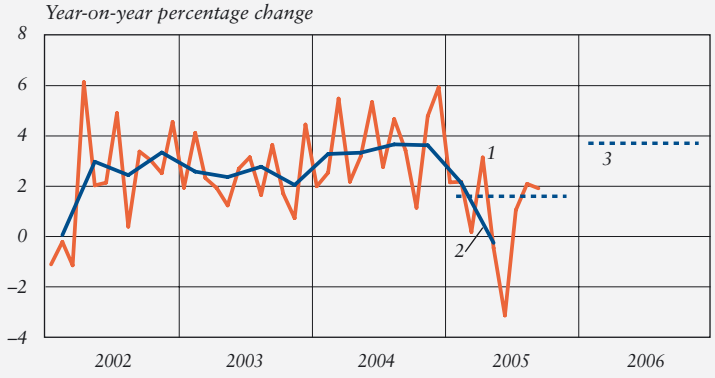
Private consumption still serving as the engine of the Finnish economy

Preliminary data indicate that the rate of growth of Finland's GDP in the third quarter of 2005 was fairly sedate year-on-year. Growth in industrial production was especially subdued despite the increase in forest industry output since the labour dispute witnessed in the summer (Chart 10). Growth has continued to be largely dependent on private consumption. Consumer demand has been sustained by the favourable development of households' real disposal income, good consumer confidence and an upswing in employment. Retail trade growth has been particularly strong.

The near-term economic development of the Finnish economy is expected to be relatively favourable. Private con-

Chart 10.

GDP for Finland



1. Monthly GDP indicator
2. GDP
3. Bank of Finland's forecast, September 2005

Sources: Statistics Finland and Bank of Finland.

sumption is likely to remain brisk and industrial production is expected to improve. According to the economic barometer survey undertaken by the Confederation of Finnish Industries, the outlook for the manufacturing industry is positive and order stocks have improved from recent years.

Growth in Finnish export volumes was robust in the autumn, whereas growth in import volumes was depressed. With the deterioration in the ratio of export prices to import prices, ie the terms of trade, coming to a halt at the same time, the trade surplus on goods has grown. The improvement in the terms of trade is most likely related to an increase in the prices of largely oil-based export products. This is likely to be a temporary improvement, with the terms of trade expected to deteriorate further over the next few years.

Finnish inflation still slow

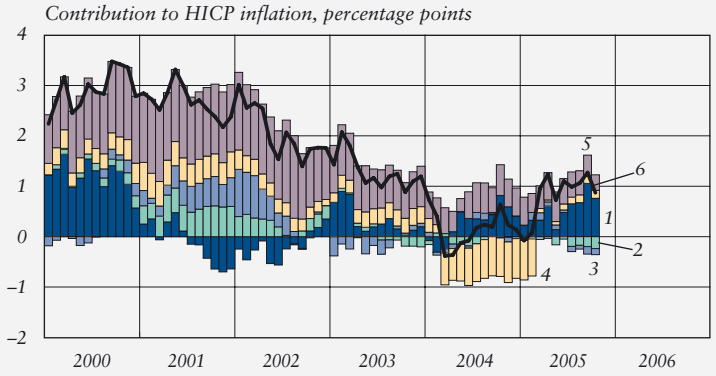
The rate of inflation in Finland has remained relatively slow, close to 1% (as measured by the Harmonised Index of Consumer Prices, HICP). The impact of the fuel price rise prompted by the United States hurricanes on Finnish inflation was smaller than on the euro area on average. This was for example attributable to the high tax on fuels which exerts a dampening influence on the transmission of oil price fluctuations onto inflation.

The persistent slow rate of inflation in Finland is largely a consequence of the fall in the prices of many industrial products and moderate service price inflation (Chart 11). This is related for example to the continuing growth in competition, both at home and globally. Service price inflation, in particular, has slowed and its contribution to the rate of inflation in Finland has been clearly lower than was the case only a few years ago.

Key words: inflation, monetary policy, economic situation

Chart 11.

Contribution to inflation in Finland



1. *Energy*
2. *Non-energy industrial goods*
3. *Unprocessed foods*
4. *Processed foods*
5. *Services*
6. *HICP inflation*

Sources: Eurostat and Bank of Finland.

Will growth in Russia continue?

1 November 2005

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Head of Research
Institute for Economies in Transition (BOFIT)

Half of the economic growth in Russia in recent years is assumed to have stemmed from high oil prices and increased output. The other half of the growth is explained by responsible economic policy, the price competitiveness of the rouble, institutional changes and a recovery from past years' crises.

While no abrupt contraction in growth is in view, risks related to growth also exist.

In the 1990s, the Russian economy contracted strongly, by about 40% according to statistics. The economy did finally appear to be resuming an upward trend in 1997, but plunged instead into a crisis, primarily caused by ballooning short-term public debt, in August 1998. Contrary to a number of forecasts, the crisis remained short-lived. This was due, in particular, to the fact that the authorities were able to continue responsible fiscal and monetary policies aimed at consolidating the economy. Growth started as early as 1999 and has subsequently stood at almost 7% per annum. In the current year, growth is expected to reach some 6%, with no abrupt reversal or sharp contraction in view over the next few years. However, it continues to be unlikely whether the political objective, set in 2002, of doubling overall production in ten years will be reached.

Considerable export receipts and current account surplus

Russia has been lucky in recent years. The world market price of the country's key export product, oil, has more than quintupled since spring 1998 and is believed to continue staying at a high level. According to the Bank of Finland's forecast, the price of Brent crude oil should be clearly over USD 50 at the end of 2007. Accordingly, Russian export receipts will remain large.

The Russian current account has been very strong, with the surplus ranging from 10% to 15% of GDP. The surplus in 2005 is likely to stay at 14%. These are exceptionally high ratios by international standards. Russian economic policy in recent years deserves excellent marks, unlike in the early part of the 1990s, in particular. The temptation to use export receipts for immediate improvements in living standards or for large-scale public investments has been apparent, but this sort of policy would have easily led to an inflationary spiral and inefficiencies. Political consensus aimed at balanced economic policy has also lasted flawlessly, constituting – together with a robust improvement in the terms of trade – one of the pillars of growth. In this respect, Russia contrasts sharply with a number of Latin American countries, for example.

The large current account surplus poses a challenge to monetary policy, especially when the Russian

small financial market scarcely provides scope for sterilising the inflow of foreign currency. Monetary policy needs to choose from two alternative objectives: targeting either inflationary discipline or a stable nominal exchange rate of the rouble. In practice, the Russian central bank has kept the nominal value of the rouble fairly stable in relation to a basket composed of the US dollar and the euro (Chart 1). The euro's weight in the basket has gradually been increased up to 35%. The broadly stable nominal exchange rate means a rapid appreciation of the rouble in real terms, being, on a trade-weighted basis, clearly more than 10% in the current year. According to recent statements, the monetary policy focus would be shifted towards deceleration in inflation.

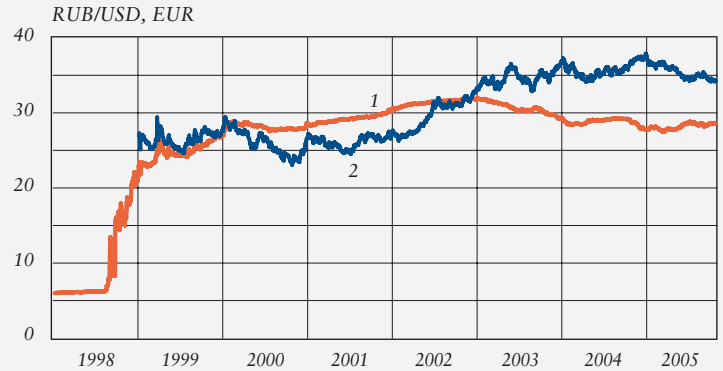
Fiscal policy has been supportive of balanced developments in maintaining considerable surpluses and transferring large income into reserves.

Economic policy has accomplished a number of objectives. While inflation continues to be fairly high, presumably 10–11% this year, it does not appear to act as a constraint on financial market development. With anticipated price increases, the ongoing banking reform – combined with strongly rising stock prices – underpins both bank saving and a growth in the lending stock. From the supervisory authorities' point of view, the stock of lending may even grow too fast. Borrowers have hardly any credit history, and the capability of monetary financial institutions of assessing risks is inevitably insufficient. The possibility of problem credits exists, but it must be recalled that the rapid growth in the stock of lending departed from a very low level. The Russian banking system continues to be very small. Bank deposits only account for 12% of GDP. Nevertheless, the share of long-term deposits has grown.

The Russian central bank has maintained a fairly stable nominal value for the rouble.

Chart 1.

Value of the euro and the US dollar in Russian roubles



1. RUB/USD exchange rate
2. RUB/EUR exchange rate

Sources: Reuters and Bank of Finland.

Russia does not live solely on energy and raw material exports.

Overall, the amount of money in circulation in the economy (M2) has grown rapidly, by several tens of per cent per annum. At the same time, the dollar's recent depreciation has led to a shift in roubles as the savings currency. In the first quarter of 2005, all bank deposits registered 30% growth, whereas foreign-currency deposits grew only by 20%. This is a highly welcome phenomenon. In a largely dollarised country, economic agents are quick to respond to exchange rate movements. As the rouble, like the currencies of other emerging economies, can be expected to appreciate further still, the shift into rouble holdings will continue. Meanwhile, the position of the euro will also strengthen, as economic agents diversify their asset allocation.

No Dutch disease

The rapid rouble appreciation in real terms could be expected to jeopardise output other than that of energy and commodities and lead to the traditional Dutch disease. This typically refers to a situation where a strong current account surplus, resulting from a recent discovery of natural resources or a sharp surge in the prices of natural resources, pushes up the value of the domestic currency so high that it becomes unsustainable. As a consequence, profitability elsewhere in the open sector collapses and the structure of the economy becomes more one-sided (as occurred in the Netherlands after the discovery of North Sea oil). This gives rise to large cyclical fluctuations, widening standard-of-living gaps and protectionist maintenance of jobs.

Much as the Dutch disease may have been discussed in Russia, it poses no de facto problem. The rouble continues to be undervalued. This is a feature typical of emerging economies, and in the case of Russia the difference between current exchange rates and the estimated purchasing power parity is also considerable, about threefold. Admittedly, the structure of Russian exports has become more one-sided, but it would appear that the problem is the real lack of competitiveness as a legacy from the Soviet times rather than an overvalued currency. The real exchange rate has edged up to the pre-1998 crisis level, which many consider too strong; meanwhile, however, the productivity of the open sector has been enhanced so that unit labour costs in most sectors have not gone up in the post-crisis period. Improved productivity has largely rested on the higher utilisation rate of the existing production capacity, but many Russian companies have – in contrast to what is generally believed – intensified their production in other respects, too, and introduced various innovations. As the inherited efficiency is weak, it can also be expected to continue improving without unreasonably high costs. This offsets the eroding impact exerted by the strengthening real exchange rate on price competitiveness.

Box.

How large is the Russian energy sector?

It may come as a surprise that the factual size of the Russian energy sector is controversial. This also creates uncertainty to discussions concerning the Dutch disease.

According to official statistics, the energy sector as a whole generates just under 10% of the country's overall production. On the other hand, the World Bank and certain domestic and foreign researchers reckon that the share would be 20–25%. The difference would, above all, be explained by transfer pricing used by oil companies, in particular, to minimise taxes. A large part of the energy sector's value added would have been statistically recorded in trade, which is less heavily taxed than energy production. This would create an exceptionally large statistical bias.

An energy sector that is possibly larger than reported in statistics does not necessarily mean that the sector's share of overall production – as opposed to its share of net exports – would have grown. Although oil production has increased rapidly in recent years, it continues to be lower than at its peak in 1987–1988. Natural gas and electricity output, in turn, has grown slowly. Growth rates in engineering, for instance, are considerably higher.

Both political decision-makers and experts fully understand the urgent need to diversify the production structure. Russia can never live solely by exporting energy and raw materials. At the present, the energy sector, contributing one quarter to GDP, employs only 1% of the labour force.

A multi-sectoral economy

The Russian economy can be considered as being composed of three sectors. Firstly, there is the energy and commodity sector in which export prices are likely to remain high in the future. The question is how this sector can provide increasingly higher value added. Transition from commodity exports towards refined products is unavoidably slow and requires large-scale investments. Neither does recent political uncertainty in this sector help foster the objective of higher value added.

Secondly, there is industry as a legacy from the Soviet Union, with the automobile and aircraft production playing a key role. Its future competitiveness and possible linkage with international production chains is also a big issue for the future of several Russian industrial cities with some one million inhabitants each.

The third sector is composed of new production. Although it is sometimes forgotten, Russia has already undergone a major structural change, as services in particular but also

The public-sector's budget surplus is large by international standards.

industry have created new lines of business, partially or completely unknown in the Soviet Union. Examples range from the financial sector via travel agencies to beer brewing. The new production is mostly domestic market activity, at least for the time being. New, high value-added industrial or service-based export products have not emerged to any significant extent. It is however encouraging that, according to survey data, Russian small-sized companies consider their operating environment as having improved in almost all respects, at least until the end of 2003. Small companies complain about high taxation and difficulty of access to financing, in other words, basically the same problems as entrepreneurs in other countries. While they do not regard corruption or organised crime as serious problems, they perceive arbitrary action by the authorities as constituting a severe drawback. It remains to be seen whether the positive developments observed in surveys thus far will be continuing or whether political interventionism in economic management, like the Yukos process, will also be reflected in regions and small-scale production.

Paradoxical enough, developments in recent years have benefited from the diversely poor legacy left behind by the 1990s. It has been easier to absorb the swelling money supply, caused by the current account surplus, as the point of departure was a dollarised, indebted economy based on only limited use of money. Demand for roubles has increased now that assets have been shifted away from dollars, payments in arrears have mostly been settled and there has been a transition from bartering to monetary economy. When reaching its peak in autumn 1998, bartering accounted for about 60% of industrial turnover, compared with one tenth thereof at present. With an ongoing expansion and deepening of the financial system, the demand for roubles continues to strengthen.

Fiscal policy has experienced a radical change. While the budget deficit ranged from 5% to 10% of GDP in the 1990s, large surpluses have been the norm in the 2000s. The public sector's budget surplus for the current year would appear to rise to 7% of GDP, which is an extremely high ratio by international standards. Russia was already a country of high taxation in the 1990s, but adjusted to the post-crisis situation by primarily cutting public spending, by as much as some 10% of GDP. This is also a singularly radical change when comparing internationally, especially in a society characterised by broad-based poverty, big income differences and public commitments often short of financing. Against this background, increases in budget-sector wages and salaries and a number of social expenditure items in the 2006 budget are perfectly understandable and would not appear to endanger macroeconomic balance.

'The country that pays its debts'

A positive change in the Russian economy that may have received the least attention is debt service. Russia inherited from the Soviet Union a debt which, at its worst, equalled the size of the country's foreign-currency denominated GDP. The debt was rescheduled twice, whereas Russia has always been punctual in settling its own debts. The country, once the biggest debtor of the International Monetary Fund, paid its remaining debts at the beginning of this year – ahead of schedule. In July 2005, prepayments were also made of the Soviet-era debt to the Paris Club of sovereign creditors. The intention is to continue prepayments of the Paris Club debt in 2006, which is considerably earlier than provided for in the agreed schedule. If this is to happen, Russia will be another 'country that paid its debts'.

Meanwhile, the country's foreign exchange reserves have grown so as to rank the fifth largest in the world, amounting to USD 160 billion, from an insignificant level as late as 1998. In addition, the Stabilization Fund is likely to hold about USD 50 billion worth of assets at the end of 2005. Thus, the central government fiscal position is very strong. On the other hand, account should be taken of the fact that Russian banks and companies have rapidly increased their international borrowing.

According to estimates, the high oil price and increased output would explain about half of Russia's growth in the last few years. The second half would be explained by other factors: responsible economic policy, price competitiveness generated by the rouble crisis in 1998, the completion and gradual maturation of institutional changes made in the 1990s and a recovery from past years' crises. Owing to the latter, growth in the coming years may inevitably be slower than now. As capacity utilisation cannot be the primary source of growth any longer, investments and new output development must be given priority. While the investment-to-GDP ratio continues to be low for an emerging economy, ie roughly equalling that of Finland, it is rising steadily.

Russia has paid its debts ahead of schedule.

Russia will be facing a change-over from growth based on increased capacity utilisation to growth based on investment. Investment needs are indisputably enormous, and the investment ratio is reckoned to exert a very important influence on the pace of growth. The production capacity inherited by Russia was already dangerously obsolete in the last Soviet decades, and the same trend has continued in most sectors. About half of industrial investment is concentrated on the energy sector. Housing and retail trade have experienced a strong boost in investment, especially in bigger cities. Disadvantaged sectors include forestry, where proprietary rights are still poorly defined. A large part of the basic structure of the economy, perhaps

The Russian economy is forecast to grow at an annual rate of 5%.

municipal engineering in particular, is decayed. A number of areas of human capital, such as public health and education, are also of concern.

The Bank of Finland's and other forecasters' baseline scenario for the Russian economy is that it will grow at a pace of 4–5% in the next few years (Chart 2). This would be slower than in China and India, but still clearly faster than in the world economy on average, not to mention the growth rates widely forecast for the large European countries.

When considering Russia as a Finnish export market, four factors must be added together. One of these is economic growth. At the same time, Russian purchasing power with respect to foreign products will grow in line with the strengthening of the rouble in real terms, and willingness to buy foreign products is likely to increase with the growing middle class and modernisation of output. Of particular significance are the St. Petersburg and Moscow markets, geographically close and traditionally familiar to us, including their hinterlands, which will continue to expand faster than the national average. Together, these factors point to continued growth at a rate of even over 20% per annum in the Russian market, as seen from the Finnish perspective. Our exports thus far have followed growth in the Russian euro-denominated GDP (Chart 3). This can be interpreted so that another two factors affecting the size of the market – increased propensity to import and faster-than-average growth in population centres close to Finland – have remained an untapped potential. Finnish investment in Russia will also grow, albeit mainly for Russian own markets. An increase in living standards – about 10% per annum on average – and the rouble's appreciation in real terms suggest that Russia will not remain a cheap-output country for long, although there is still plenty of room for enhancing productivity.

Chart 2.

Change in Russian GDP and Bank of Finland's forecast for 2005–2007

Sources: Rosstat and Bank of Finland.

Future risks

Thus, the baseline scenario for the Russian economy cannot be other than positive. The economy does not function well in that it cannot guarantee high living standards for citizens. Even so, it appears to function better year-on-year so that growth will be secured, at least for the next few years. This development also poses risks, which must not be forgotten.

Assuming the price of energy does not continue to rise, increasing consumption and investment may imply an erosion of the current account surplus as early as this decade. This will pose new challenges not only to economic policy but also to key economic agents.

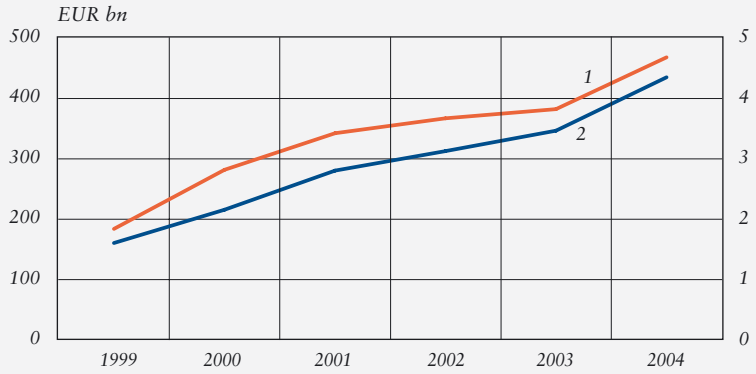
Energy production will play a key role in the next few years. Recent years have constantly witnessed about 10% growth in oil output, but growth in 2005 is expected to be only a couple of per cent. This can be a temporary problem, caused by political uncertainty surrounding the Yukos process or implications from taxation, which has become unreasonably high in the sector. But it may also be a question of a factor having longer-term effects. No significant new oil fields have been opened up for two to three decades, and the country is possibly reaching its production ceiling, at least in the absence of major investments. Should this be the case, the repercussions would be far-reaching. In recent years, Russia has been providing almost half of the increase in world oil output, and the energy strategy of the European Union is based on the notion of Russia's strong capability of stepping up exports of oil and gas alike. This view is shared by China and Japan, for instance.

Energy production will be key to Russian economic growth in the next few years.

The historical legacy must be remembered, too. The Soviet Union left Russia a legacy of output, infrastructure and social commitments

Chart 3.

Russian GDP and Finnish exports to Russia



1. *Russian GDP (EUR billion, left-hand scale)*
2. *Finnish exports (EUR billion, right-hand scale)*

Sources: Rosstat, Finnish Customs and Bank of Finland.

that Russia has been unable to maintain. The society is confronting a number of slow, long-term and difficultly reversible decay processes, which can even lead to abrupt interruptions in activity. One example is the life expectancy of Russian men, which has not risen despite improved average living standards. This may illustrate not only an uneven distribution of the fruits of growth, but also certain deep cultural features.

Moreover, it should be borne in mind that Russia is a country of diminishing population. Irrespective of the return of the Russian-speaking population back to Russia, the country's population has decreased by almost one million in a year. The population in fringe areas has contracted, in certain cases to less than half the number in the Soviet era. In 15 years, the age groups of 18-year-olds will be less than half their recent size. In a few decades ahead, the population number may still diminish by tens of per cent. This sort of development has never been seen in developed societies, and therefore we do not know how adaptation will take place. The situation is rendered no easier by the fact that, in addition to Russia, many other European countries will be facing the same problem, albeit to varying degrees.

Key words: Russian economic development and economic policy, Finnish-Russian economic relations, energy policy

Differences in the euro area: a wavelet approach

9 December 2005

The wavelet approach looks beyond the more usual areas of growth pattern analysis of trends and cycles. Comparative analyses show considerable similarities in euro area growth rates, particularly at business cycle frequencies, most notably among the original European Community founding members. Non-business cycle frequencies highlight some concerns for policy-making.

In assessing the needs of policy, there has been considerable effort in recent years to search out and explain the differences in longer-term growth rates among the euro area countries. This has been supplemented by a concern for the variations in the pattern of growth round these longer-term trends. Not only is distinguishing a shorter run fluctuation from a change in trend crucial for the sustainability of economic policy but the setting of the policy stance, particularly in the case of the single monetary policy, also presents a problem for members states or regions that are facing a deviation in the opposite direction from the bulk of the euro area. This is particularly important if the nature of fluctuations and the appropriate responses to them are not symmetric above and below trend.

Traditional analysis tries to separate economic growth into three main components, a trend, a cycle and a random or noise component. In the euro area the business cycle has usually been judged to last somewhere between 3 and 8 years. In this analysis we go further and consider whether there are differences among the euro area countries in fluctuations at other frequencies.[1]

Monetary policy is generally thought to have its main effect over an horizon of one to two years. Hence the implications of policy for economic fluctuations might be important over that horizon as well. If countries behave rather differently at these frequencies then this may have implications both for the setting of monetary policy and fiscal policy. If responses to a common policy are not the same then each country needs to think what this implies for structural and fiscal measures that can be varied at a more local level. Similarly, reversing the argument, if there are strong differences in the phase of a cycle across countries and responses are asymmetric (depending on whether the country is in an up or down phase, for example) then these need to be assessed in choosing the appropriate setting for an area-wide monetary policy.

The method

We use two varieties of what is known as wavelet analysis, which involves breaking down the growth path into a series of small regularly shaped (but not necessarily symmetric) waves at a number of

[1] This article draws on Crowley and Lee (2005) and Crowley, Maraun and Mayes (2005).

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Wavelet decomposition shows that the Finnish cycle has features at several frequencies.

different frequencies by fitting wavelet functions to the series. (A thorough introduction to wavelets and their use in economics can be found in Crowley (2005)). Wavelets have the advantage that they have aspects of both the time domain and frequency domain approaches to analysis of cycles, so we therefore consider both aspects. The first approach simply involves seeing what regular wavelets we can extract at each possible frequency, building up from the basic interval in our data, namely, a quarter.[2] Thus we can look at cycles of length 1–2 quarter, 2–4 quarters, 1–2 years, 2–4 years, 4–8 years, 8–16 years, each double the previous length until we reach the longest cycle that can be completed in our data period (16 years). Figure 1 shows a breakdown for Finland. Here six different frequencies (which accord with wavelet functions at these frequencies) have been distinguished, labelled d1 to d6, matching each of the 5 intervals described in the previous sentence.[3] The sixth line shows the underlying trend (what is left over after extracting these cycles), labelled s6.[4]

The Finnish crisis is immediately obvious in the last two lines of the Figure but it is noticeable that the method does not generate a sharp downturn around 1991 but a smoother decline starting earlier. The sharper parts of the downturn can be seen in the next two frequencies moving up the page, 4–8 years and 2–4 years. What this shows is that there are detectable patterns in the crisis period

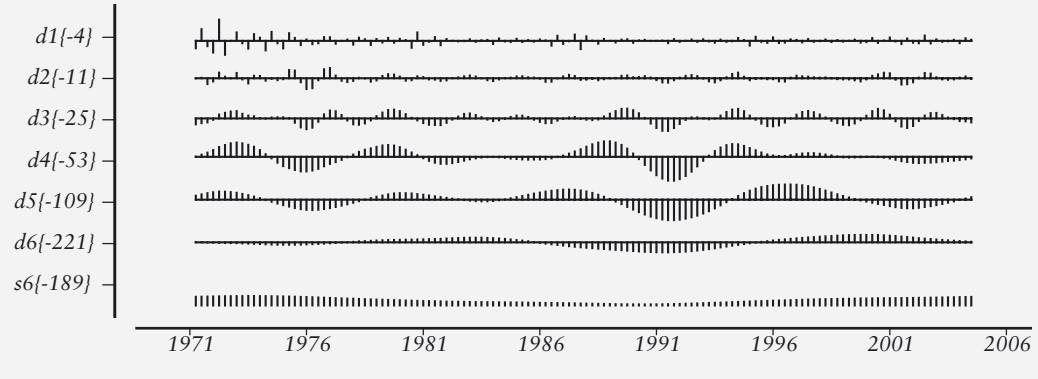
[2] The wavelet method we choose is known as the Maximal-Overlap Discrete Wavelet Transform (MODWT).

[3] The wavelets we have used are relatively symmetric.

[4] The letter s is used because the trend is often described as the wavelet smooth. The wavelet literature is riddled with jargon, which we try to avoid while possible here.

Figure 1.

Discrete Wavelet Decomposition for Finland



that reflect different frequencies. Some aspects of the economy decline and recover faster than others.

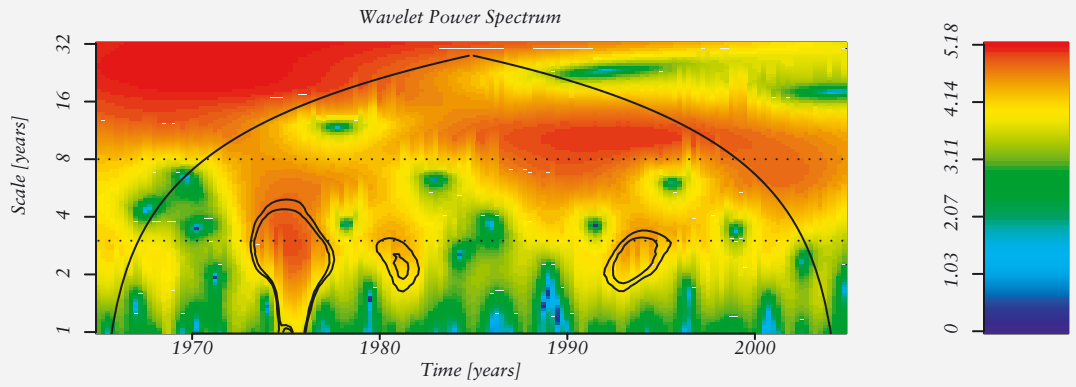
A look at the latest period is also helpful in understanding how this analysis works. According to the bottom line the trend in growth has been falling somewhat in the Finnish economy but compared to the 2–8 year cycles in growth, the economy has been picking up, as revealed in the next two lines moving up the page. The nearer we get to the top of the figure the more the wavelets are likely represent noise or specific shocks. What is noticeable, however, is that the 1–2 year wavelet shows quite a lot of energy – at monetary policy horizon frequencies the Finnish economy has shown quite a lot of movement.

The second and less well-known approach is to look at all possible frequencies in a continuous framework. This second approach is somewhat more difficult to use in subsequent analysis but it is visually quite compelling, as can be seen in the case of France, shown here in Figure 2. The colour code at the side shows the various densities. Thus the greener sections suggest the emergence of cycles. There is clearly quite a lot of energy at higher frequencies and from time to time at business cycle frequencies as shown by the interval between the two dotted lines. In the period before 1980 there was also a lower frequency cycle. The cone (pointed arch) drawn on the chart contains the area where we are most confident about the results (there are some technical problems in estimating the power outside this cone), so the area outside it is rather more tentative for any interpretation. Perhaps the most we can say, therefore, about the top right-hand part of the picture is that something seems to have changed.

Continious decomposition shows that most cyclical activity in France is at higher frequencies.

Figure 2.

Wavelet Power Spectrum for French Real GDP



The data

Our main data set relates to real GDP for the euro area countries over the period 1970 to 2004 Q2 (log-differenced to indicate growth rates). We also have data for Denmark, Iceland, Japan, Sweden, Switzerland, the UK and the US. The data are from the OECD database, with the exception of the US (US Bureau of Economic Analysis) and Switzerland (BIS). The euro area aggregate comes from the ECB Area-Wide Model database. Data are seasonally adjusted.

The larger countries show wavelet patterns similar to those for the euro area as a whole.

Results

In Crowley and Lee (2005), Figure 1 is repeated for all of the nineteen countries in the sample and for the euro area. Our task here however is simply to consider how well the various wavelets match at the different frequencies to get an idea of the similarities in the growth cycles of the euro area countries. Figure 3 shows how well the individual countries' wavelets are correlated with the same wavelets in the euro area as a whole. (Naturally the larger countries will have a higher correlation because they form a noticeable part of the euro area. Thus common policies aimed at euro area fluctuations will be construction tend to be more related to a policy that would be applied to the individual country on its own.)

The Figure shows that for Belgium, France, Germany, Italy and the Netherlands, i.e. almost all of the original 6 member states of the EU, there is quite a close correlation at all frequencies, except the lowest. When we come to the next six countries (Austria is excluded and Switzerland included) there is very little similarity at any frequency. Portugal, Spain and Switzerland do show some correlation at higher frequencies, including that over the monetary policy horizon. Finland is the least correlated – because of the crisis – so this does not tell us how well correlated Finland is with the euro area cycles today.

Figure 4 on the other hand opens up a second important aspect of the relationship between the individual countries and the euro area by checking how the cycles are correlated as we lead and lag the individual country wavelets with the euro area ones. At lower frequencies, Belgium, France, Luxembourg, Greece, Portugal, Spain and Switzerland seem to have cycles that are fairly well in phase. Finland seems to lag it and Germany to lead it. Most countries show relatively similar phasing at all frequencies. Again Finland is a clear exception, as is Greece and in the case of Ireland some of correlations are negative.

Figure 4 also includes the other countries in the sample by way of comparison. It is immediately clear that Denmark and the UK have exhibited some clear differences. Indeed they look to be in a relatively similar position to the US. Japan incidentally looks about as well correlated with the euro area as Finland.

Figure 3.

Wavelet correlation with euro area

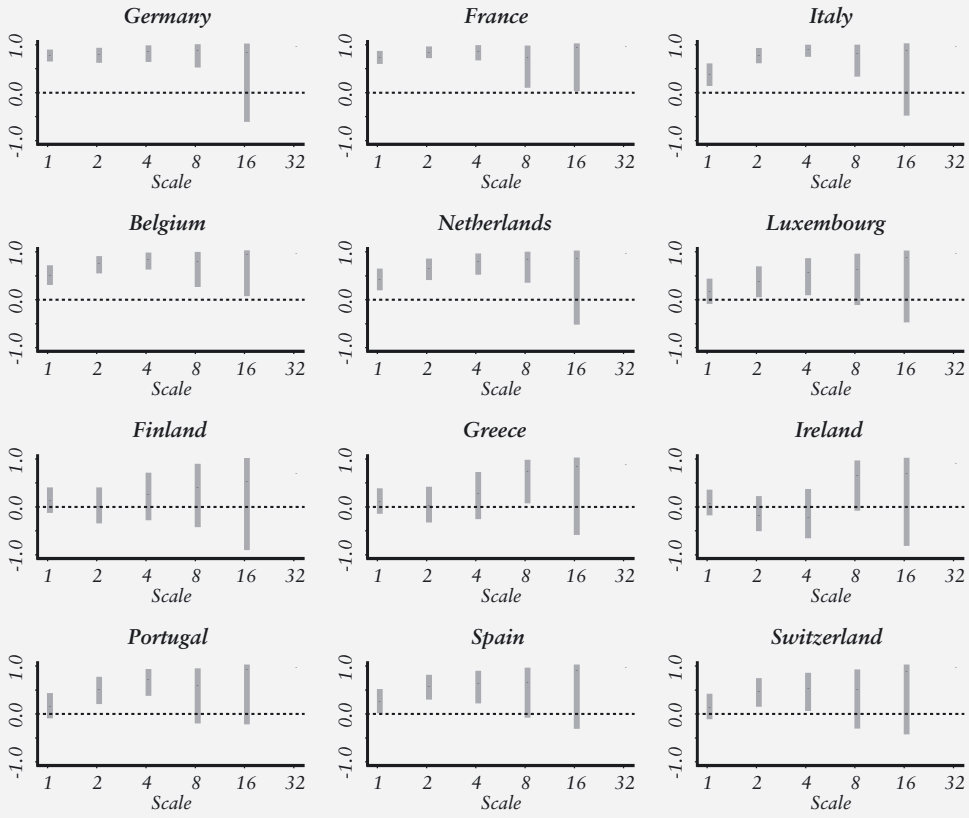
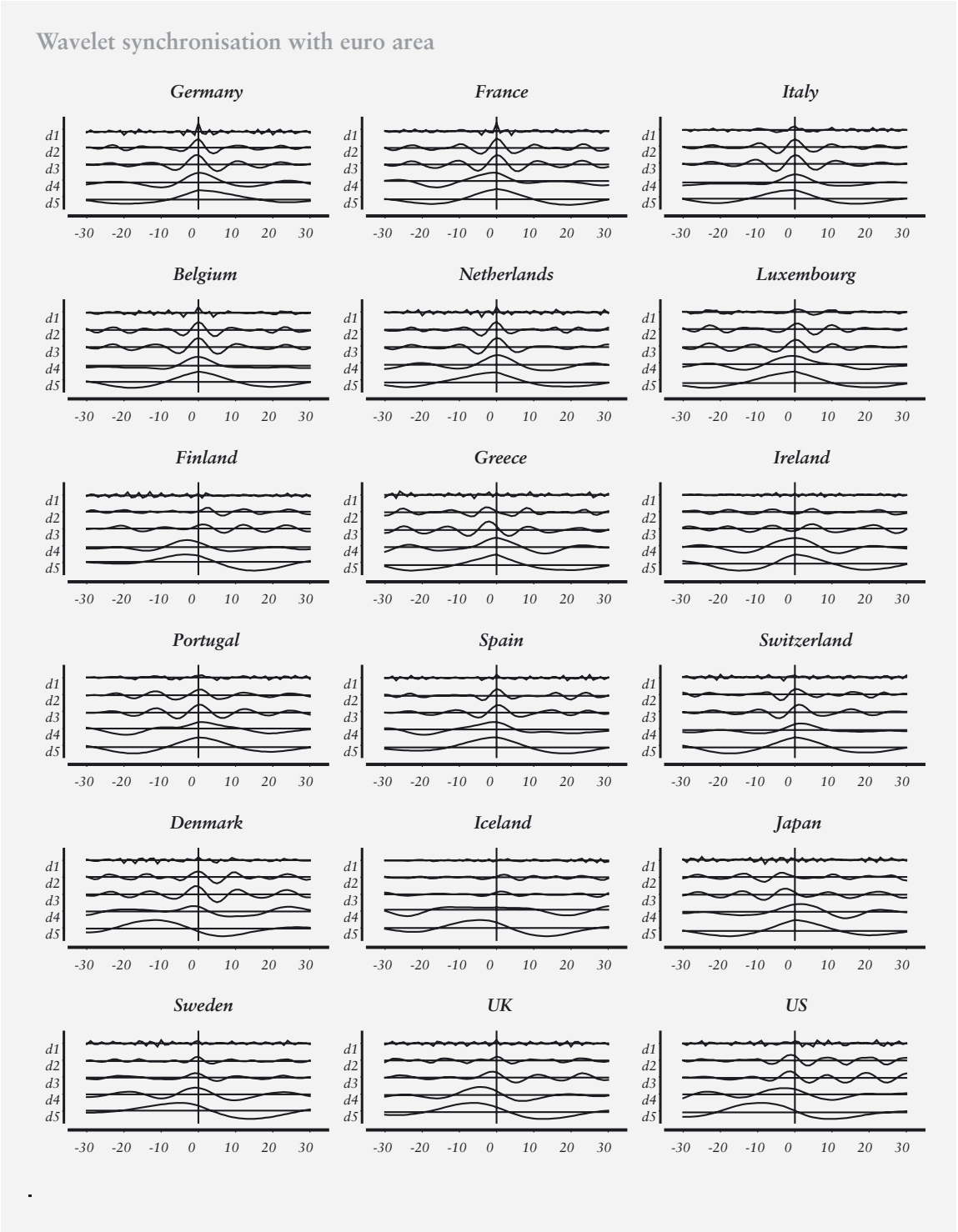


Figure 4.


Wavelet synchronisation with euro area
Germany
France
Italy
Belgium
Netherlands
Luxembourg
Finland
Greece
Ireland
Portugal
Spain
Switzerland
Denmark
Iceland
Japan
Sweden
UK
US
d1
d2
d3
d4
d5
-30 -20 -10 0 10 20 30

As we pointed out earlier, however, these correlations relate to the period as a whole. In the context of European integration it would be helpful to see whether the euro area countries have been becoming more correlated as time has gone past, as this is what we would expect. However, since integration has been increasing generally round the world over the same period as barriers to trade and capital flows have fallen we need to contrast this with the other countries which can to an extent be regarded as a control group.

It is somewhat debatable how best to approach this but rather than using the more common rolling regressions we use a different dynamic process known as Dynamic Conditional Correlation (Engle, 2002).[5] We can do this for the original data, shown in Figure 5 for the group of non-core countries or for each wavelet. A visual inspection of Figure 5 suggests that there has not been much convergence in the data series as a whole over the period. A similar experience can be seen for the longest identified cycles. However, if we look at 2–4 years, Figure 6, correlation is quite strong and seems to have improved in recent years in most countries except Ireland and Portugal. However at the 1–2 year horizon the same is not true, as shown in Figure 7. Portugal, Spain and Switzerland show quite close and improved correlation

[5] This approach involves using a VAR of the country and euro area growth processes at each frequency to generate a GARCH regression.

Figure 5.

Dynamic Conditional Correlations – original data

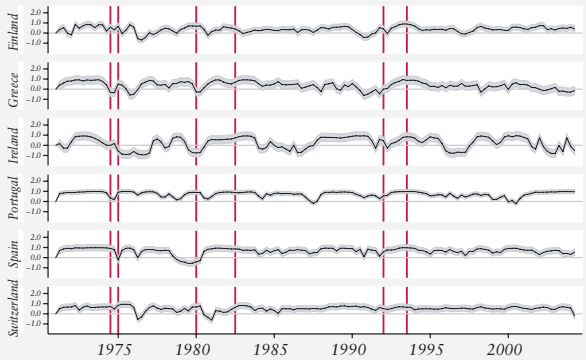


Figure 6.

Dynamic Conditional Correlations – 2–4 year wavelets

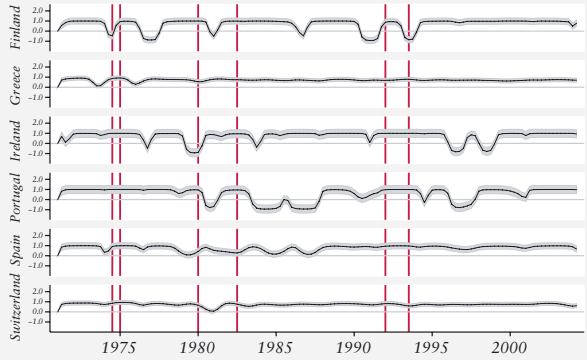
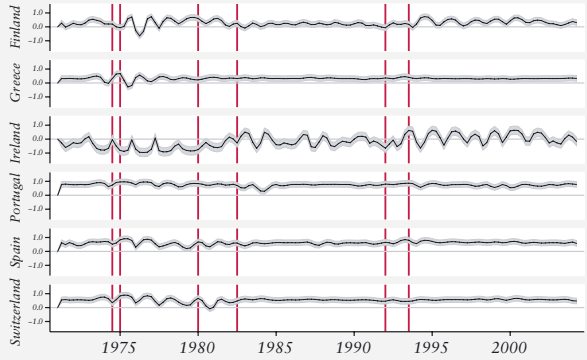


Figure 7.

Dynamic Conditional Correlations – 1–2 year wavelets



but Greece retains low correlation and Finland and Ireland show a very erratic relationship. Not only that, but the relationship was more consistent over a large part of the ERM period up to the 1992 widening of the system. This suggests that it might easily be possible to find periods over recent years where the appropriate monetary policy for Finland or Ireland individually would be quite different from that needed for the euro area as a whole.

Changes in the pattern among the three largest euro area countries

For the three largest euro area countries, Germany, France and Italy, we have taken this analysis a little further, and we illustrate it here for the case of the first two countries in Figures 8 and 9. We can see how well each pair of the wavelets for the two countries at each cycle length compare with each other using a measure from spectral analysis called

Figure 8.

Coherence of French vs. German Real GDP Growth

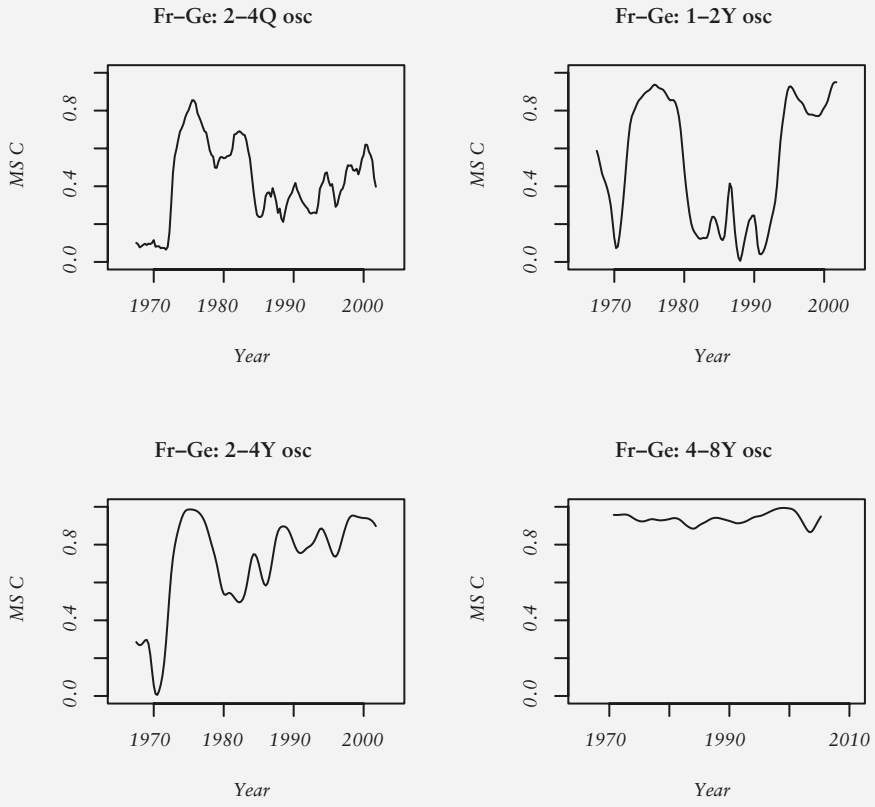
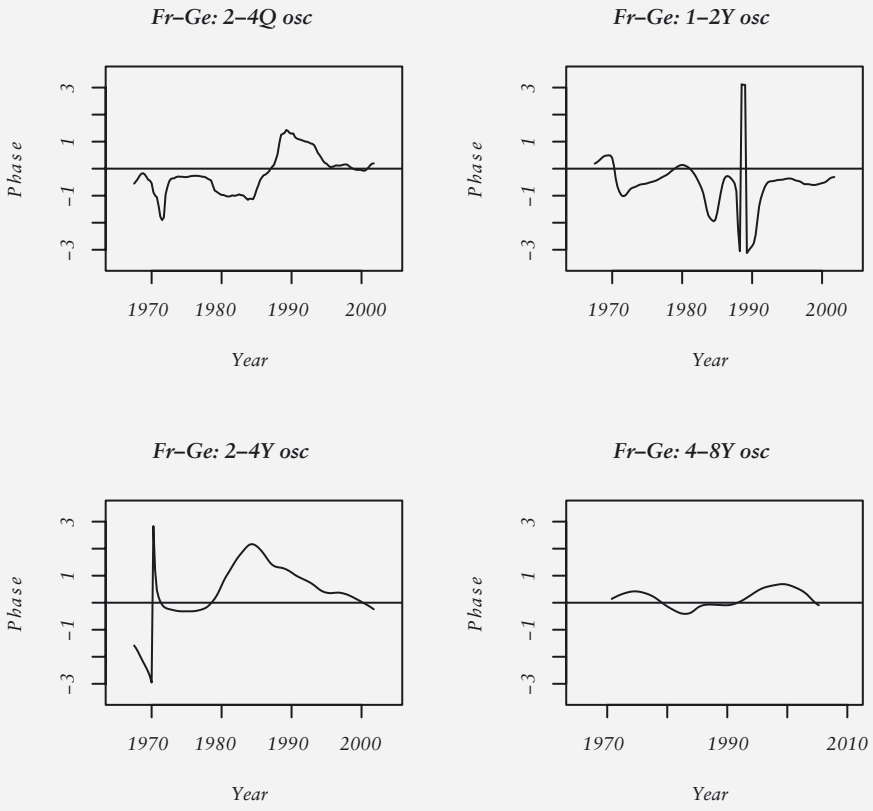


Figure 9.

Synchronisation of French vs. German Real GDP Growth



magnitude squared coherence (Figure 8).[6] This measures the similarities between the cycles at play at any given frequency. In the case of the shortest interval shown, 2–4 quarters, coherence remains fairly limited, although we see a period in the 1970s when coherence was rather high. This is somewhat misleading as it reflects the first oil shock which had a dominating influence on the two countries, making all other sources of variation trivial by comparison. It is somewhat debatable whether we want to know how well countries move together in the face of abnormal shocks or in normal times. If they do not cohere in normal times then policy faces an enduring problem. On the other hand if they do not cohere in the face of major shocks then this is a recipe for crisis. Our analysis does not attempt to filter out shocks.

The striking feature of the graphs however is the strong coher-

[6] We use 16 quarter moving windows in making the comparison.

The cycles among the large countries are becoming increasingly similar but clear differences remain.

ence of the 4–8 year wavelets, the increasing coherence of the 2–4 year frequency cycles since the 1983 policy change in France and the rapid increase in coherence even in the 1–2 year frequency cycles since the initial disturbance from unification in Germany. At the same time, as is clear from Figure 9, it is not simply that the cycles are similarly shaped but they are increasingly simultaneous, even for the very high frequency cycles. It is worth noting in passing that there are sudden switches from being a long lag in one cycle to being a long lead on the next if the length of the cycle, at a particular frequency is not the same in both countries. This is noticeable in 1970 for the 2–4 year cycle and at the time of unification for the 1–2 year cycle.

A similar profile is observable between Italy and Germany, although at all but the 2–4 year cycle all of the coherence is weaker, especially in the shortest cycles. The relationship between Italy and France, however, appears to have been getting closer at all frequencies much in the same was for that between France and Germany. The exception is the 1–2 year frequency cycles, which has become less coherent since the start of the euro area. That could pose a problem for monetary policy.

The picture using continuous rather than discrete analysis

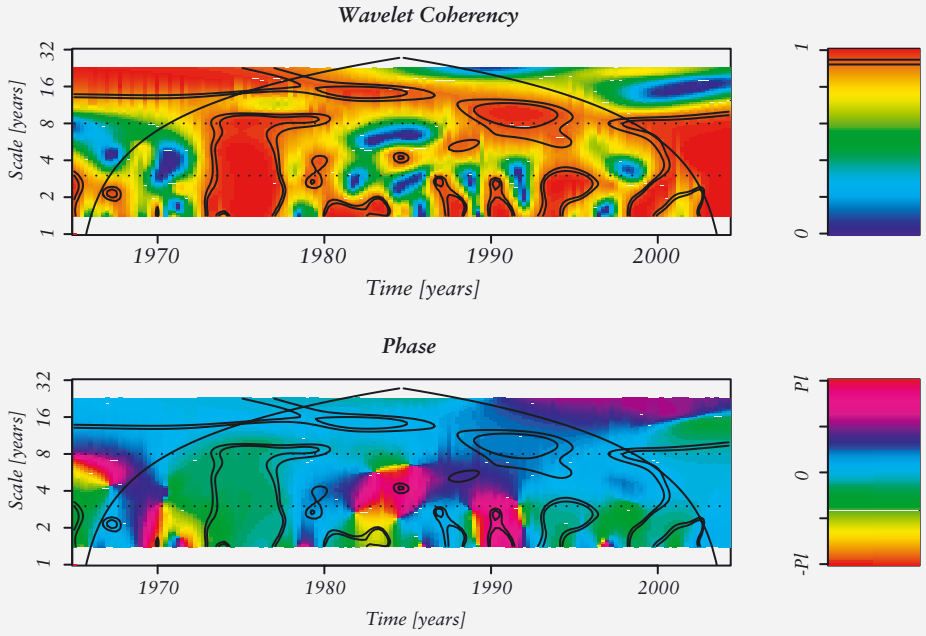
We turn now to the Continuous Wave Transform CWT, which we have thus far only estimated for the three largest euro area countries, although the research is continuing. Here the analysis starts with a version of Figure 2 for Italy and Germany to add to the shown for France. We then need to compare these experiences. We show this for each of the three possible pairings in Figures 10–12. In the top part of the Figures which look for coherence in the wavelets in each pair of countries, the red area suggestions strong coherence and the green and blue areas increasing difference.

Thus taking the Franco-German pairing first, there have been a number of occasions over the years when the countries have differed in the higher frequency cycles. The clear discrepancy in the middle of the figure at business cycle frequencies probably relates to the period when France clearly changed its policy towards the franc fort. The period since the creation of the euro has however been characterised by very considerable coherence except at the longest wavelets. While this lies outside the region where we can speak with any confidence, this is likely to reflect the difference in growth rates that has more recently begun to affect the German economy.

The bottom half of the figures indicates how much the cycles are in phase. Thus moving towards darker blue and then purple indicates a lead, while lighter greens moving towards yellow and red denotes a lag. Thus, starting with the Franco-German

Figure 10.

Cross Spectral Analysis of French vs. German Real GDP Growth



picture, for a period in the 1970s, France tended to lag Germany at almost all frequencies. The 1980s shift resulted in a lead at business cycle frequencies, which has tended to die away more recently. At higher frequencies, the impact of unification in Germany is obvious but in general cycles seem to be quite closely in phase.

For the comparison of Italy and Germany, the increased coherence and close phasing of cycles in recent years at all frequencies is very obvious (as is the effect of unification). However, in the early years Italy showed a strong lead over Germany at short and business cycle frequencies, which was reversed in the 1970s and early 1980s, although at the same time the cycles became more coherent, as is clear from the top half of the figure.

The remaining comparison between Italy and France follows as might be expected. The change in French policy in the 1980s stands out; there is no unification effect and cycles in the euro area era have been quite coherent and in phase. In lower frequency cycles, Italy appears to show some lead.

This use of continuous measures thus appears to give a similar set of results to that from the discrete methods in the previous section. However, it does suggest that there may be some differences emerging in trends that have not been picked up by the previous method of analysis.

Figure 11.

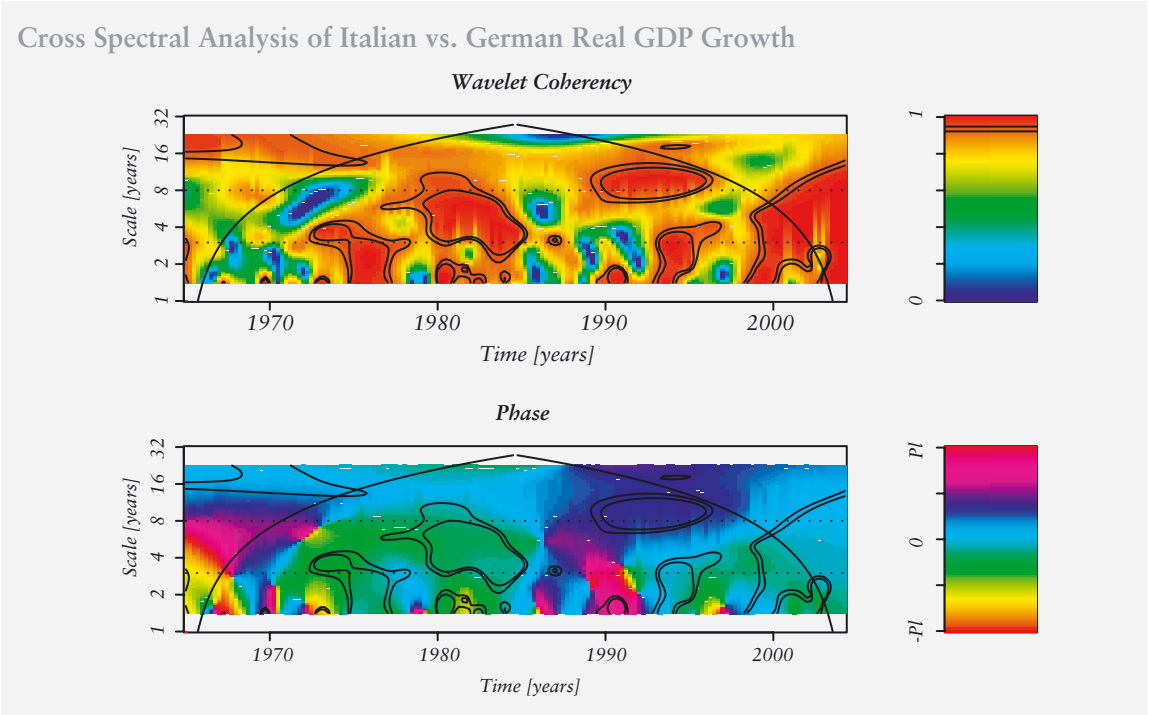
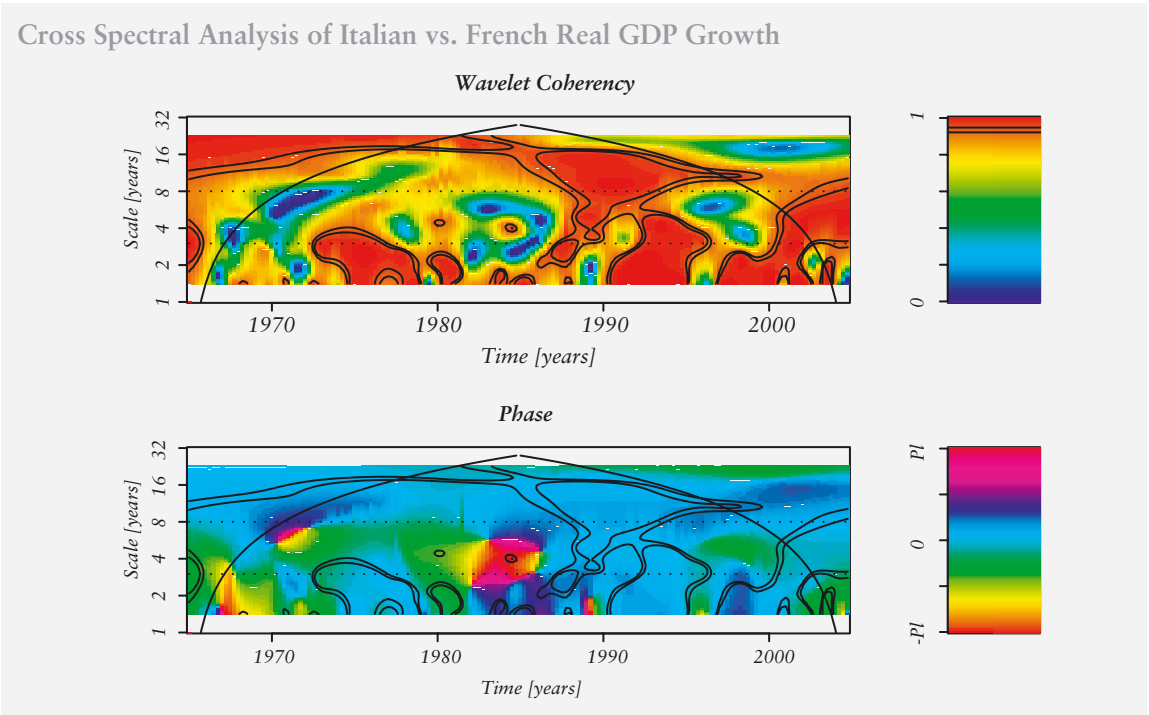


Figure 12.



Concluding Remarks

Taking these various analyses together we can see that there is considerable similarity in the cycles of the euro area countries, particularly at business cycle frequencies. This similarity is greatest among the countries that were members of the EC from the beginning. Belgium and France show clear correlations with the euro area as a whole at all frequencies; Germany, Italy and the Netherlands have clear positive correlations except in longer cycles. Luxembourg, along with Portugal and Spain show less relationship to the euro area, very much at a par with non-members such as Switzerland and Denmark. Finland, Greece and Ireland show little correlation, along with Sweden and the UK (indeed in some respects they show less than Japan).

On the whole cycles are quite well synchronised and Belgium, France, Germany, Italy, the Netherlands, Portugal and Spain are quite well in phase. Denmark, Sweden and the UK, which are not in the euro area, are quite well in phase with it at high (but not low) frequency cycles. For Greece and Ireland it is the other way round with low but not high frequency synchronisation. Finland shows poor synchronisation at all frequencies. However, to quite a large extent this reflects the Finnish crisis of the early 1990s.

If we look at how the relationships have been changing in recent years there are some interesting findings. If we take the data as a whole there is no apparent convergence inside the euro area, although Denmark appears to have converged towards it. However, once we divide the picture into the various different frequency cycles there are some more obvious examples of convergence in the post 1999 period compared to the position in the previous decade. Finland, France, Germany, Ireland, Portugal and the UK have shown a clear increase in similarity in the 2–4 year frequency. The same is true for France, Germany, Greece, Ireland, Luxembourg, the Netherlands, Denmark, Sweden, Switzerland and Japan at the 4–8 year frequency. Given this includes three non-euro countries and one non-European country it is clear that convergence should not be equated with adoption of the euro. Lastly in the long-term trend there are significant movements in both directions. Belgium, France, Greece, Italy, the Netherlands, Iceland, Japan, Sweden and the UK have moved closer, whereas Germany, Luxembourg, Denmark and the US have moved away from the euro area pattern.

There is a general move towards cyclical convergence also with countries that are not even in Europe.

This gives a strong motivation for our mode of analysis using wavelets, which reveals rather more about convergence than the conventional decomposition into trend, cycle and a residual.

Finally, if we turn to the more detailed analysis of the convergence process across time of the three largest members of the euro area, there is a large degree of coherence at conventional business cycle frequen-

Wavelet analysis has revealed a more complex pattern of both convergence and difference among countries that has implications for monetary policy.

cies between the three countries, although the coherence measure is not always significant. Further, these cycles are largely synchronous. Coherence at other frequencies is less consistent, with low coherence often found at higher frequency cycles. Phasing at all frequencies appears to be less of an issue between the Italian and French economies, but perhaps this is hardly surprising, given the fact that Germany was the anchor of the ERM of the EMS and also experienced the exceptional circumstances surrounding the reunification of the country in the 1990s. In terms of similarity of cycles and phasing, Germany and France appeared to have been more closely associated with each other than with Italy during the late 1960s and 1970s, but during the 1980s and 1990s, the French u-turn in economic policy and German reunification lead to closer association in cycles between the two countries not associated with these events.

In terms of more recent trends, although there is increased uncertainty associated with the results, it is clear that coherence is currently increasing between the three countries, albeit during a slowdown in all three economies when common turning points of the business cycle might be expected. Phasing at all frequencies seems to be roughly synchronous, suggesting that ECB policies are not going to differentially impact any single country differently.

In terms of non-business cycle growth frequencies, there are some concerns for policy. Clearly coherence at frequencies below a 4 year cycle is not consistently high, which does suggest different growth patterns between turning points. It is likely that monetary policy will be unable to respond to differences in cycles at these frequencies, although clearly these cycles are important in terms of growth dynamics, as was shown by the wavelet power spectra plots.

As for future developments, as synchronicity is an important issue in the timing of business cycles, ECB monetary policy could perform the function of a 'coupler', aligning synchronization of cycles between these countries. But ECB monetary policy will not cope with idiosyncratic developments, which could 'decouple' the synchronicity of business cycles – but in all cases where these could be identified in this study, the impact of these events was confined to cycles at frequencies shorter than the business cycle.

Key words: wavelet, business cycle, synchronisation, euro area

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Crowley, P (2005) 'An Intuitive Guide to Wavelets for Economists', Bank of Finland Discussion Paper 1/2005.

Crowley, P and Lee, J (2005) 'Decomposing the Co-Movement of the Business Cycle: a Time-frequency Analysis of Growth Cycles in the Euro Area', Bank of Finland Discussion Paper 12/2005.

Crowley, P , Maraun, D and Mayes, D G (2005) 'Analysing Growth in the Euro Area Core: Multivariate Spectral Analysis of Growth Cycles Using a CWT and Hilbert Wavelet Pairs', paper presented at the Banque de France, Banca d'Italia, Deutsche Bundesbank conference on Business Cycle Convergence, Paris 22–23 June 2005.

Engle, R (2002) 'Dynamic Conditional Correlation – a Simple Class of Multivariate GARCH Models', Journal of Business and Economic Statistics, vol. 20 (3), pp. 339–350.

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Discussion Papers

ISSN 0785-3572 (print)
ISSN 1456-6184 (online)

The mixed oligopoly of cross-border payment systems
Karlo Kauko
11/2005
ISBN 952-462-212-2, print
ISBN 952-462-213-0, online

Key words: payment systems, network economics, mixed oligopolies

This paper presents a model depicting cross-border payment systems as a mixed oligopoly. A private net settlement system that maximises profit competes with the central banks' gross settlement system that maximises welfare. It may be optimal for the central bank system to encourage increased use of the private system by charging fees that exceed the marginal cost. The central bank system is not only a competitor but also an essential service provider, because central bank money is needed for net settlement of payments in the private system. In some cases the central bank system can, paradoxically, induce the private system to charge lower fees by making it expensive to use central bank money for settlement purposes.

Decomposing the co-movement of the business cycle: a time-frequency analysis of growth cycles in the euro area
Patrick M Crowley – Jim Lee
12/2005
ISBN 952-462-214-9, print
ISBN 952-462-215-7, online

Key words: business cycles, growth cycles, European Union, multiresolution analysis, wavelets, co-correlation, dynamic correlation

This article analyses the frequency components of European business cycles using real GDP by employing multiresolution decomposition (MRD) with the use of maximal overlap discrete wavelet transforms (MODWT). Static wavelet variance and correlation analysis is performed, and phasing is studied using co-correlation with the euro area by scale. Lastly dynamic conditional correlation GARCH models are used to obtain dynamic correlation estimates by scale against the EU to evaluate synchronicity of cycles through time. The general findings are that euro area members fall into one of three categories: i) high and dynamic correlations at all frequency cycles (eg France, Belgium, Germany), ii) low static and dynamic correlations, with little sign of convergence occurring (eg Greece), and iii) low static correlation but convergent dynamic correlations (eg Finland and Ireland).

Banking fragility and distress: An econometric study of macroeconomic determinants
Jarmo Pesola
13/2005
ISBN 952-462-216-5, print
ISBN 952-462-217-3, online

Key words: financial fragility, shock, loan loss, banking crisis

The macroeconomic determinants of banking sector distresses in the Nordic countries, Belgium, Germany, Greece, Spain and the UK are analysed using an econometric model estimated on panel data partly from the early 1980s to 2002. The dependent variable is the ratio of banks' loan losses to lending. In addition to the lagged dependent variable, the explanatory variables include a surprise change in incomes and real interest rates, both variables as a separate cross-product term with lagged aggregate indebtedness. The underlying macroeconomic account that this paper puts forward is that loan losses are basically

generated by strong adverse aggregate shocks under high exposure of banks to such shocks. The underlying innovations to income and real interest rates are constructed using published macroeconomic forecast for these variables.

According to the results, high customer indebtedness combined with adverse macroeconomic surprise shocks to income and real interest rates contributed to distress in the banking sector. Loan losses also display strong autoregressive behaviour which might indicate a feedback effect from loan losses back to macroeconomic level in deep recessions. The results can be used in macro stress testing the banking sector.

The demand for money market mutual funds
Karlo Kauko
14/2005
ISBN 952-462-218-1, print
ISBN 952-462-219-X, online

Key words: money market mutual funds, money demand

This paper presents a model on the demand for money market funds (MMFs). These funds are a very close substitute for M1 deposits, except that MMFs do not satisfy immediate transaction requirements. The demand for MMFs strengthens when the intended volume of transactions is low. A high interest rate level makes it expensive to hold M1 deposits. High interest rate volatility, paradoxically, increases the risk of holding M1 deposits stronger than the risk of holding MMFs. The results are largely corroborated by Finnish data.

Fiscal policy in the 1920s and 1930s: How much different is it from the post war period's policies?
Matti Virén
15/2005
ISBN 952-462-220-3, print
ISBN 952-462-221-1, online

Key words: fiscal policy, deficit, asymmetric behaviour

This paper deals with the fiscal behaviour of governments in the 1920s and 1930s. The intention is to see whether there were the same features in government behaviour as in the post-World War II era. In particular, attention is paid to asymmetric fiscal policies, ie the question of whether government deficits react differently to income growth and inflation during depressions and booms. The analysis is carried out using data primarily from the League of Nations. The data come from 32 countries and covers the period 1925–1938. Estimation results suggest the in pre-war period deficits were much less sensitive to output and did not show as many asymmetric features as in post-war period. Otherwise, the same regularities apply to the empirical results. In particular, this is true with the disciplinary role of government debt in terms of budget deficits.

BOFIT Discussion Papers

ISSN 1456-4564 (print)
ISSN 1456-5889 (online)

Bank supervision Russian style: Rules versus enforcement and tacit objectives
Sophie Claeys – Gleb Lanine – Koen Schoors
10/2005
ISBN 952-462-786-8, print
ISBN 952-462-787-6, online

Key words: Bank supervision, bank crisis, Russia.

We focus on the conflict between two central bank objectives – individual bank stability and systemic stability. We study the licensing policy of the Central Bank of Russia (CBR) during the period 1999–2002. Banks in poorly banked regions, banks that are too big to be disciplined adequately, and banks that are active on the interbank market enjoy protection from license withdrawal, which suggests a tacit concern for systemic stability. The CBR is also found reluctant to withdraw licenses from banks that violate the individual's deposits-to-capital ratio as this conflicts with the tacit CBR objective to secure depositor confidence and systemic stability.

On the speed of economic reform: Tale of the tortoise and the hare
Bruno Merlevede – Koen Schoors
11/2005
ISBN 952-462-788-4, print
ISBN 952-462-789-2, online

Key words: policy reform, gradualism, big bang, FDI, economic growth

We analyse how the choice of reform speed and economic growth affect one another. We estimate a system of three equations where economic growth, economic reform and FDI are jointly determined. New reforms affect economic growth negatively, whereas the level of past reform leads to higher growth and attracts FDI. This means that the immediate adjustment cost of new reforms is counterbalanced by a future increase in FDI inflows and higher future growth through a higher level of past reform. Reform reversals contribute to lower growth. We use the model to simulate the impact of big bang reform and gradualist reform on economic growth. This is only meaningful in the presence of reform reversals, which requires aggregate uncertainty about the appropriate reform path. Using the coefficients from the empirical model, we find that even relatively small ex ante reversal probabilities suffice to tilt the balance in favour of gradualism. The case for gradualism gains strength if policymakers are short-sighted, but weakens if voters are myopic.

Russian equity market linkages before and after the 1998 crisis: Evidence from time-varying and stochastic cointegration tests
Brian M. Lucey – Svitlana Voronkova
12/2005
ISBN 952-462-790-6, print
ISBN 952-462-791-4, online

Key words: Stock Market Integration, CEE Stock markets, Russian Stock Market, Cointegration

This paper examines the relationships between the Russian and other Central European (CE) and developed countries' equity markets over the 1995–2004 period. Along with the traditional Johansen and Juselius (1990) multivariate cointegration tests, we apply novel cointegration approaches, including Gregory-Hansen (1996) test, which allows for a structural break in the relationships, as well as the newly developed stochastic cointegration test by Harris, McCabe and Leybourne (2002) and the non-parametric

cointegration method of Breitung (2002). The latter tests point to a significant agreement that in the aftermath of the Russian crisis of 1998 there was an increasing degree of co-movements of the Russian market with other developed markets, but not with CE developing markets. This result is further confirmed by dynamic conditional correlation modelling, which allows us to investigate graphically the evolution of co-movements in the system. The results of detailed cointegration analysis suggest a) that the time-varying nature of equity markets co-movements should be explicitly accounted for while modelling long run relationships b) that there is a decline in diversification benefits for foreign investors seeking to invest in Russian equities over the long horizon.

Growth expectations and banking system fragility in developing economies

Eugenio Proto

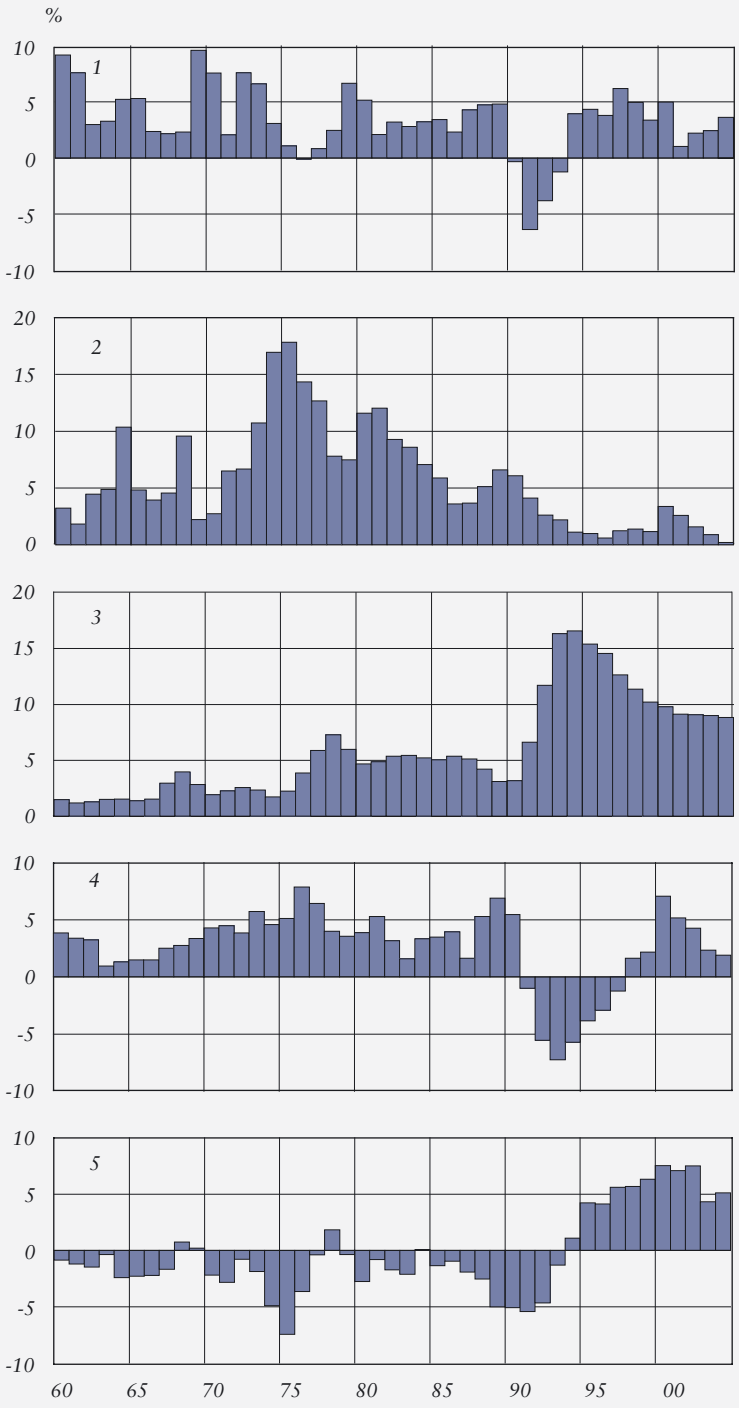
13/2005
ISBN 952-462-792-2, print
ISBN 952-462-793-0, online

Key words: banking crises, emerging markets, deposit insurance

The likelihood of a banking crisis appears to be higher in fast-developing countries. An explanation is provided within a Diamond and Dybvig framework, where banks are vehicles of consumption-smoothing, offering insurance against shocks to the consumption path of consumers. The theoretical model shows that the higher the consumer growth expectations, the higher the optimal level of illiquidity insurance – even if it implies higher exposure bank runs. Empirical evidence supports this result and suggests that the effect of deposit interest rates on the probability of crisis is stronger after a period of high, uninterrupted growth. Policies of providing bail-outs or deposit insurance are demonstrated to be efficient even when they increase the fragility of the banking system.

Charts

1. Finland: key economic indicators



GDP, volume change from previous year

Consumer prices, change from previous year

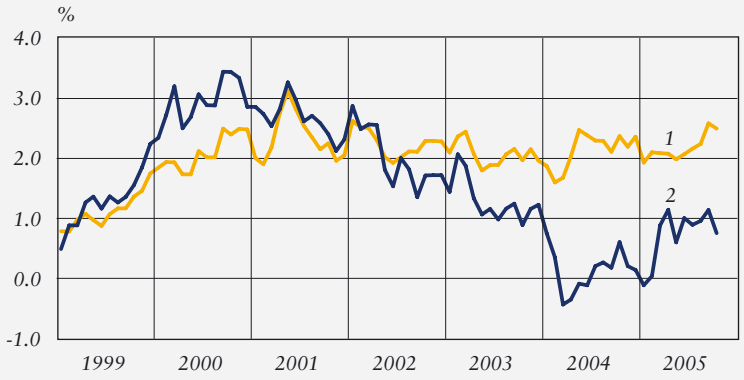
Unemployment rate

General government fiscal position, % of GDP

Current account, % of GDP

Sources: Statistics Finland and Bank of Finland.

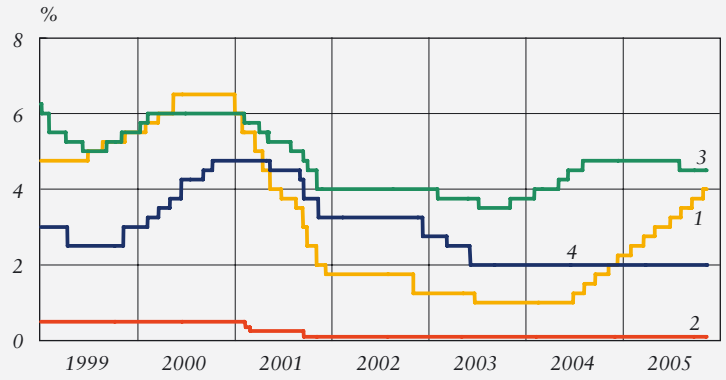
2. Price stability in the euro area and Finland



Harmonised index of consumer prices, 12-month change, %
1. *Euro area*
2. *Finland*

Sources: Eurostat and Statistics Finland.

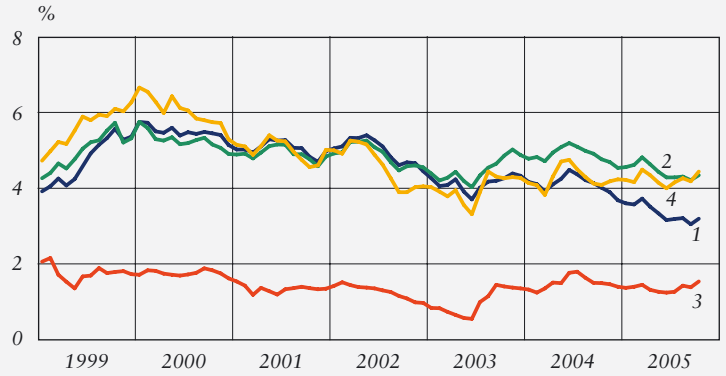
3. Official interest rates



1. *USA: fed funds target rate*
2. *Japan: discount rate*
3. *United Kingdom: repo rate*
4. *Eurosystem: main refinancing rate/minimum bid rate*

Source: Bloomberg.

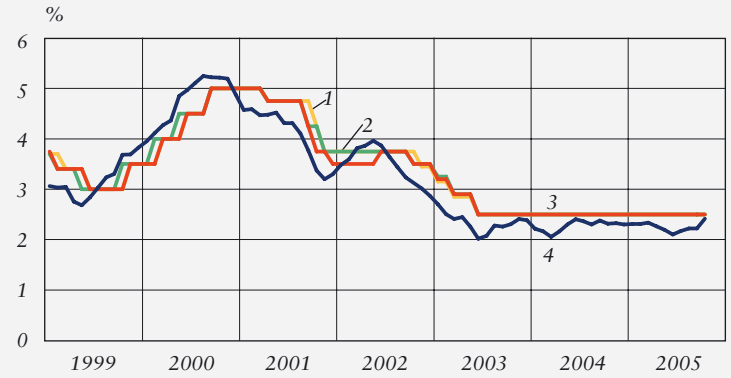
4. International long-term interest rates



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

Source: Reuters.

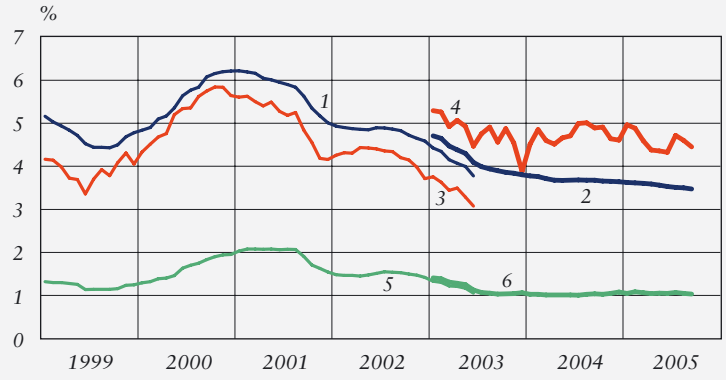
5. Bank reference rates in Finland and 12-month Euribor



1. *Nordea prime at the end of the month*
2. *Sampo prime at the end of the month*
3. *OKOBANK group prime at the end of the month*
4. *12-month Euribor*

Sources: Banks and ECB.

6. Average lending and deposit rates

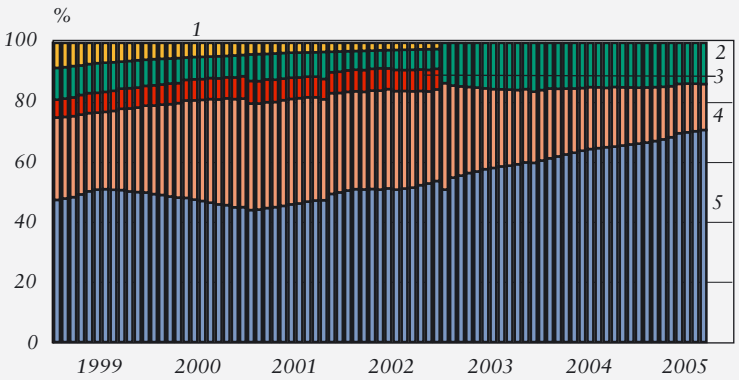


1. *Banks' stock of loans*
2. *MFIs' stock of loans*
3. *Banks' new loans*
4. *MFIs' new loans*
5. *Banks' stock of deposits*
6. *MFIs' stock of deposits*

Source: Bank of Finland.

Data collection changed as of 1 January 2003. Under the new system MFIs include both deposit banks and other credit institutions.

7. Stock of bank lending by interest rate linkage

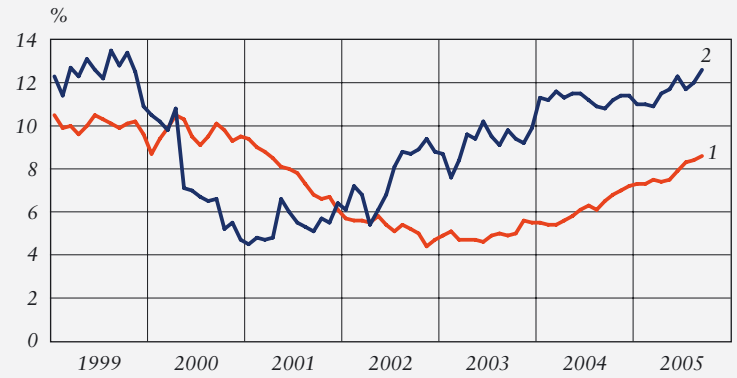


1. *Linked to base rate*
2. *Linked to other rates (as of 2003 includes loans linked to base rate and fixed-rate loans)*
3. *Fixed-rate*
4. *Linked to reference rates of individual banks (prime rates, etc)*
5. *Linked to Euribor*

Source: Bank of Finland.

Data collection changed as of 1 January 2003.

8. MFI loans to private sector



12-month change, %
1. *Loans by euro area MFIs to euro area residents*
2. *Loans by Finnish MFIs to euro area residents*

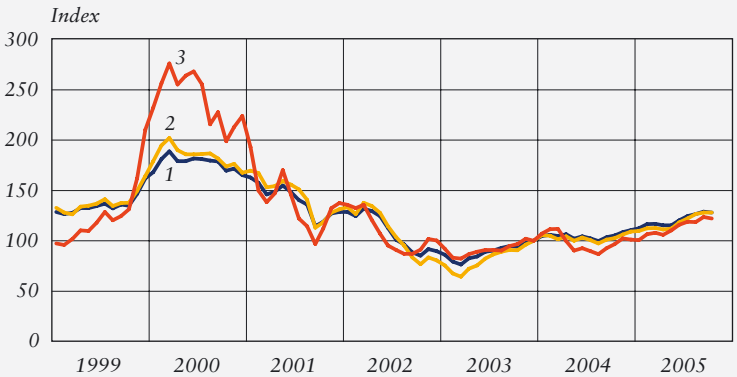
Sources: European Central Bank and Bank of Finland.

9. Competitiveness indicators for Finland

1999 Q1 = 100
Based on trade-weighted exchange rates.
An upward movement of the index represents a weakening in Finnish competitiveness.
1. *Narrow competitiveness indicator including euro area countries*
2. *Narrow competitiveness indicator*

Source: Bank of Finland.

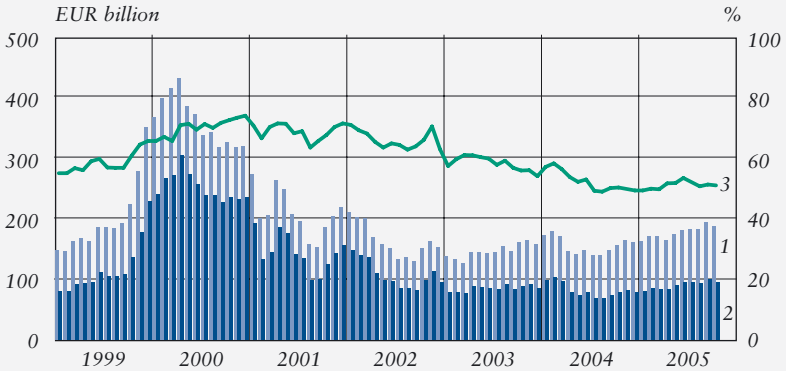
10. Selected stock price indices in the euro area



31 December 2003 = 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.

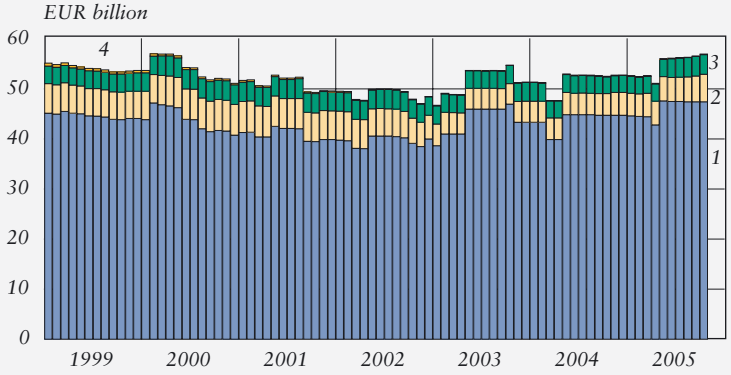
11. Listed shares in Finland: total market capitalisation and non-residents' holdings



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

Sources: HEX Helsinki Exchanges and Finnish Central Securities Depository (APK).

12. Bonds issued in Finland

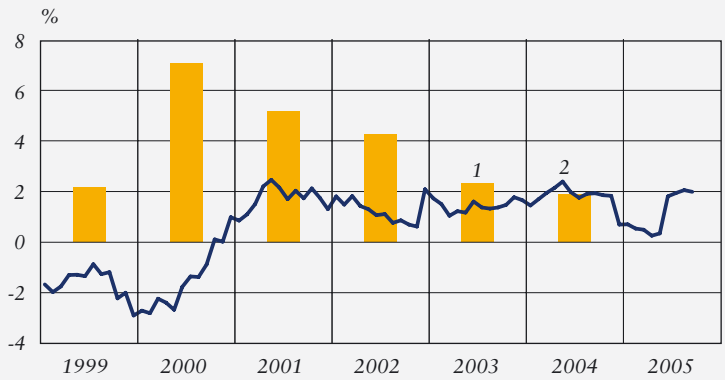


End-month stock

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

Source: Statistics Finland.

13. Public sector balances in Finland

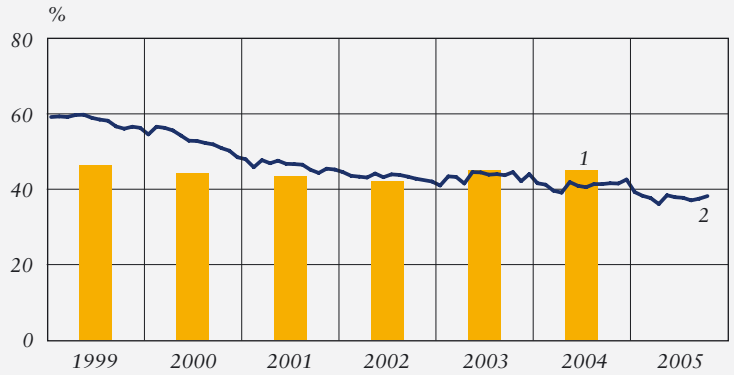


% of GDP

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

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

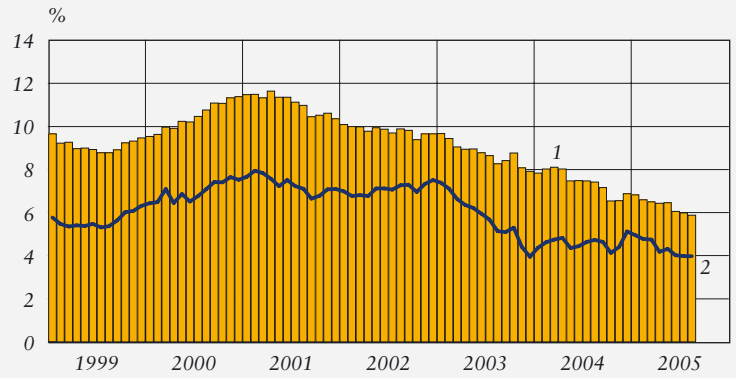
14. Public debt in Finland



% of GDP
1. *General government debt*
2. *Central government debt, 12-month moving total*

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

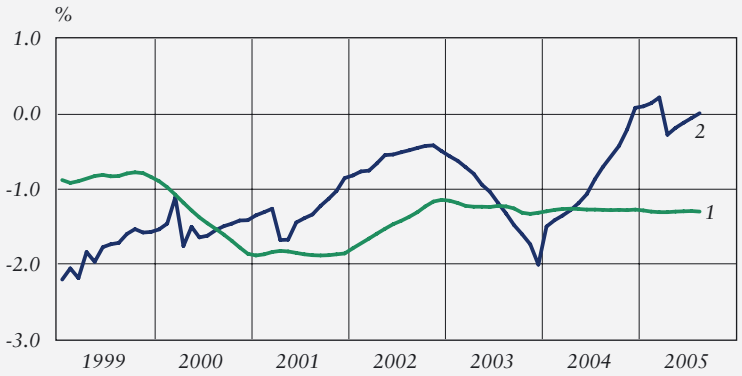
15. Finland: goods account and current account



12-month moving totals, % of GDP
1. *Goods account, fob*
2. *Current account*

Source: Bank of Finland.

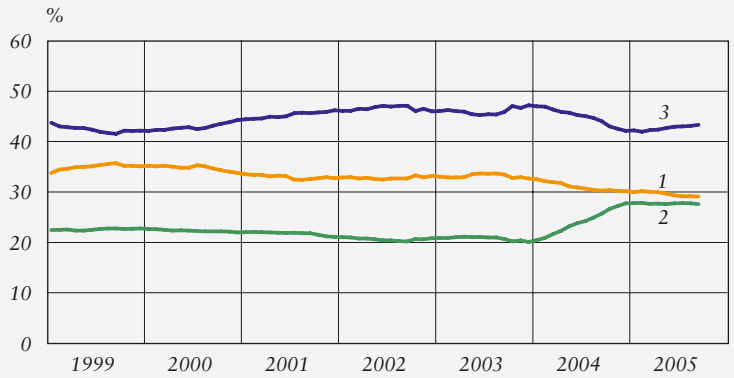
16. Finland: services account and income account



12-month moving totals, % of GDP
1. *Services account (trade in goods, fob)*
2. *Income account*

Source: Bank of Finland.

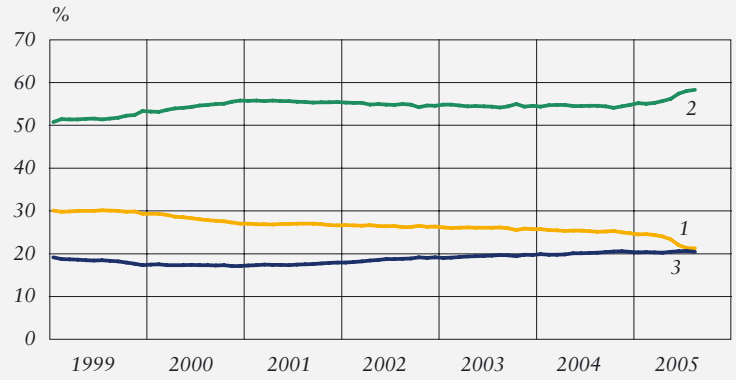
17. Regional distribution of Finnish exports



12-month moving totals, percentage of total exports
1. *Euro area*
2. *Other EU member states*
3. *Rest of world*

Sources: National Board of Customs and Statistics Finland.

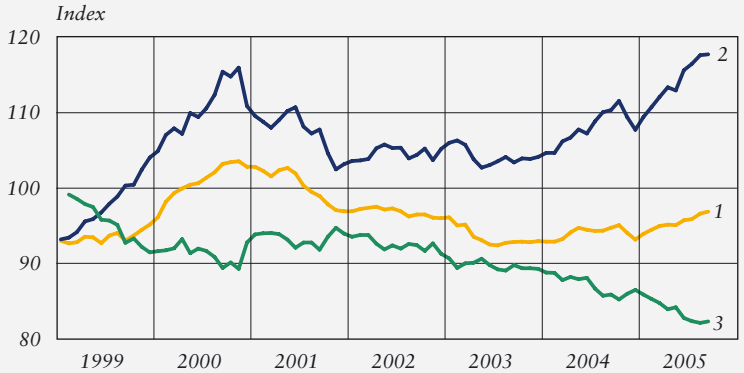
18. Finnish exports by industry



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.

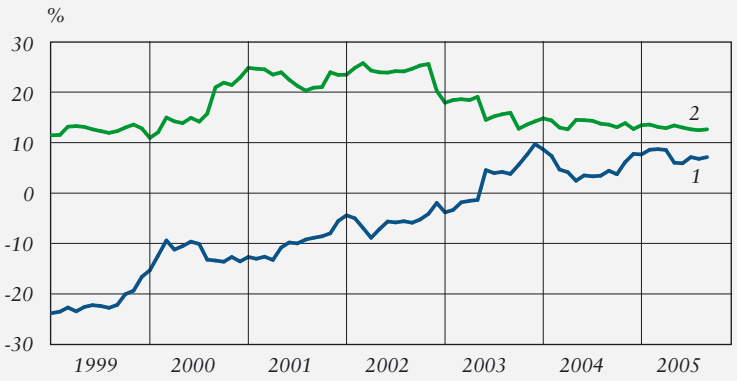
19. Finland's foreign trade: export prices, import prices and terms of trade



1995 = 100
1. *Export prices*
2. *Import prices*
3. *Terms of trade*

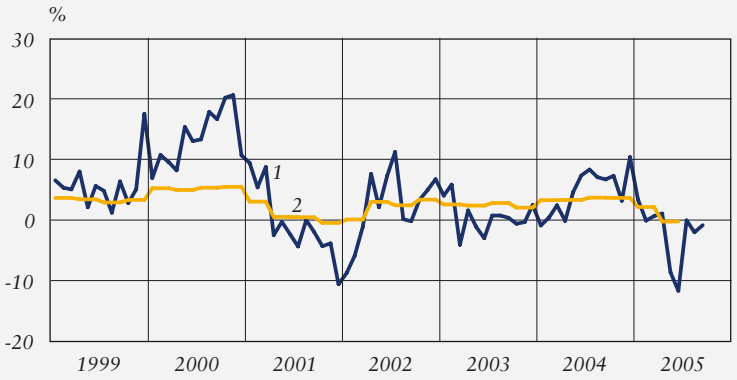
Source: Statistics Finland.

20. Finland's net international investment position



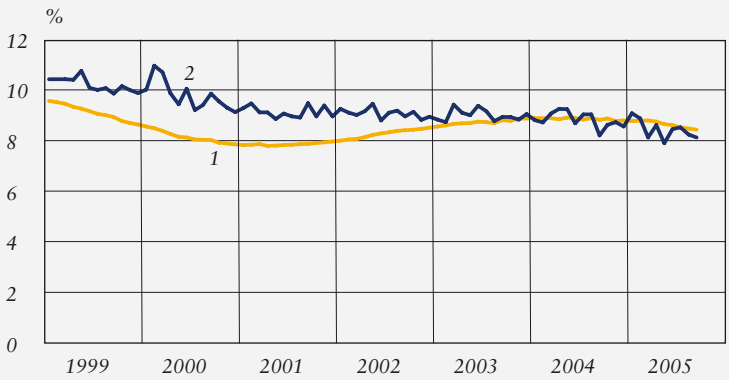
% of GDP
1. Net international investment position excluding equity items
2. Net outward direct investment
Sources: Bank of Finland and Statistics Finland.

21. Finland: GDP and industrial production



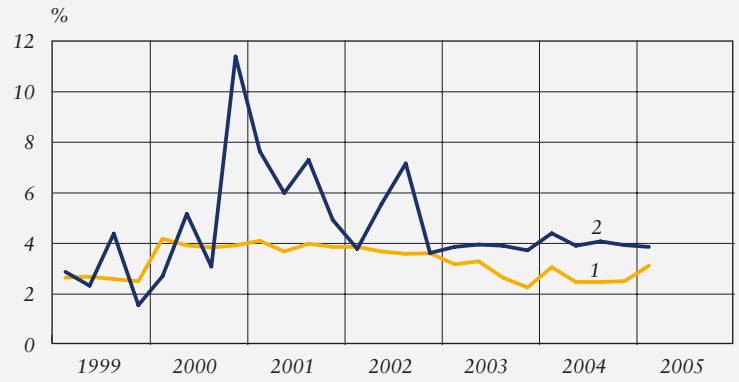
Percentage change from previous year
1. Industrial production
2. Gross domestic product
Source: Statistics Finland.

22. Unemployment rate in the euro area and Finland



1. Euro area
2. Finland
Sources: Eurostat, Statistics Finland and Bank of Finland.
Data seasonally adjusted.

23. Hourly labour costs in the euro area and Finland

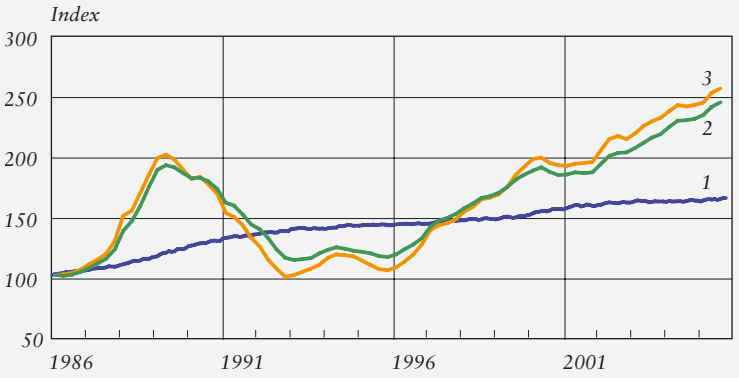


Whole economy excl. agriculture, public administration, education, health and unclassified services.

Percentage change from previous year
1. *Euro area*
2. *Finland*

Source: Eurostat.

24. Selected asset prices in Finland



January 1985 = 100
1. *Consumer prices*
2. *Housing prices*
3. *Two-room apartments (secondary market; debt-free price per m²)*

Source: Statistics Finland.

Bank of Finland Bulletin, Index to Vol. 79, 2005

Organisation of the Bank of Finland

28 September 2005

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