BANK OF FINLAND

BULLETIN

1 • 2008

Monetary policy and economic outlook

Financial stability in Finland

Mobile payments breakthrough is just around the corner

Systemic importance of financial institutions

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FINLANDS BANK

EUROJÄRJESTELMÄ
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The cover portrays the work of Kari Huhtamo 'Tankero' (1974).

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Bank of Finland
PO Box 160
FI-00101 HELSINKI
Phone: National 010 8311,
International +358 10 8311
Fax: +358 9 174 872
www.bof.fi

Monetary policy and economic outlook

30 May 2008

The world economy is growing more slowly, but the trend in the early part of 2008 has been uneven. The short-term economic outlook is shrouded in a great deal of uncertainty. The continued turbulence on the financial markets and accelerating inflation are undermining the prospects for growth and setting challenges for economic policy. In the euro area and Finland, too, the growth outlook is more subdued, although the trend in the first quarter of 2008 was still fairly favourable.

World growth began to slow in the second half of 2007 when the financial markets in many countries began to experience difficulties as the turbulence that began in the US housing loan market deepened and spread around the world economy. Rising energy and food prices at the same time pushed up the pace of consumer price rises.

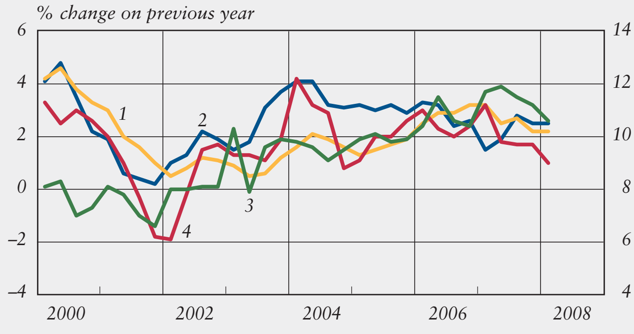
The continuation of the financial market turbulence in the early part of 2008 has overshadowed the development of the world economy. The situation is, however, uneven. In the United States and some other developed economies growth has slowed further or remained very lacklustre. In contrast, many emerging economies have continued to experience fairly brisk levels of growth. In the euro area, too, growth in the early part of the year was close to estimated potential growth (Chart 1).

A similar divergence is visible in the short-term growth outlook for the world economy. US growth could well slow further still, whereas many emerging economies look set to continue growing strongly. The growth outlook for the world economy is, however, at present surrounded by an exceptional amount of uncertainty due to the continued financial market turbulence, the economic consequences of which are still unclear. The main impact so far has been on the US housing market and on bank finance and lending in the developed economies.

The faster inflation kindled in the second half of 2007 is increasingly casting a shadow over the world economy. There has been a dramatic rise in crude oil and food prices, fuelled particularly by the strength of

Chart 1.

GDP growth



1. Euro area
2. United States
3. China (right-hand scale)
4. Japan

Sources: US Bureau of Economic Analysis, Economic and Social Research Institute, Eurostat and Bloomberg.

demand in emerging economies, and this has driven inflation in the developed economies as well.

The present situation, in which the outlook for growth has in many areas deteriorated alongside accelerating inflation, presents a challenge for monetary policy. Different countries have responded to this challenge in different ways, depending on precisely how they have been affected by the combination of financial market turbulence and faster inflation. Some countries (eg the United States, United Kingdom and Canada) have lowered their key interest rates since the beginning of the year, some (eg many new EU member states plus some countries of Latin America) have raised them, while some (eg the euro area and Japan) have kept them unchanged.

The uncertainty over world growth and acceleration in the pace of inflation have been reflected in indicator data during the course of the spring. For example, industrial confidence has weakened in the main economic regions (Chart 2). There are, however, differences in the growth outlook between different countries. In the United States, domestic demand has slumped and the situation on the labour market has rather quickly become decidedly gloomy, whereas in the euro area and Japan the outlook is somewhat brighter. It also seems that currency appreciation has not so far weakened exports to any significant degree in the euro area or Japan. Export growth in the United States has also been strong. In Finland, the economy continued to grow favourably in the early months of 2008 on the back of household consumption and rekindled export growth. Admittedly, the growth outlook in Finland, too, has recently deteriorated.

Indicator data as yet gives no clear sign of a slowing in world trade growth. Import demand in emerging economies, in particular, has continued to be strong. The briskness of world trade and capacity constraints are partly reflected in the fact that the indices depicting daily rates for shipping freight have risen to very high levels during the course of the spring. Indicators of new industrial orders in the main economic regions have, however, declined in recent months, which suggests a gradual easing in the pace of world trade growth.

Chart 2.

Industrial confidence

1. Euro area, Purchasing Managers' Index (left-hand scale)
2. United States, Purchasing Managers' Index (right-hand scale)
3. Japan, Tankan Index, large industrial corporations* (right-hand scale)

* The Tankan Index was restructured in December 2003.

Sources: Reuters, Institute for Supply Management and Bloomberg.

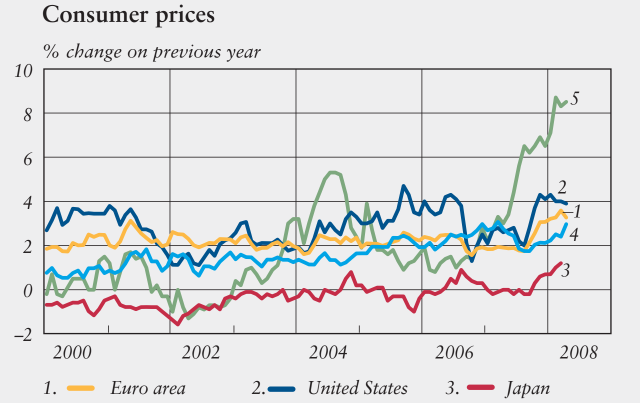
Rising commodity prices driving inflation

Inflation has picked up both in the main economic regions and in emerging economies during the course of the past year (Chart 3). This is due above all to the strong rise in world market prices of energy and food. Another contributory factor, however, is the decline in the amount of unutilised production resources: despite the recent easing in the pace of growth, the labour market remains tight and the utilisation rate of manufacturing capacity is still high in many countries.

The inflation-driving rise in commodity prices has over the past year been broadly based (Chart 4). The price rises have been particularly sharp in respect of crude oil, food and iron ore. They share a number of common background factors, particularly the strong growth in demand in emerging economies and the sluggish response of supply to the higher prices. The latter is partly due to the above-mentioned capacity constraints, and partly because of temporary disruptions of output caused, for example, by freak weather conditions.

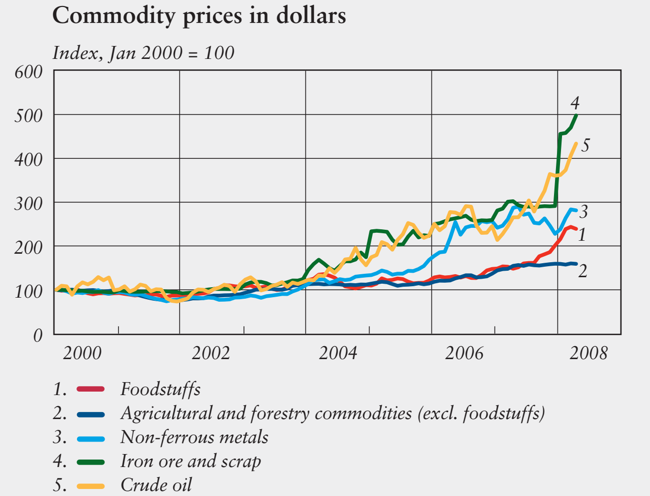
Contrary to most forecasts, the price of crude oil has continued on the upward trajectory that began in 2004. The rise has been so dramatic that, calculated in euro, it has even in real terms almost touched the heights reached at the time of the second oil crisis in 1979. The main factor driving the rise is the strong demand growth in emerging economies, particularly in China. Supply has struggled to meet increased demand at a time when Russian output has begun to decline and Saudi Arabia is the only OPEC country with significant unused production capacity. Oil futures prices have also risen strongly, which

Chart 3.



Sources: Eurostat and Bloomberg.

Chart 4.



Sources: Bloomberg and HWWA.

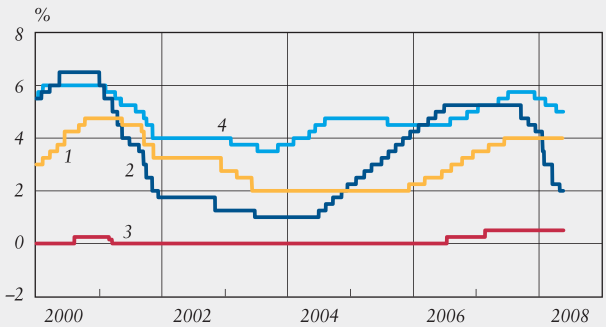
suggests the market believes the high oil price is not a short-term phenomenon.

The rise in food prices – and rice in particular – has been a significant factor in the recent acceleration of inflation in emerging economies, as food accounts for a large proportion of household consumption expenditure in these countries. The rise in cereal and dairy prices has, however, also significantly boosted inflation in the developed economies. The price rises are being driven by both demand and supply factors. Changing dietary habits in the emerging economies has boosted consumption of meat and dairy products, which has in turn meant higher demand for animal feed. At the same time, increased production of biofuels has taken farmland out of food production. The situation has been further exacerbated by poor harvests in some key agricultural producer countries and export restrictions on foodstuffs imposed by some countries. Although crop forecasts for 2008 are fairly good, the substantial decline in food inventories in recent years combined with continued strong demand is likely to keep the prices of many foodstuffs high into the future.

World market prices of many foodstuffs are likely to remain high in the future.

Chart 5.

Central bank interest rates



1. Eurosystem: minimum bid rate in main refinancing operations
2. United States: fed funds target rate
3. Japan: overnight rate
4. United Kingdom: repo rate

Sources: Bloomberg and Reuters.

Financial market uncertainty continues

The financial market turbulence that began on the US housing loan market in summer 2007 has continued in the early months of 2008, although the situation has admittedly eased slightly in recent weeks. The turbulence has impacted particularly on the banking sector, being reflected in higher risk premia and malfunctioning of the interbank market for short-term finance in both the United States and Europe. Bank lending surveys by the central banks in Europe and the United States[1] reveal that banks have generally tightened their lending criteria and increased their interest margins, which has possibly already dampened corporate investment growth. However, the market turbulence seems so far to have had only a minor impact on corporate finance in Finland (see Box).

Central banks in Europe and the United States have continued and expanded various measures aimed at

[1] For more detail on these surveys by the European Central Bank and the US Federal Reserve Board see: www.ecb.int/press/pr/date/2008/html/pr080509.en.html and www.federalreserve.gov/boarddocs/snloansurvey/200805.

boosting the liquidity of market participants and improving the functioning of the financial markets. The US Federal Reserve has also continued to cut its policy rate. This now stands at 2%, 3.25 percentage points lower than in August 2007 (Chart 5). The rate cuts have been in response to slower growth, contracting employment and the continued serious turbulence on the financial markets. Market expectations over further cuts in the policy rate have, however, recently receded.

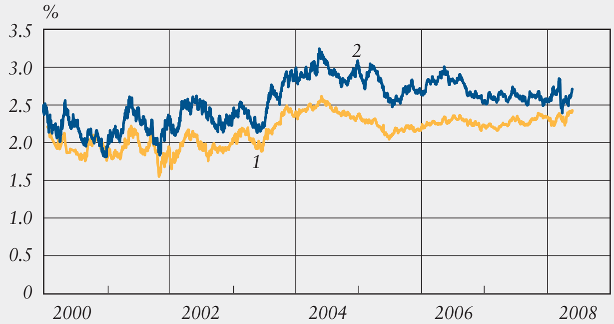
During the course of the spring, interest rates on long-term government bonds have remained very close to the levels at the end of last year. Based on index-linked bonds and inflation swaps, it would seem that euro area and US market expectations regarding the long-term pace of inflation have barely risen despite the recent acceleration in the pace of inflation (Chart 6).

The widespread depreciation of the dollar that began on the foreign exchange markets in autumn 2007 has continued through the early months of 2008. The nominal trade-weighted index gives the value of the dollar as more than 10% lower than a year ago. The euro, meanwhile, has gained during the early part of the year (Chart 7). The exchange-rate movements have largely reflected the changes in interregional interest rate differentials and the outlook for growth.

The impact of the financial market turbulence on share prices and corporate earnings prospects has so far been fairly limited. Following a dip in the winter, share prices have in recent months begun to rise again both in the main economic regions and in many emerging economies as well. It would thus appear that investor confidence in corporate

Chart 6.

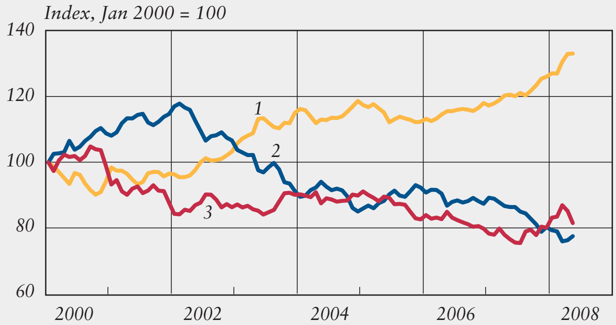
Break-even inflation rates in the euro area and the United States



1. Euro area 2. United States
The yields have been calculated as the difference between the yields from 20-year nominal and index-linked government bonds. Euro area data is based on French government bonds.
Source: Bloomberg.

Chart 7.

Nominal effective exchange rates



1. Euro area 2. United States 3. Japan
Sources: European Central Bank and Bank of Finland.

earnings capacity has survived despite the recent major losses and writedowns primarily in the financial and insurance sector.

Many measures of market uncertainty and perceptions of risk, such as the cost of hedging credit risk, interest rate risk premia on corporate bonds and expected stock market volatility, are also indicating a slight reduction in uncertainty and in the size of risk premia, although the figures are, admittedly, still fairly high (Chart 8). In contrast, the turbulence on the interbank money markets remains serious. This is reflected in, for example, the large interest differential between secured and unsecured loans.

Chart 8.

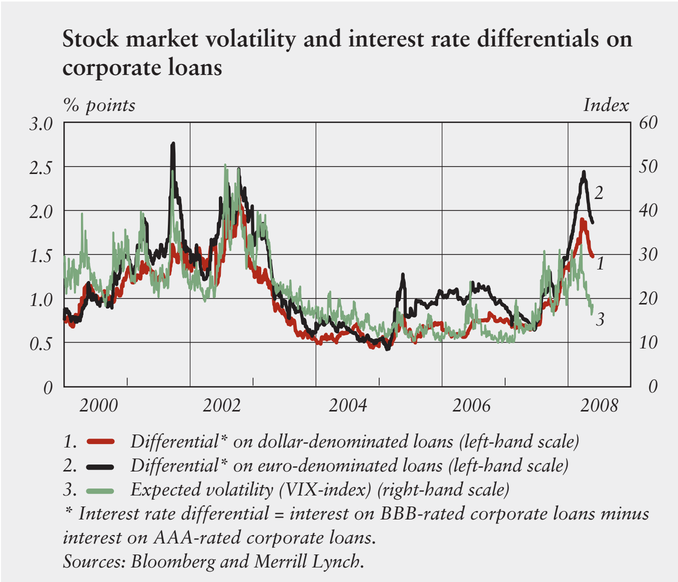
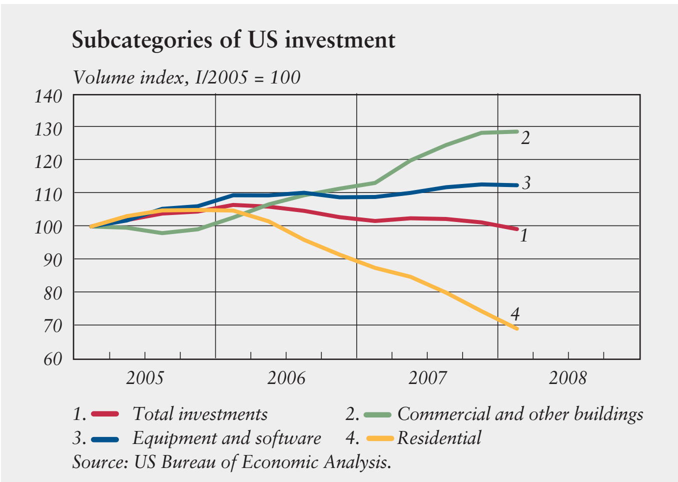


Chart 9.



Short-term outlook for US economy is weak

US growth slowed substantially in the final quarter of 2007, when it was only just over 0.1% on the previous quarter. Growth has been almost as sluggish during the first quarter of 2008. This is much slower than the general pattern in recent years. Year-on-year, first quarter growth was still fairly reasonable, at 2.5%.

The slowdown in US growth thus far has been due above all to the continued problems on the housing market and in housing finance. At present, it seems it will take some time for the housing market to recover, as sales have continued to decline and the downward trend in prices has gathered pace. Growth has also stagnated in commercial and other construction, and in investment in machinery and equipment (Chart 9). Export growth, in contrast, has continued to be favourable on the back of the weaker dollar.

US household consumption growth slowed during the first quarter of 2008. Accelerating inflation eroded consumers' purchasing power, while at the same time the labour market deteriorated rapidly. Despite the federal government's tax cuts, households' willingness to consume is unlikely to increase significantly in the near future, as the number of jobs is continuing to decline and household confidence indicators have fallen to a very low level. At the same time, the household savings ratio has remained low. It could well be that increased precautionary saving by households could postpone the recovery in consumer demand.

All in all, the growth outlook for the US economy for the immediate future is moderate at best. The latest forecasts by international organisations suggest GDP growth could be under 1% this year, slightly less than estimated by the Bank of Finland in March. Recovery is not expected to get under way until 2009, and even then to be relatively modest.

Asian growth outlook still mostly favourable

The quarterly growth figures for the Japanese economy indicate it continued to grow relatively strongly in the final quarter of 2007 and the first quarter of 2008. First-quarter growth was 0.8% from the previous quarter. Year-on-year growth was only slightly more, at just 1.0%.

Japanese growth in the early part of 2008 was almost entirely based on household consumption and net exports. Appreciation of the yen has not significantly weakened export performance, at least not yet. Inflation has picked up relatively modestly, which has helped sustain consumers' purchasing power. However, survey data on both consumer and corporate confidence suggests the Japanese growth outlook is deteriorating. At the same time, weakening corporate earnings will erode employees' incentive payments and hamper the creation of new jobs.

Growth prospects in non-Japan Asia have in general remained relatively favourable, particularly in China, where the economy has continued to grow strongly. Year-on-year growth in the first quarter of 2008 was 10.6%. There was continued strong investment and household consumption, whereas the growth contribution of net exports was slightly down. In China, too, inflation has clearly accelerated over the past year (Chart 3). At the same time, the Chinese authorities have sought to control money and credit growth, for instance by placing restrictions on lending and tightening banks' reserve requirements.

The Chinese economy has continued to grow strongly.

Euro area growth surprisingly strong

The strength of economic growth in the euro area in the early months of 2008 came as a surprise to many forecasters and money market participants. GDP growth gathered pace during the first quarter and was 0.7% from the previous quarter, against 0.4% growth in the final quarter of 2007. Year-on-year, first-quarter growth remained unchanged at 2.2%.

German growth can be expected to slow considerably in the second quarter.

First-quarter data on subitems in the balance of resources and expenditure is not yet available. There were large differences in the growth figures for different countries in the euro area; in Germany, growth was considerably faster than in the other large euro area countries. German growth was bolstered primarily by domestic demand. Construction investment was apparently brought forward on account of the exceptionally mild winter. We can therefore expect substantially slower growth in the second quarter as the pace of construction ebbs.

The trade account statistics for January–February 2008 suggest that euro area exports have continued to develop rather favourably despite the marked appreciation of the euro. Growth in the value of exports has been bolstered particularly by continued strong demand from new EU member states and Asia. In contrast, exports to the United States have remained stagnant. The export impact of the stronger euro may have been reduced by exporters hedging against exchange rate movements. Another factor is the pricing of exports at least partly in euro. The euro area trade account as a whole has remained in surplus in the early months of the year despite a substantial rise in the value of imports due to the higher price of oil.

Household consumption demand in the euro area declined in the final quarter of 2007, and indicator data suggests the trend remained subdued in the first quarter of the present year. The volume of retail trade remained at approximately the same level as the previous quarter and consumer confidence was down. The gloom among consumers is largely due to the weakening outlook for the economy and employment. However, the labour market situation in the euro area has so far remained good, and the unemployment rate has continued to be low relative to recent years, at around 7%. There are, however, major differences between labour market trends in different countries. In Germany, the unemployment rate has continued to fall in the early months of 2008, whereas in Spain the rapid contraction of construction and services has caused a sharp upturn in unemployment.

The economic impact of the financial market turbulence has, at least so far, been less in the euro area than in the United States. During the second quarter of the present year, however, indicator data on the euro area economy have moved in a more negative direction. Industrial confidence, in particular, has deteriorated across a broad front in euro area countries. It may be that appreciation of the euro and slower growth in the world economy are gradually weakening the export outlook for euro area companies at the same time as accelerating inflation is depressing household consumption demand. Country-specific differences in growth outlooks, however, remain considerable. Of euro area members, the situation in Germany and France looks brighter than in Spain and Italy (Chart 10).

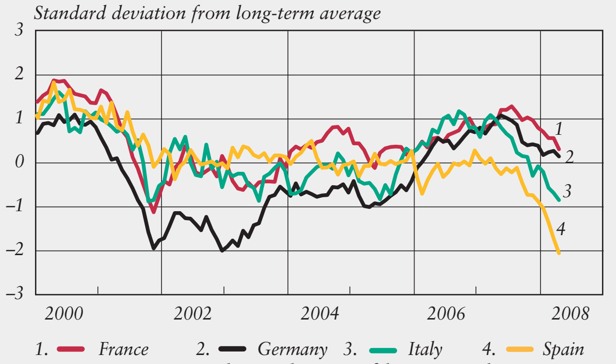
Euro area countries' general government balances continued to improve in 2007. The general government deficit contracted 0.7 percentage points from the previous year, to 0.6% of GDP, while general government debt relative to GDP fell by around 2 percentage points, to 66.4%. As well as the increased revenues generated by the strong performance of the economy, the deficit reduction was also assisted by savings measures in some countries. According to the European Commission's spring 2008 forecast, the deficit will grow again somewhat in the immediate years ahead due to the more subdued growth of the economy.

Of euro area countries, Italy and Portugal were subject to the excessive deficit procedure in 2007. In both countries, however, the general government deficit relative to GDP was brought below the 3% threshold, mainly due to increased tax revenues, and the Commission forecasts they will also be below the threshold in 2008 and 2009. On this basis, the Commission recommended in May that the Council abrogate the excessive deficit procedure for these countries. If the recommendation is accepted, there will no longer be any euro area countries subject to the procedure. This would be the first time since 2002.

Chart 10.

Euro area confidence indicators*

Standard deviation from long-term average



**Economic sentiment indicator, depicts confidence across the economy as a whole.*
Source: European Commission.

Euro area inflation gathers pace

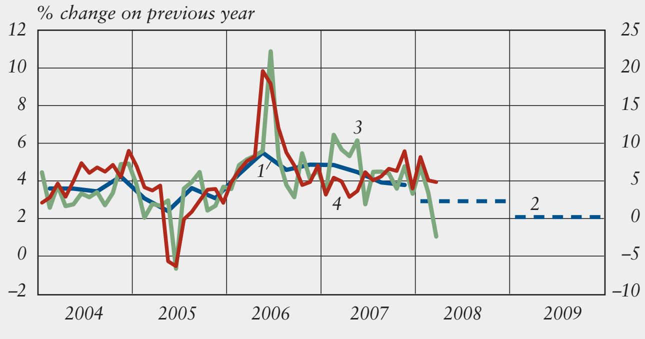
Inflation as measured by the harmonised index of consumer prices (HICP) for the euro area accelerated during the early months of 2008 to well above 3%. As in the other main economic regions, euro area inflation was driven particularly by the dramatic rise in energy and food prices. In March and April, there was also the temporary impact of prices for package holidays, where there was exceptionally large fluctuation due to the different timing of Easter from last year.

Consumer prices in the euro area are still subject to upward pressure due to the continued rise in world market prices of energy and food. The current assessment, therefore, is that inflation will remain rapid over the next few months and only begin to slow gradually. Even so, survey data and information from the financial markets suggest that economic actors' long-term inflation expectations have not changed significantly during the first half of the present year. In some euro area countries, recently negotiated pay deals have included much higher rises than in previous years, which poses further risks to price stability.

The Governing Council of the European Central Bank has held its policy rate unchanged at 4% since June 2007 (Chart 5). Monetary policy has been framed so as to ensure the medium-term risks to price stability do not materialise. In addition to the above-mentioned factors, inflation risks have been augmented by continued rapid growth in the money supply and lending. Growth in corporate loans, in particular, has remained brisk despite banks indicating in their response to surveys that they have tightened their lending criteria, in some respects considerably.

Chart 11.

Finnish GDP and industrial output



Figures seasonally adjusted
Sources: Statistics Finland and Bank of Finland.

Finland's growth outlook remains positive

Finland's economy has continued to grow relatively briskly in the early months of 2008. The overall trend has been in line with the Bank of Finland's March forecast.[2] According to Statistics Finland's trend indicator of output,[3] the output figures for January–March 2008 were approximately 3% higher than the first quarter of 2007 (Chart 11). Growth in March was, however, well below the figures for January–February. Manufacturing output, meanwhile, increased at an average annual rate of 6% in the first quarter. Finnish growth is still benefiting from continued strong household consumption and export growth, which has picked up again since the turn of the year.

The Finnish economy, too, is showing signs of an easing in the pace of growth, which has continued strongly for a couple of years already. Survey data indicates a weakening in industrial confidence in recent months in tandem with a decline in companies' order books. It would seem the gradual cooling of the world economy is also weakening export prospects for Finnish companies. In the construction sector, too, the peak

[2] The March forecast is presented in the Bank of Finland Bulletin special issue, Economic outlook 1/2008.

[3] Statistics Finland has revised its monthly indicator of total output (to be known in future as the trend indicator of output) to accord more closely with the methods used in calculating the quarterly national accounts (see www.tilastokeskus.fi).

of the cycle appears to be over: while housing construction began to slow down already in 2007, this has now been joined by a gradual slowing of growth in the construction of offices and commercial premises.

There is as yet no sign of slower growth in household consumption, with retail growth strong in the first quarter, and surveys indicate consumers are still fairly optimistic. The labour market situation is also still positive, with the unemployment rate holding at around 6% and an increase in the number of employed. Labour demand growth appears to have cooled slightly, however, as the number of job vacancies has begun to decline and the number of companies reporting labour shortages is also down.

Finnish inflation also gathers pace

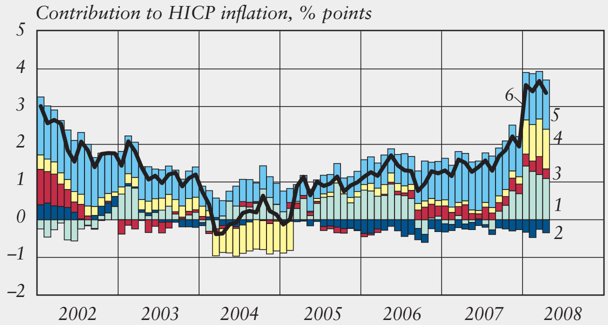
HICP inflation in Finland has been brisk in the early months of 2008. In March it was 3.6%, and in April 3.3%. Finnish inflation has been driven particularly by the rising prices of energy and processed foods (Chart 12). In addition to the rise in world market prices for commodities, these sub-indices also reflect the tax increases that came into effect at the turn of the year.

Prices of non-energy industrial goods in Finland have continued to fall. This is due to the price trend in consumer durables, and especially the change in taxation on cars that came into effect at the turn of the year. The appreciation of the euro has also subdued price rises in many industrial goods.

Chart 12.

Contribution of subcategories to HICP inflation in Finland

Contribution to HICP inflation, % points



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

Sources: Eurostat and Bank of Finland.

According to Statistics Finland's index of wage and salary earnings, wage-earners' nominal earnings were more than 5% higher in the first quarter of 2008 than a year earlier. However, the simultaneous rise in the pace of inflation means that real income growth was much smaller. The strong rise in nominal wages weakens the international cost-competitiveness of Finnish companies, and hence the chance of maintaining a favourable trend in growth and employment.

Keywords: inflation, monetary policy, economic situation

Box 1.

Global financial market turbulence is reflected in monetary and credit trends in Finland

The international financial market turbulence that began towards the end of summer 2007 has also impacted on the Finnish financial market, and indirectly on the real economy as well. The market uncertainty has so far had little impact on Finnish banks. Higher risk premia have made it more expensive for businesses to acquire finance on the bond markets, and companies have recently preferred to seek finance from the banks. Companies do not, however, appear to be having any major difficulties acquiring finance.

Households have transferred assets from mutual funds to deposits

A striking feature of Finnish banking in recent months has been the exceedingly strong growth in the stock of deposits (Chart A). New arrivals in the banking market have increased competition for households' deposits. At the same time, the uncertainty on the financial markets has continued and the resulting rise in money-market interest rates has caused households to favour deposits as an investment. In early 2008, annual growth in the general public's euro-denominated deposits has been 18%, which represents a much faster rate of growth than the average over the present decade. This has been mainly due to an increase in households' fixed-term deposits.

The financial market uncertainty has also reduced net subscriptions to mutual funds. Since August 2007 these have been negative. In the early months of 2008, redemption of mutual fund units has accelerated further. In January–April they averaged over EUR 1 billion a month. Redemptions have focused particularly on equity funds and short-term fund units, whose yields have declined substantially. The downturn in fund investment is presumably due to households' reluctance to keep their assets in the funds, as these are felt to be a less secure investment than before.[1] The redeemed assets have most likely gone mainly into bank deposits (Chart B).

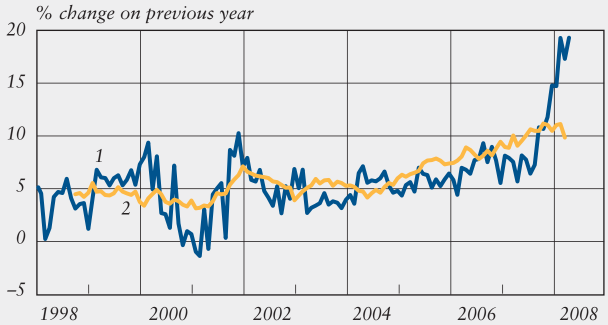
Companies not experiencing major difficulties acquiring finance

Growth in the stock of MFI loans to corporate clients accelerated towards the end of last year, and the trend in the early months of 2008 has been similar (Chart C). The trend has been influenced by the difficulties on the bond markets caused by the prevailing financial market uncertainty, and the simultaneous completion of corporate acquisitions. Companies have increasingly used bank loans to meet their need for finance. The financial market crisis has led to higher risk premia, which has

Chart A.

Growth in deposits by the public* in euro area and Finnish MFIs

% change on previous year



1. Deposits from the euro area in Finnish MFIs
2. Deposits from the euro area in euro area MFIs

* Here, the 'public' includes households, companies, financial and insurance institutions (excl. MFIs) and general government (excl. central government).
Sources: European Central Bank and Bank of Finland.

[1] According to the Financial Supervision Authority and the Bank of Finland, households accounted for 27% of the assets in mutual funds in January 2008 and 70% of fixed-term deposits in March 2008.

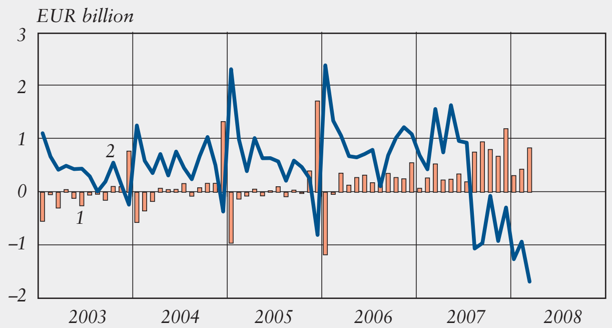
made it more expensive to seek finance on the bond market. Bank loans are generally cheaper than bonds, because they require solid collateral, and the banks can often sell the company other services in addition to the loan.

The rapid growth in corporate loans has probably also contributed to the increased volume of deposits by the corporate sector in recent months. In the second half of 2007 companies transferred assets worth over EUR ½ billion from mutual funds, primarily into fixed-term deposit accounts. It would appear that a similar trend has continued in the early part of 2008. Between July 2007 and April 2008 corporate fixed-term deposits rose from EUR 3 billion to EUR 7 billion. Over the same period, corporate assets in transaction accounts remained almost unchanged, at around EUR 14 billion. It seems likely that companies have been favouring fixed-term deposit accounts over transaction accounts due to their better yield.

The financial market turbulence does not appear to have significantly hampered Finnish companies' access to finance. The Confederation of Finnish Industries' latest investment survey indicates that availability of finance is not expected to restrict investment this year seriously, if at all. Companies' difficulties in acquiring finance have increased only slightly. Within the corporate sector a lack of skilled labour and insufficient demand are considered to be a much more significant restraint on growth than finance is. According to the Federation of Finnish Financial Services' recent economic outlook indicator for the banking sector, which came out in March, Finnish companies are in good health. The increased cyclical uncertainty has, however, caused some companies to consider postponing their investments. It is also possible that the impact of the financial market turbulence on bank lending will be visible only at a later date.

Chart B.

Monthly change in fixed-term deposits of 12 months maximum duration, and net subscriptions to mutual funds

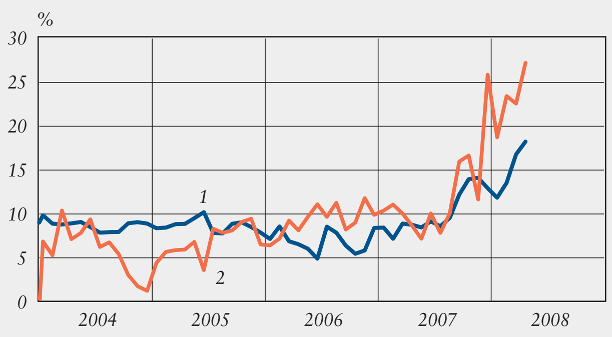


1. *Households, fixed-term deposits of a maximum duration of 12 months, monthly change*
2. *Total mutual funds, net subscriptions*

Sources: Bank of Finland and Finnish Association of Mutual Funds.

Chart C.

Finnish MFIs' euro-denominated corporate loans and companies' euro-denominated deposits



1. *Annual growth in the loan stock*
2. *Annual growth in the stock of deposits*

Source: Bank of Finland.

Financial stability in Finland

28 May 2008

The financial market turbulence that began on the US housing loan market has continued, and there are no clear signs of an end to the instability. Markets are suffering from liquidity problems caused by lack of confidence. Banks in America and Europe have been suffering credit and impairment losses, and these have been very unevenly spread. Following a record year in 2007, earnings development at Finnish banks appears more moderate in 2008, but remains positive. Viewed internationally, the Finnish financial market is relatively stable, but the international turbulence could have unforeseen consequences in Finland. The rise in house prices has moderated and the rapid pace of growth in the housing loan stock has eased somewhat, which can be considered a welcome development. The recent market turbulence has had scarcely any impact on financial market infrastructure in Finland. As ownership and operation of payment and settlement systems and their providers move outside Finland this will increase challenges in the area of infrastructure.

International operating environment

The United States' large current account deficit has for years been attracting a great deal of attention and concern. Commentators have been wondering whether the eventual stabilisation of the deficit will come gradually or through a sudden crisis. In any event, the assumption has been that a weakening of the dollar and foreign creditors' unwillingness to continue to finance the deficit would be part of the process. There is evidence that this is now happening.

In April this year the value of the dollar in euro was on average 14% lower than a year earlier. Over the same period the euro appreciated only around ½% against the Japanese yen and depreciated relative to the Swiss franc and gold, which means the dollar's weakness is not simply a case of the strength of the euro. The downward trajectory of the dollar has been strongest since early autumn 2007.

There has been some weakening in foreign investors' willingness to finance the current account deficit. The high level of household borrowing and low level of savings have been key features of the US economy for several years. This level of borrowing has helped deepen the deficit. The pace of new household debt is probably now slowing down, reflected in weakening demand for certain types of securities used in financing it.

Less creditworthy households, in particular, are now finding it harder to borrow. The indebtedness of this type of household gathered momentum in the United States during the 1990s when banks began to increasingly grant housing loans to subprime customers who would not have qualified for a normal housing loan. The terms of these subprime mortgages differed from those of traditional housing loans. Interest payments on subprime loans are relatively low during the first two years, whereafter they can rise several percentage points, and convert into variable-rate. Until 2007, these loans were seen as low-risk, as the real estate collateral was expected to ensure repayment of the debt. There was fairly systematic securitisation of these loans, with banks selling the rights to the claims to separate companies established specifically for this purpose. The new companies then acquired finance by issuing bonds. These companies are mostly very weakly capitalised.

Financiers' willingness to purchase the securities used in financing subprime mortgages has declined dramatically since last summer. The market prices of these instruments has also declined, and their liquidity has weakened. The effect has spread to many other mortgage backed instruments. US housing prices have declined, with the result that real estate collateral no longer fully cover creditors' claims. Subprime household borrowers' opportunities to access credit have been hardest hit, but the decline in house prices has also reduced the scope for more creditworthy households to use their home as collateral, eg for consumer credit.

There is a possibility the housing market crisis could spread to Europe, but it is unlikely to be as serious as the US crisis. European households have less debt, and most European countries do not have loans similar to the American subprime loans to less creditworthy borrowers.

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A fairly large proportion of securitised subprime loans have been held by banks in different parts of the world. The credit risk attaching to these loans has turned out to be greater than expected. The problem is particularly severe in the US banking sector, but many large European banks have also reported significant problems. Japanese banks have also invested in these instruments, but the information that has emerged so far indicates they have done so less American and European credit institutions. It is probable that banks in most of the emerging economies do not have dangerously large investments in the subprime market.

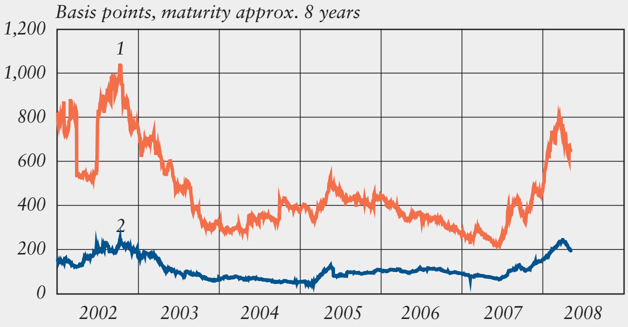
By mid-May, banks and insurance companies had reported loan losses and securities writedowns totalling approximately USD 375 billion. There have been a number of assessments of what the final losses will be. The largest estimate was by the IMF. According to its calculations published in April, the final losses if the crisis were to spread further could be in the region of EUR 1,000 billion. According to the IMF, the problems are threatening to spread from the housing market to the market for commercial real estate, which would further exacerbate the situation. The OECD has estimated the final losses at the much smaller sum of just over USD 400 billion. The difference between these estimates is so large partly because the IMF calculation takes more account of indirect effects.

The market's general appetite for risk has moderated in recent months, but not to an exceptional degree. For example, while the interest rate differentials between loans with debtors of different levels of creditworthiness have grown since last summer, they have not done so to any unusual degree (Chart 1). In recent weeks the appetite for risk has recovered slightly in some segments of the market.

Chart 1.

Interest rate differentials of euro-denominated corporate loans

Basis points, maturity approx. 8 years



1. Differential between B-rated and AAA-rated loans
2. Differential between BBB-rated and AAA-rated loans

Source: Merrill Lynch.

Subprime securities are also held in large amounts by special investment companies established by the banks. While generally launched by a bank, these companies are not usually set up as subsidiaries. They generally have only small amounts of equity capital but plentiful short-term liabilities. The banks are often committed to financing the investment companies they have set up if no alternative source of finance can be found. In many cases these companies have turned out to be a considerable risk for the banks. The commitment to extend them credit often also means in practice a commitment to underwrite their debts, because when they get into difficulties other financiers will not renew their loans to these weakly capitalised companies. These risks were not sufficiently appreciated prior to the onset of the current serious problems.

The importance of off-balance-sheet financial intermediation by banks has grown considerably in a fairly short period of time. There has to date been little regulation or supervision of these arrangements. In April 2008, the Financial Stability Forum, an international cooperative body for central banks and financial supervisors, made a number of proposals to promote stability on the financial markets. These included changes in accordance with the currently awaited proposal by the Basel Committee, involving higher risk weightings in banks' capital adequacy calculations for complex structured finance instruments and lending commitments made to special investment companies.

Uncertainty over the subprime risks of financial sector companies has fuelled a lack of confidence between banks. The interest differential between secured and unsecured loans on the interbank money market has at times been almost a full percentage point, which is historically very unusual (Chart 2). In this respect, there is no sign of a return of market confidence.

The lack of confidence has also damaged liquidity on the financial markets. Liquidity is harder to measure than the risk premia on bonds, but, according to an index presented by the Bank of England, market liquidity has deteriorated so sharply in the early part of 2008 that such small figures have not been seen for many years.[1] Liquidity problems often peak in periods of uncertainty. Counterparties who want to avoid risk are unwilling to lend or engage in any other significant business on the financial markets.

During the period of turbulence, banks have managed to attract new equity, which has bolstered their capital adequacy despite their large losses. State-owned investment companies in countries with a current account surplus have been particularly active investors in US and European banks. For example, investment companies from Singapore, Abu Dhabi, South Korea and China have since November 2007 invested billions of dollars in banks that have suffered major losses. Share issues have also been used to generate new capital.

The profitability of banks in EU countries is declining. In Europe, too, the main reason for this has been investment in subprime-linked securities. The losses on the subprime markets are very unevenly distributed between different banks. The worst losses have been incurred by certain British, Swiss, German and French banks. In contrast, Nordic banks do not appear to have taken significant risks on the subprime markets. There are, however, also other reasons for the declining profitability of banks.

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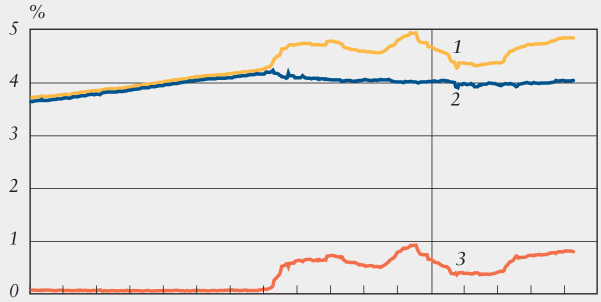
Chart 2.

Price of secured and unsecured money on the euro area interbank market



1. 3-month unsecured interbank rate (Euribor)
2. 3-month secured interbank rate (Eurepo)
3. Differential between 3-month unsecured and secured interbank rates

Source: Reuters.

[1] Financial Stability Report (April 2008), p. 6.

Insurance companies have also recorded major losses, but they are better placed than the banks.

Many banks have experienced difficulties in sustaining income levels, due at least in part to the financial market turbulence. Interest rates on deposits have risen, demand for credit has weakened and the price of finance on the wholesale interbank market has risen. Admittedly, the average interest on lending has also risen, which has helped sustain interest margins.

Insurance companies, too, have had to bear considerable losses, for example in the United States, but they do not appear to be as badly affected as the banks. Many bond insurers have run into trouble. These are insurance companies that pursue only one type of business: underwriting their customers' bond issues. For many of them, underwriting securitised housing loans has in recent years become their main activity. These companies have been recapitalised, but some have nevertheless had their credit ratings downgraded.

The economic cycle in the United States is weakening, one sign being that unemployment has begun to rise. The main reason for the slowdown in the economy is likely to be weaker private consumption. In Europe, too, the economic cycle appears to be weakening in other sectors as well as the financial markets. The IMF has presented a fairly pessimistic view of the short-term economic outlook for Europe. The housing markets are showing clear signs of falling prices in some countries.

The vigorous expansion abroad by Icelandic banks has required considerable finance, which they have acquired in various ways, including through foreign-denominated wholesale finance. At the same time, Iceland's current account has been running a large deficit. The market turbulence has shaken investors' confidence in Icelandic banks, which have been forced to pay rates of interest on their debts well above those payable on risk-free debts. In spring 2008, international rating agencies downgraded the credit ratings on both the Icelandic government and some of the country's banks. On 16 May, Iceland's central bank concluded a currency swap agreement with the central banks of Sweden, Norway and Denmark whereby it can if necessary exchange Icelandic kronor for euro. This agreement will boost the international liquidity of the central bank.

The situation in the Baltic states, too, has attracted some attention lately. In Estonia and Latvia, in particular, house prices rose particularly strongly in 2002–2006, but have now begun to fall. In all three Baltic countries there are clear signs of a slowdown in growth.

Domestic operating environment

In Finland, the economy has continued to grow relatively quickly, but the pace is now easing. According to the spring forecast by the Bank of Finland, real GDP growth in 2009–2010 will be only very slightly over 2%. Housing construction already began to decline before the end of 2007, and data from early 2008 on building permits indicates a continued contraction in the sector. Weaker export performance also looks probable. Statistics Finland's consumer confidence indicator has declined considerably in recent months. The April survey indicated reduced confidence in the Finnish economy. Respondents were mildly pessimistic regarding their own economic situation, even if they considered unemployment unlikely in their own case. The prevailing situation was felt to be unfavourable for taking out a loan but favourable for saving, which lends support to the view that household indebtedness has slowed.

The long period of sustained growth in indebtedness means Finnish households' liabilities are now larger than their annual income. Interest rates have risen, which means debt now constitutes a significant financial burden on an increasing number of households, although the number in real difficulties had, at least in 2007, not grown particularly strongly. According to the Finnish business and credit data agency Suomen Asiakastieto, more than 20% more new payment defaults were recorded in the personal credit data register in 2007 than in 2006, but the number of individual defaulters grew by less than 1%. Interest expenditure relative to household income is still well below the level of the early 1990s.

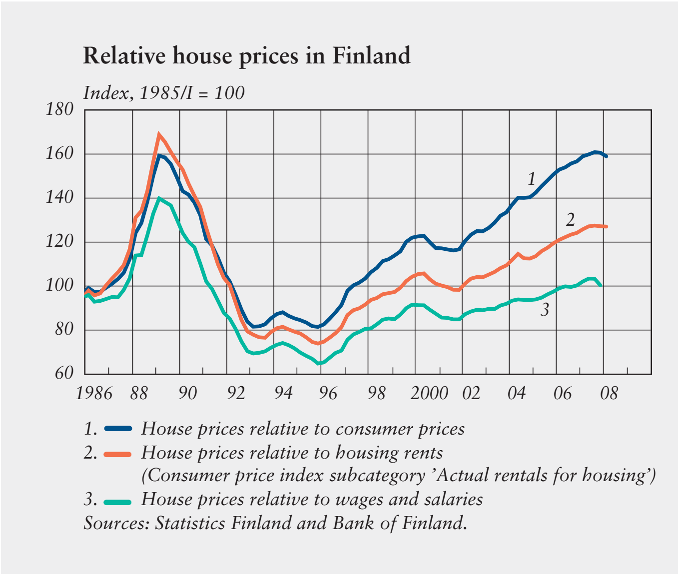
Interest expenditure relative to household incomes is still much lower than in the early 1990s.

There are some signs the corporate sector is experiencing increased difficulty with payments, although there were less applications for bankruptcy in the early months of 2008 than a year earlier. On the other hand, the number of payment defaults already increased significantly in 2007. According to indicator data collected by the Confederation of Finnish Industries, the industrial confidence indicator deteriorated considerably early this year, but recovered slightly in May.

It may be that banks will become less willing to lend to their corporate customers in the present uncertain environment. According to a report published by the Confederation of Finnish Industries and Ernst & Young in April, access to finance in Finland in the early part of the present year was a problem primarily for growth companies, not for established, relatively low-risk small companies.

Although house prices in Finland have not been falling, there has been a clear slowdown in the pace of rise in nominal prices. According to advance data from Statistics Finland, house prices in the first quarter of 2008 rose only 0.3% from the previous quarter, which equates to an annual rise of around 1.2%. Year-on-year, prices were up 3.1%. In March 2008, Statistics Finland's consumer price index was 3.9% higher than a year earlier, which means house prices

Chart 3.



can be said to have fallen in real terms (Chart 3). Real house prices are, however, still approximately at the peak levels of the late 1980s. Relative to rents, too, house prices are higher than they were just a few years ago. The market for commercial premises varies from area to area, but at least in the Helsinki region rents for office premises are continuing to rise, according to the Institute for Real Estate Economics' monthly review of the property market in May.

Banking and insurance

Despite the international turbulence, the profitability of Finnish banks still looks good, according to the latest figures. According to Statistics Finland, the operating profits of Finnish banks in 2007 were 29% up on the previous year, putting them at a higher level than ever before.[2]

Profitability in Finland's banking sector has declined slightly since 2007, but remains good (see Table). The decline in profitability is not strong enough to cause serious concern, and results before the recent turbulence were very good indeed. As in many other European countries, the decline in profitability is due to factors such as a smaller return on other income and writedowns on portfolio investments. With regard to loan losses, the situation is deteriorating somewhat, but nevertheless relatively stable. On the positive side, net interest income has been rising steadily, presumably on account of factors such as higher interest rates and increased volumes.

According to the April bulletin from the Federation of Finnish Financial Services, earnings development among insurance companies is also stable. Total premiums grew only very slightly. Income from premiums was up almost exclusively in the areas of statutory employment pension insurance and private pension insurance. Investment activities were relatively productive given the prevailing climate. In non-life insurance, profitability improved, partly due to a favourable trend in the loss ratio.

[2] The figures from Statistics Finland show the banks as parent companies, not as banking groups. In contrast, information published by the Bank of Finland on banks' profitability is generally based on group-level data.

Table.

Key data and profit and loss account items on banking groups January–March 2007 and 2008

	Net interest income, EUR million		*Other income, EUR million*		*Total expenses, EUR million*	
	1–3/2008	*1–3/2007*	*1–3/2008*	*1–3/2007*	*1–3/2008*	*1–3/2007*
Nordea Group	*1 181*	*1 004*	*780*	*869*	*1 055*	*992*
Banking activities in Nordic countries	*971*	*854*	*540*	*564*	*779*	*730*
of which, Finland	*273*	*250*	*147*	*159*	*194*	*177*
Danske Bank Group	*837*	*769*	*542*	*705*	*848*	*787*
Banking activities in Finland	*107*	*68*	*59*	*38*	*141*	*79*
OP-Pohjola Group	*272*	*244*	*260*	*315*	*333*	*313*
Pohjola Bank Group	*35*	*26*	*100*	*153*	*115*	*114*
Savings banks (excl. Aktia, total)	*40*	*38*	*9*	*12*	*31*	*29*
Aktia Savings Bank plc (Group)	*24*	*20*	*47*	*45*	*57*	*41*
Local cooperative banks, total	*27*	*26*	*7*	*8*	*19*	*19*
Bank of Åland plc (Group)	*10*	*9*	*8*	*9*	*13*	*11*
Evli Group	*0*	*0*	*17*	*17*	*15*	*14*
eQ Group	*2*	*2*	*6*	*11*	*8*	*8*

	Loan losses		*Operating profit, EUR million*		*Capital adequacy 31 March 2008*	
	1–3/2008	*1–3/2007*	*1–3/2008*	*1–3/2007*	*Primary equity, %*	*Total capital, %*
Nordea Group	*21*	*-13*	*885*	*895*	*7.2*	*9.4*
Banking activities in Nordic countries	*10*	*-34*	*722*	*722*		
of which, Finland	*2*	*-22*	*224*	*254*		
Danske Bank Group	*73*	*-24*	*458*	*710*	*9.5*	*13.6*
Banking activities in Finland	*-4*	*-2*	*29*	*28*		
OP-Pohjola Group	*2*	*1*	*196*	*246*	*12.7*	*12.8*
Pohjola Bank Group	*2*	*0*	*17*	*65*	*8.2*	*10.8*
Savings banks (excl. Aktia, total)	*0*	*0*	*18*	*22*	*20.3*	*21.9*
Aktia Savings Bank plc (Group)	*0*	*0*	*14*	*25*	*10.5*	*14.2*
Local cooperative banks, total	*-1*	*0*	*15*	*15*		*21.9*
Bank of Åland plc (Group)	*0*	*0*	*6*	*8*	*8.3*	*12.3*
Evli Group	*0*	*0*	*2*	*3*		*15.3*
eQ Group	*0*	*0*	*-1*	*5*	*11.3*	*11.3*

Writedowns on tangible and intangible assets have been entered as expenses.
The figures for Danske Bank have been converted to euro at the average rate for the quarter.
Source: Banks' interim reports and statements.

Finnish banks have scarcely any investments in the US subprime market. The situation is the same in the insurance sector: there is very little exposure to direct risks from subprime finance.

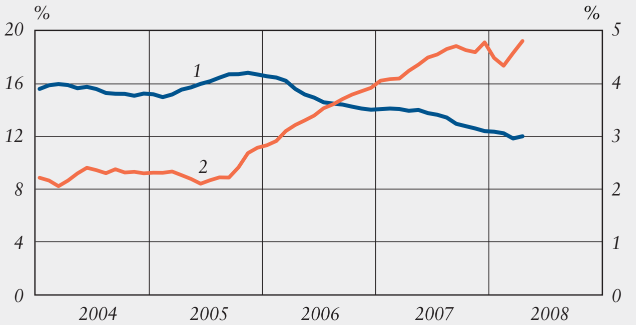
The international market turbulence could cause serious problems for the Finnish financial system only if there were to be completely unexpected second-round effects. Banks could, for example, have significant claims on foreign counterparties, other banks, that could prove unable to meet their commitments. The securities market and the price of investment assets are a more likely channel for the spread of negative impacts. Writedowns for this reason have to some extent already weakened the financial performance of banking groups. The macroeconomy is another possible channel of influence: the turbulence could lead to a global recession that would also affect Finland.

Households' stock of housing loans has in recent years grown extremely quickly. Previous experience and calculations by the Bank of Finland using household-level data suggest the credit risk from these loans is fairly negligible. In Finland, less creditworthy households have been not granted loans as in the United States, and lending decisions have not normally been made purely on the basis of the collateral value of the property. Household demand for loans is now receding: according to the Federation of Finnish Financial Services' recent economic outlook indicator for the banking sector, which came out in March, the proportion of bank managers who indicated a decline in the volume of new household loans was at its highest level since the year 2000. The volume of household loans has in recent years grown so quickly that continued growth at the same pace would inevitably result in problems for both banks and borrowers. The slower growth is therefore in many ways a welcome development. Admittedly, the latest observations indicate that household borrowing is still growing at over 10% per annum (Chart 4).

Banks are facing higher costs for their finance. For example, interest paid on deposits has risen more than previous experience would have given cause to expect. As recently as June 2007 average interest on the stock of

Chart 4.

Finnish MFIs' loans to households: annual change in loan stock, and 12-month Euribor



1. *Annual change in stock of housing loans (left-hand scale)*
2. *12-month Euribor (right-hand scale)*

Source: Bank of Finland.

deposits was 2.2%, while in February 2008 it was already 2.7% (Chart 5). This is partly a question of a change in the composition of deposits: fixed-term deposits have increased their share at the expense of deposits in transaction accounts. The exceptional situation currently prevailing on the financial markets is also indicated by the fact that the average interest rate on fixed-term accounts has at times been higher than the weighted average interest rate on the Eurosystem's main refinancing operations, ie money from deposits was more expensive for the banks than central bank finance.

Rising Euribor rates are also helping to increase banks' interest income, with almost 60% of lending in Finland being Euribor-linked. These loans are repriced at regular intervals specified in the terms and conditions of the loan. This means the risk premia attached to unsecured loans spread automatically from the interbank market into a large proportion of the general loan stock, despite the fact that such lending is often secured. While this helps to maintain and even boost banks' net interest income, it could also increase the risk of loan losses. If interest rates on their loans rise, more customers will find themselves in difficulties coping with the combination of capital instalments and interest payments.

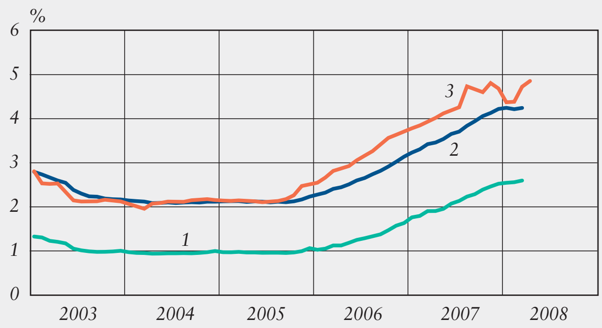
Banks' liquidity has benefited from the rapid growth in the stock of deposits. Deposits by households grew 16%, and corporate deposits by 24% in the year to February 2008. According to the Federation of Finnish Financial Services' economic outlook indicator for the banking sector published in March, an increase in deposits in the first quarter was reported by a higher proportion of bank managers since 1997, if not earlier. In contrast, there appeared to be little interest in shares or equity funds.

A rapid increase in the uptake of central bank loans could be interpreted as a sign banks are experiencing problems with liquidity.[3] The Bank of Finland's euro-denominated claims on euro area credit institutions in relation to monetary policy operations have grown somewhat since the beginning of 2008, but they

[3] See eg BIS (2006) The Joint Forum: The management of liquidity risk in financial groups.

Chart 5.

Average interest rates on bank deposits



1. Total deposits
2. Fixed-term deposits
3. 3-month Euribor

Source: Bank of Finland.

are still below the average for eg 2006. During the current turbulence, there has been no sign of any lack of collateral, and banks have constantly had more collateral posted with the Bank of Finland than the minimum required to cover their liabilities to the central bank. This indicates the lack of borrowing stems from the small scale of banks' current financing needs.

So far, at least, the international turbulence has clearly had little impact on banking in Finland, but the turbulence is not yet past. It is therefore premature to draw final conclusions on its consequences. The current uncertainty increases the possibility of surprises.

Financial market infrastructure

The recent turbulence has not compromised the reliability and efficiency of Finland's financial market infrastructure.

Ever-closer integration of financial markets ensures that milestone events in the global and European economies are also reflected in Finland's financial market infrastructure. Even so, the recent turbulence on the international financial markets with its associated liquidity problems have not had any visible impact on the reliability and efficiency of the Finnish market infrastructure.

The launch at the end of January of the Single Euro Payments Area (SEPA) means payment system infrastructure changes throughout Europe, including Finland. Clearing for large banks operating in Finland will now be handled by a pan-European automated clearing house owned by the banks and situated in continental Europe. This move transfers operations outside the direct supervision of the Finnish Financial Supervision Authority. The smaller banks will be setting up their own payment centre in Finland, planned to begin operations towards the end of 2008.

In order to be able to offer their customers SEPA services, banks will have to invest in system changes to comply with the new standards. Such changes, along with the introduction and further development of the new system for clearing and settlement, represent a major challenge for the banks. The length of the necessary period of transition will be determined once the additional services have been introduced and the operability of the new solutions is confirmed. Finland has long been a trailblazer in the field of payment services. It is important to ensure the current level of service to customers is maintained at the present overall cost in the future.

A successfully implemented SEPA will further European integration and enhance payment efficiency. The changes brought by SEPA are, however, not entirely without problems. How can we ensure that the level of payment services is not endangered in those countries where they are already top class, as in Finland and the other Nordic countries? In these countries, the general view is that electronic invoicing will serve the economy better in the future than direct debiting.

Recent examples demonstrate that concentration of infrastructure in pursuit of efficiency can be something of a mixed blessing. The recent merger between Sampo Bank and Danske Bank led at Easter to Sampo Bank adopting the Danish Danske Bank's IT systems. The transition brought to light a long list of technical problems that have taken a long time to resolve. This has caused problems for many customers, with, for example, difficulties in making everyday payments.

The global economy makes it possible to operate IT systems at a distance. However, as the geographical distance grows, the number of links required for forwarding data also grows, which increases the operational risks. Nordea has transferred some of its systems to Sweden. The OP-Pohjola Group, meanwhile, uses partly the services of a Dutch clearing house that operates in several countries. The TARGET2 system[4] introduced in November 2007 represents the technical concentration of the world's third largest payment system. The concentration of systems and their ever greater dependency on each other, external suppliers, data networks and operators means the systems have become more vulnerable and there is an increased level of systemic risk. At the same time, data protection and contingency arrangements are becoming increasingly important, particularly during times of market turbulence like the present.

As systems, their development and their operation move outside Finland, it is possible there will also be a loss of expertise from the country. The Bank of Finland has devoted particular attention to this issue.[5] Recent trends and the above examples demonstrate that, at a time when development decisions are increasingly being taken on terms set by large European or global actors, this concern is not entirely without foundation.

Securities market integration is continuing: stock exchanges and securities clearing and settlement systems are still seeking cooperation partners within Europe and beyond. New electronic trading venues are emerging to take their place in the competition between exchanges. Their impact on stock exchange liquidity remains to be seen in the immediate years ahead. Helsinki Stock Exchange, which has ended up as part of NASDAQ OMX Group, has so far fared well, with liquidity actually flowing back to Helsinki, but the changing market situation could turn this around very quickly. The transfer of blue chip trading away from Helsinki would mean reduced investor interest, thereby making it harder for smaller companies in particular to acquire market funding. The impact would also be

Helsinki Stock Exchange is, so far, doing well – electronic trading venues are bringing increased competition.

4 Trans-European Automated Real-time Gross Settlement Express Transfer system, a pan-European automated real-time gross payment system.

5 See Bank of Finland Bulletin special issues, Financial stability 2006 and 2007.

immediately reflected in declining clearing and settlement volumes. There are, in addition, other international market integration projects currently under way that if implemented could reduce share trading and clearing and settlement volumes.

Securities market settlement ratios have declined recently in many markets, including Finland. Clearly, this is partly due to the poorer current functioning of the securities lending market. The current situation has pushed up the price of credit and caused some investors to withdraw from the market. This trend can be seen as a sign of declining confidence among market actors and the repricing of risks.

Will the benefits of securities market development projects be sufficiently evenly distributed?

The aim of the TARGET2-Securities project (T2S) is to improve the efficiency of clearing and settlement of cross-border securities transactions and the competitiveness of the European securities market. The project foresees the establishment of a common platform for central securities depositories, to which they will outsource their booking systems, ie transaction settlement and maintenance of securities accounts. The technical solution proposed offers one alternative approach to deeper integration without the merger of central securities depositories. The Eurosystem is planning the project in cooperation with market participants.

It will soon be time to decide on moving on to the system definition phase, but the system itself will come on stream in 2013 at the earliest. As the project progresses it is important to ensure that Finland's national market structure and practices are taken into account. The issues concerning Finnish market participants relate primarily to the direct holding model, ie will the services offered be as efficient and at the same price for both the Finnish direct holding market and the indirect holding market? Harmonising of operating practices could indirectly change the services provided.

Integration of the financial market infrastructure will reduce the scope for Finnish market participants and authorities to directly influence the systems. It is therefore vital to ensure that system governance is impartial and that supervision by authorities is reinforced and harmonised. A combination of free competition, national differences in regulation and fragmented supervision would facilitate the emergence of an unbalanced competition situation between market participants and could endanger the present high quality of services in Finland.

Keywords: financial system, stability, banking sector, securities market, payment and settlement systems

Mobile payments breakthrough is just around the corner

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Päivi Heikkinen
Economist
Financial Markets and Statistics

We Finns, the world's most enthusiastic mobile phone users, use our phones not only for making calls but also for surfing on the Internet, listening to music, and taking photographs. We even compete in the Mobile Phone Throwing World Championships. We have not, however, been willing to use our phones as a means of payment – or how else can we explain the fact that so many mobile payment initiatives have not got beyond the experimental level?

When the future of payments is discussed, mobile payment is an inevitable part of the debate. The ubiquitous mobile phone that can be used everywhere has been seen as a step towards more efficient and user-friendly payments. The promises of the visionaries have, however, not yet been fulfilled. The most sceptical commentators have been ready to discard the entire concept of mobile payment. What does mobile payment actually involve? And what are the basic preconditions needed for using the mobile phone for payments?

The introduction of a technical innovation is usually welcomed with excitement, and new applications spring up in abundance. Mobile payment has already for several years been at this stage of development. Hundreds of various types of pilot programmes have been created around the world, including several in Finland. Some of these programmes cover proximity payment, some remote payment, and the number of technical solutions is high. By comparing these innovations with other available payment methods we can identify which characteristics a mobile payment application needs in order to succeed.

The first generation of mobile payments

The first mobile payment applications were SMS text messages or calls to toll numbers for services such as purchasing ring tones or making a donation to some charitable cause. Purchasing a tram ticket in Helsinki by SMS message has become fairly popular. What these payment methods have in common is that the SMS message is an authorisation by the customer to invoice, and payment takes place only when the mobile phone invoice is paid.[1] The telephone operator credits the payments to the service provider based on a mutual agreement. These types of payment methods are thus primarily invoicing systems, not payment systems.

Payment methods based on invoicing by operators have several characteristics that prevent them from becoming widespread. Increased invoicing would increase operators' credit risk, while the purchasing of services is restricted by the high number of people using company

1 If a prepaid connection is used, the payment is made by deducting the amount from the balance.

phones. People easily make mistakes when writing SMS messages and some users find them clumsy. Perhaps this is why these types of payments are mainly used for supplementary mobile phone services.

Paying by SMS message is clumsy

The Digiraha and Mobiiliraha programmes tested by Finnish banks resemble the above-mentioned invoicing systems. The payer transfers funds to a separate mobile payment account and is able to make payments from this account via SMS message. This does not create a credit risk for the payment transmitter, who simply transfers the payment to the merchant's account (which has joined the system). The user experience is similar to that with operators' invoicing systems, but the payer must transfer the funds to a zero-interest mobile payment account in advance. From the viewpoint of the consumer, the payment process is thus equivalent to a payment made via a prepaid connection.

The Austrian payment service Paybox provides a number of alternatives for making a payment. Upon payment, the customer gives his mobile phone number to the retailer, who will then call him. The customer confirms the payment by punching in his personal identification number (PIN). The actual payment is effected by direct debit or by invoicing the customer in connection with his mobile phone invoice. The service has, however, only a limited number of users.

The most popular service in Europe in terms of the number of users is the Belgian service Banxafe, which requires an updated SIM card. Banxafe allows the customer to recharge his prepaid balance either directly from his bank account, by direct debit or by card payment (via SMS message). Upon payment, the retailer sends an SMS message to the payer detailing the payment information, and the payer confirms payment with his PIN. Banxafe commenced operations in 2003. In 2007, the service was extended by the Pay2me service, in which registered private individuals can make payments to each other. The Pay2me service is used by eg self-employed persons who do not have a payment terminal for handling card payments.

Compared with operator-based invoicing, the other SMS-based payment methods have the advantage that they can also be used via a company mobile phone. In principle, they are suitable for both proximity and remote payment, ie for paying at a store and at home. With the exception of some types of payment situation, the above-mentioned payment methods are viable alternatives to cash and card payments. But they just as often lose the competition with cash and cards.

From a consumer's point of view, opening a separate account or purchasing a specific SIM card means extra effort, as the payments can be made by other means as well.

Moreover, sending even a short SMS message takes a longer time than punching in your PIN at a payment terminal, and SMS messages are susceptible to disruptions. These payment methods require that merchants acquire specific payment terminals. The threshold to invest in new technology is high, due to the continuous obligatory updating of payment terminals and customer-bank interfaces ever since the turn of the millennium.

Our experience is, that a new payment card will become widespread if a sufficient number of end customers start using it at an early stage. When that happens, merchants find it sensible to acquire the payment terminal required for verifying the card. Other new payment methods will most probably go through the same process.

Mobile phone payment is most widespread in the Far East, particularly Japan and South Korea. The Japanese mobile phone operator NTT DoCoMo has created a completely new method for proximity payment. This was launched successfully to customers and merchants, as a result of the company's strong marketing effort and solid market position. The mobile phones sold by NTT DoCoMo have a separate chip that can be read via the merchant's data terminal. The technology resembles that of the travel card available in the Greater Helsinki Area.

NTT DoCoMo's payment chip is reported to have 5–10 million users. The chip is accepted in numerous locations, and the operator has supported merchants in acquiring the required data terminals. Currently, payment is effected via a prepaid chip, but the plan is to extend the service to account-linked and invoiced applications. Similar near field communication-based (NFC) proximity payment applications are also in use in other countries of the Far East.

Proximity payment by mobile phone instead of a plastic card

In addition to operators, international payment card companies have also been actively developing NFC-based proximity payments. Both Visa International and MasterCard International have been testing a solution in which the chip is embedded on the cover of a mobile phone, instead of a plastic card. Most of these experiments have taken place in the Far East and the United States. As a payment transaction, this type of payment resembles card payment – from the viewpoint of the consumer it is irrelevant whether the chip is embedded on a plastic card or a mobile phone. The situation is similar for the merchant: payment card transactions are credited to the merchant using existing systems. NFC-based payment has been modelled on several successful public transport applications.[2] News reports suggest some of these programmes

For the consumer, it ultimately makes no difference whether the payment chip is located in a plastic card or a mobile phone.

2 Eg Octopus in Hong Kong, EZ in Singapore and Oyster Card in London.

Proximity payments via a mobile phone chip could provide added value for both consumers and merchants.

are to be extended to other types of payment. They are well suited to this: consumers already have a considerable number of cards and have learned to use them. Shops located on commuter routes would be a natural place to use these NFC-based cards.

In Europe, progress has been hampered by the Electronic Money Directive[3], which imposes strict requirements on electronic money that can be interpreted as common forms of payment. The European Commission is currently updating regulation on electronic money. This will hopefully pave the way for new proximity payment initiatives in Europe as well.

Experiences gained with public transport applications and in the Far East indicate that NFC-based payment may provide real added value to both consumers and merchants. The payment transaction is quick, and with small payments no separate confirmation is required. The user experience is that this payment method is as easy to use as card payment, or even easier. If the actual payment is effected using card payment technology, merchants do not have to make big investments because the chip reader will be attached to the existing payment terminal. If the service fee charged from consumers and merchants is no higher than that levied on payment card transactions, the application could be a success.

[3] Directive 2000/46/EC.

NFC-based payment could be the second generation of mobile payments. But has the service anything to offer payment service providers, banks and payment card companies?

The only hindrance to the widespread use of NFC-based payment is that the chip has to be installed in the phone. Several currently used applications are based on a separate chip embedded on the cover of the phone. Acquiring such a chip requires extra effort from the user, particularly if the NFC phone is not automatically compatible with all the applications offered by service providers. Should the customer know already when he is choosing the phone whether he wants to pay by Visa or MasterCard?

A solution to this problem could be new multifunction chips that include the mobile phone's SIM application and one or several payment applications of the customer's choice. These could be updated over the air, enabling the consumer to acquire and switch payment applications. This would require a technically compatible chip, standardisation of its operation, and agreed practices for administering the chip and the included applications. All these requirements will probably be fulfilled in the near future when ETSI[4], the organisation responsible for standardising communication between chips

[4] European Telecommunications Standards Institute, http://www.etsi.org/WebSite/homepage.aspx.

and phones, and the Mobey Forum,[5] which is preparing the chip administration model, complete their work. There is still a long way to practical applications, but they are definitely now a possibility.

Developing countries have specific needs

The largest mobile phone market is in the developing countries, where the most innovative payment solutions are also to be found. One of the most successful new payment methods is M-Pesa, which was launched in Kenya in 2007. The application is operated by Vodafone and Safaricom.

More than half the Kenyan population has no access to banking services. While mobile phones, too, are not universal, their number is growing rapidly, and mobile phone networks cover even the most remote regions. The livelihood of many Kenyans is dependent on funds sent by relatives working in the cities or abroad.

Whereas money was formerly transferred via costly money transfer agencies, slow postal money orders, or sent with relatives or local busses (Matutu), with M-Pesa, funds can be transferred via SMS message. An M-Pesa account operates like a prepaid connection, but as a separate application. Funds can be transferred to the account or can be collected in cash at M-Pesa sales points or M-Pesa's partners.

[5] Http://www.mobeyforum.org/.

Kenya has a population of over 35 million, approximately 450 bank branches and 600 ATMs, and only some 27% of the population has a bank account. In a short time, Safaricom has already established 1,600 M-Pesa service points, located at Safaricom sales points, shops and service stations. The M-Pesa service is suitable for paying wages and salaries, for safeguarding money during travel when there is a considerable threat of being robbed, for purchasing goods that are located far away (the goods, eg medicine, are transported to the customer by local bus), for transferring tuition fees and for many other purposes.

M-Pesa's near-term challenges relate to the framing of legislation, because according to international practice its operations correspond to the issuing of electronic money, which thus far is not covered by Kenyan banking legislation. Safaricom has expanded its services to neighbouring countries, and Vodafone has launched a similar service in Afghanistan. These types of services have also been launched in other African countries and in the less developed regions of Asia, eg to support micro-crediting.

These kinds of services are expected to gain rapidly in popularity because they offer the hundreds of millions of people without access to banking services a reliable and reasonably-priced method of transferring funds, both micro-payments and larger payments of tens of dollars.

The mobile phone network reaches places that would otherwise have no banking services.

The social benefit gained is much greater than the risks caused by the current insufficient level of regulation and supervision. Authorisation and supervisory issues will hopefully be solved in a way that does not hamper the development of the service.

The future of mobile payments is twofold

What conclusions can we draw from these diverse developments? Many payments effected by mobile phone are in fact only new ways of using existing payment methods, credit transfer or card payment. We should thus perhaps talk about payment by mobile phone or mobile banking services, instead of mobile payments. Only when we have a payment application that is included in a mobile phone's multifunction chip and utilises the phone's security features can we talk about genuine mobile phone payments.

In developed countries, existing payment methods have a strong foothold, and the mobile phone's user interface is most suitable for confirming a transaction (which only requires punching a few numbers). The future of mobile payments thus lies in the support functions of electronic banking services, ie the mobile phone will be used for customer identification in online banking or for confirming a payment, or in contactless proximity payments.

Payment by mobile phone will probably be developed in the direction of NFC-based payment – either contactless micro-payments or larger payments confirmed separately with a PIN. These thoughts seem to be shared by the expert group of the European Payments Council appointed to prepare the single euro payments area. Several open issues concerning chip administration still exist, but they can be solved. International payment card companies are leading developments.

By contrast, in developing countries, electronic money applications used via mobile phone and developed by mobile phone operators create new opportunities to support economic activity. There is a need for appropriate regulation and supervision by authorities in order to ensure the reliable functioning of the applications and to enable further development of the service. The future of mobile phone payments is thus twofold, lying both in NFC-based payments and in money transfers. The expectations for mobile phone payments seem set to be finally fulfilled.

Keywords: mobile payments, mobile phone payments, proximity payments, remote payments, money transfers

Systemic importance of financial institutions

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Jukka Vauhkonen
Economist
Financial Markets and Statistics

Suspension of the activities of a systemically important financial institution would in all probability by seriously detrimental to the financial system and, indeed, the economy as a whole. Authorities seek to identify systemically important financial institutions in advance, during normal times, before the emergence of crisis situations. Financial market integration means that the problems of an individual financial institution are more likely than before to have a knock-on effect on the financial systems and economies of more than one country. To enhance cross-border cooperation in crisis management authorities need a common view of the systemic importance of cross-border banking groups and their constituent parts in different countries.

The financial sector is one of the most regulated and supervised of economic sectors, the primary aim being to prevent banking crises that could impose enormous costs on national economies. Studies indicate that the cumulative costs of banking crises could be as much as several tens of percents of a country's annual GDP. A well-known study estimates that the Finnish economic and banking crisis of the early 1990s cost the country's economy some 22–45% of GDP in terms of the value of lost output.[1]

The potentially high social costs of crises and the need to develop readiness for crisis management make it vital to identify systemically important financial institutions. There is no firmly established definition of what actually constitutes a systemically important financial institution. In this article it is taken to mean a financial institution the disruption of whose operations would with a high degree of probability cause serious problems for the financial system and the economy as a whole. Systemically important financial institutions are most often banks or banking groups. It is, however, possible that problems with insurance companies or hedge funds, for example, could in extreme situations trigger a systemic financial crisis with serious macroeconomic implications.

The responsibility for saving a bank in crisis lies primarily with its owners. However, the authorities charged with supervising the stability of the financial system, primarily central banks, financial supervisors and finance ministries, also have to be prepared for the sort of systemic crisis for which no private sector solution can be found. In October 2007, the Ecofin Council adopted common operating principles for the management of cross-border financial

[1] Hoggart – Reis – Saporta (2002) Costs of banking system instability: some empirical evidence. Journal of Banking and Finance. Vol. 26, p. 825–855.

The use of tax payers' money for crisis management can only be considered under very exceptional circumstances.

crises within the EU.[2] These indicate that the use of public funds in the resolution of financial crises cannot under any circumstances be taken for granted. The use of tax payers' money to manage a crisis is possible only if no private solution can be found and the crisis seriously threatens to destabilise the entire economy. It is, however, not possible to define in advance under precisely what conditions and at what stage of a crisis public funds would be used in crisis management; it would, however, be an issue only under very exceptional circumstances.[3]

As a result of cross-border restructuring in the banking sector, subsidiaries and branch offices of foreign banks have gained a significant position in the banking market in many countries. In Finland, for example, two of the three major banking groups operating in the country, Nordea Bank Finland and Sampo Bank, are owned by foreign banks. If these banks, or their foreign parents, were to go into crisis, this would pose a serious threat to the stability of the financial system in Finland.

Management of cross-border banking and financial crises requires cooperation between the authorities in all the affected countries. However, there is not much current legislation at EU level in this area. The situation is a problem, particularly for those countries where subsidiaries or branches of foreign banks are systemically important. The Bank of Finland has suggested that EU legislation on financial crisis management should be developed with a view to reinforcing the position of host country authorities in crisis management concerning systemically important subsidiaries and branches of foreign banks.[4] The development of EU legislation brings us back to the need for a definition of systemically important financial institutions. Cross-border cooperation in crisis management is easier if the authorities already have in advance a shared view of the systemic importance of a banking group or its constituent parts.

We shall look next at the methods developed in recent years for identifying those banking groups whose collapse would have serious implications for the entire European financial system. After that we shall consider the channels through which the collapse of systemically important banks would impact on the rest of the financial system and the real economy. Finally, we shall look at the EU's new common analytical framework for assessing the systemic implications of cross-border financial crises.

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2 Ecofin Council press release 9 October 2007.

3 Overly generous use of public funds in managing financial crises could lead to the problem of moral hazard whereby financial institutions could take excessive risks in their business operations if their senior management and shareholders were to receive large rewards for success while at the same time believing the tax payer would cover the costs of unsuccessful risk-taking.

4 Bank of Finland Bulletin special issue, Financial stability 2007, p. 56.

Large and complex banking groups

The European banking sector has recently gone through a period of rapid consolidation, particularly in the last ten years. This process is reflected in the faster growth in the balance sheets of the largest credit institutions at national level in EU member states relative to average balance sheet growth for credit institutions as a whole (Chart 1).

Suspension of operations by a large banking group operating in several countries would pose a considerable threat to financial system stability in more than one country. We therefore need a methodology that can identify those banking groups in respect of which the probable harmful effects of operational disruption would be the largest.

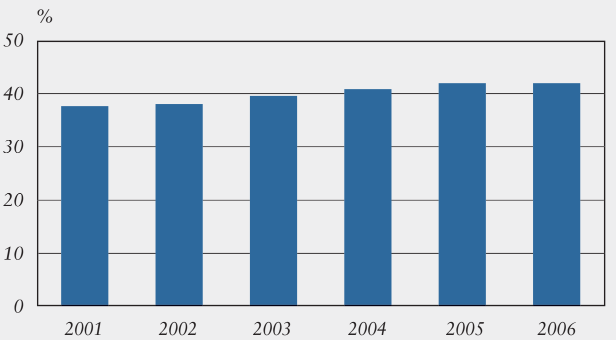
The most commonly used indicator of the size of a banking group is its balance sheet. This is, however, a rather imperfect indicator when it comes to gauging a banking group's systemic importance. It could, for example, be prominent in retail banking, but if it has few connections with the rest of the financial system its systemic importance could be limited. On the other hand, a banking group with a smaller balance sheet could be systemically more important if it has a lot of links with other banks. In addition, a growing share of banks' income comes from off-balance-sheet operations in fields such as derivatives trading. When identifying systemically important banking groups, it is important to use other indicators as well as the balance sheet so as to gauge their significance in different business areas.

The European Central Bank has developed a method for identifying large and complex banking groups (LCBGs) operating in the euro area, so they can be given special attention in the ECB's monitoring of the banking sector.[5] For identifying these types of banking group, the ECB uses 19 commonly defined indicators based on publicly available data. These provide a fairly comprehensive description of the scope of banking groups' operations in retail banking and securities-based activities as well

[5] ECB (December 2006) Financial Stability Review, Identifying large and complex banking groups for financial system stability.

Chart 1.

Combined balance sheets of an individual country's five largest credit institutions relative to the balance sheets of all credit institutions in the country (weighted average of euro area countries)



Source: ECB (October 2007) EU banking structures.

as on the interbank lending and deposit markets. Using advanced statistical methodology, the ECB has identified 36 LCBGs operating in the euro area. In 21 cases the home country of the group is a member of the euro area. The other 15 are from outside the euro area, primarily from the United States and the United Kingdom.

The ECB's list includes only a very small proportion of the over 6,000 financial institutions operating in the euro area. When identifying the banks and banking groups that are systemically important to the financial systems of Finland and the other Nordic countries, we should focus attention on the largest banking groups in these countries.

Consequences of suspension of operations by a banking group

In Finland, as in many other countries of Europe, the national banking system is highly consolidated. For example, the combined share of retail deposit and lending markets held by the three largest banking groups operating in Finland (Nordea Bank Finland, OP-Pohjola Group and Sampo Bank) is close to 80%.

Operational disruption at a bank with a large share of the market would probably have serious implications for the bank's retail customers.

Suspension of operations by a bank with a large share of the market would probably have serious implications for the bank's retail customers. For example, survey data indicates that almost 70% of Finnish micro-enterprises with less than 10 employees and around 45% of small companies with 10–49 employees use to a significant degree the services of just a single bank.[6] It is likely that a large proportion of these companies would experience difficulties in quickly finding an alternative source of finance if their main bank was to suspend operations. Suspension of the bank's payments traffic would also make it hard for consumers to pay for their daily purchases of goods and services if they were unable to use their debit/credit cards or ATMs. In addition, termination of a bank's operations would lead to losses for its creditors and for those depositors with deposits not covered by a deposit guarantee scheme. Depositors with deposits covered by a guarantee scheme would probably also suffer, as there could be a fairly substantial delay between the bank going into liquidation and the repayment of deposited funds. Under Finnish law, the Deposit Guarantee Fund must meet the claims of protected depositors within three months of a bank's going into liquidation.

The macroeconomic impact of suspension of operations by an individual financial institution is most severe when it also leads to the failure of other financial institutions or to a serious weakening of either their capital adequacy or their liquidity. When identifying systemically

[6] Confederation of Finnish Industries, Ministry of Trade and Industry and Bank of Finland report Yritysten rahoituskysely 2007 (Business finance survey, in Finnish only), www.suomenpankki.fi/fi/julkaisut/selvitykset_ja_raportit/rahoituskyselyt/index.htm.

important financial institutions it is essential to examine the links between different institutions, particularly on the interbank credit market and in payment systems. We should also ideally seek to assess the direct or indirect real economic impacts, for instance on output, employment and central government finances.

During the past ten years or so, numerous empirical studies have been conducted in different countries on the spread of problems, ie contagion, between banks. These studies identify two categories of contagion. Direct contagion is, for example, when a bank in trouble is unable to repay loans it has taken from other banks. Direct contagion can also spread between banks via payment and settlement systems. Contagion is classified as indirect if problems at one bank cause investors and depositors to suspect other banks are suffering from similar problems and to withdraw their investments or deposits from these banks.

The majority of studies in this area examine direct contagion between banks via the credit markets. Credit markets are particularly susceptible to the spread of problems, as interbank loans are often both large and unsecured. The studies are based on either real or simulated data on bilateral interbank exposures in the country in question. They typically look at a situation where an individual bank group suddenly ceases trading. Other banks that have lent to it will then suffer loan losses, or, in the worst case, collapse themselves. The scale of a bank's systemic importance is arguably reflected in the proportion of the country's banking system that would collapse as a result of this sort of contagion.

It is very rare that the suspension of trading by a banking group comes as a surprise to other banks. There are admittedly some exceptions, the best-known being the bankruptcy of the British bank Barings in 1995. In most crisis situations, the problems of the bank in difficulties become known gradually, which allows other banks to reduce their risks relating to exposures to the problem bank. The results of these studies should be treated with some caution, not least because the available data on the interbank credit market is often very inadequate. Nevertheless, they are presumably at least indicative of the overall picture. In the scenarios studied, contagion from the collapse of an individual banking group rarely causes the collapse of other banks. However, at least in some countries contagion can have an extremely detrimental effect on the stability of the country's financial system.[7] An internal report by the Bank of Finland has examined the risk of interbank contagion via the Finnish

[7] A summary and critical assessment of research results in the area of contagion on the interbank loan markets is provided in Christian Upper (August 2007) Using counterfactual simulations to assess the danger of contagion in interbank markets. BIS Working Papers, No. 234.

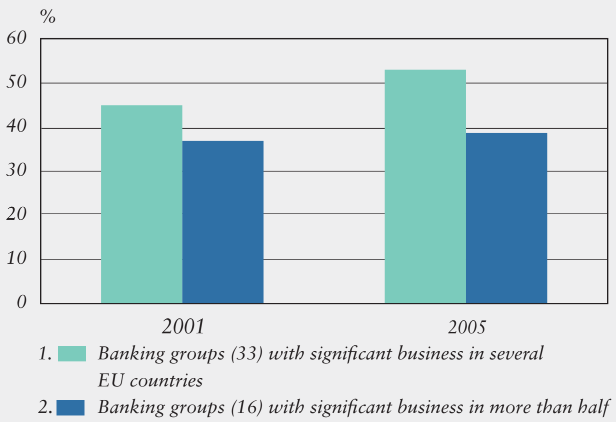
domestic payment systems POPS and PMJ. The preliminary results indicate that the risk of contagion via these channels is small.

The studies on contagion could be underestimating the real risk of direct interbank contagion and hence the systemic importance of the banks studied, as they typically study just one path of contagion at a time. At the same time, the indirect risk from damage to market confidence is very hard to quantify. The recent serious disturbances on the interbank loan market suggest the risk of indirect contagion could be considerable. Moreover, economic history shows that most banking crises have been the result of macroeconomic shocks. In macroeconomic crises, several banks can experience serious problems simultaneously, which increases the risk of contagion.

The recent serious disturbances on the interbank loan market suggest the risk of indirect contagion could be considerable.

Chart 2.

Combined balance sheet of large banks as a proportion of the balance sheets of all banks in the euro area



Source: ECB.

The analytical framework for assessing the impacts of cross-border banking crises

Future bank crises are more likely than in the past to affect several European countries at once as the number and size of large cross-border financial groups continue to grow. It is possible to identify at least 33 large banking groups with significant business operations in several EU countries.[8] Of these, 16 have significant business in more than half of all member states of the euro area. These banks' combined balance sheet has grown rapidly as a proportion of the balance sheets of all banks in the euro area (Chart 2), which makes it all the more important for authorities to prepare for managing cross-border banking crises.

Management of a rapidly progressing crisis can demand prompt action from the authorities. In this sort of situation it is vital that official assessments of the possible impact of the crisis on the financial systems and economies of different countries are as accurate as possible and the authorities all have a similar understanding of what the likely systemic impacts in different countries will be.

The cooperative organs of the central banks and banking supervisors of EU countries have drafted a common analytical framework for assessing the systemic implications of cross-border financial

[8] ECB (March 2007) Financial integration in Europe.

crises. The Ecofin Council has set a target for EU central banks, banking supervisors and finance ministries that the framework be adopted nationally by the end of 2008. The framework presents issues such as the possible channels through which financial crises can have an impact and key indicators that the authorities in different countries are expected to discuss and exchange information on in assessing the impacts of a financial crisis. The common framework provides a structure for discussions between authorities and makes it easier to compare impact assessments by the different authorities. This systematic assessment framework also serves as a check list that can assist authorities to take account of at least most of the possible impacts and channels of impact in their assessments. Comprehensive impact assessments enable more effective crisis management and the minimisation of related costs to society.

The framework also present numerous criteria that can be used in identifying systemically important banks. These do not allow the preparation of a definitive list of systemically important banks for all crisis situations, as the seriousness of a crisis depends on a number of factors, eg the macroeconomic situation. They do, however, make it possible to identify those banks whose serious problems would with a high degree of probability have systemic effects. The criteria and their complementary indicators relate to factors such as the size of a bank and its market share in different markets, the replaceability of the services it provides to its retail customers, its links with other financial corporations, particularly via the interbank loan market, and its importance to the functioning of specific financial market segments and infrastructures.

Summary

The largest banking groups operating in Finland are probably systemically important due to their large share of the market. Suspension of their operations would have an immediate very negative effect on their retail customers and, by extension, on the country's economy as a whole.

The largest banking groups operating in Finland are probably systemically important due to their large share of the market.

It is important to bear in mind that the primary responsibility for saving a bank in crisis lies with its owners. Public funds are used in managing a crisis only if no private sector solution can be found and the likely macroeconomic costs of the crisis are very high. The primary purpose of using public money is not to save the bank, but to minimise the costs to society.

Recent years have seen the development of methods for identifying systemically important financial institutions and assessing the systemic impacts of financial crises, and the publication of numerous studies on the contagion effects of bank collapses. The new methods and research can be applied in a number of ways. These include stress testing, the targeting of limited supervisory resources and the development of cross-border crisis management cooperation. There is, however, still a lot to be done in further development of methods for assessing the impacts of financial crises. There is a particular need for more research to develop methods to help authorities make more reliable assessments of the potential impacts of crisis situations on the real economy.

Keywords: banking crises, large and complex banking groups, contagion, crisis management

Organisation of the Bank of Finland

1 May 2008

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Suomen Pankki
Bank of Finland
PO Box 160
FI-00101 HELSINKI
FINLAND

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