



BANK OF FINLAND BULLETIN

EUROJÄRJESTELMÄ
EUROSYSTEMET

2 • 2012

Financial stability



Contents

Bank of Finland Financial Stability Report.....	3
Summary.....	4
Operating environment.....	7
Banking and insurance sector.....	19
Financial market infrastructure.....	33
Financial system policy.....	39
Appendix.....	52
<i>Karlo Kauko</i> Countercyclical capital buffers in Finland.....	53
<i>Päivi Heikkinen – Kari Kemppainen</i> Changes in payment and settlement systems require effective risk management.....	61
<i>Juha Kilponen – Helinä Laakkonen – Jouko Vilmunen</i> The effects of debt crisis-related policy decisions in European sovereign bond markets.....	67

Cover picture depicts the national motif
on the Slovenia's 1 cent coin: A stork

Bank of Finland Bulletin 2 • 2012
Vol. 86
Published 31 May 2012
The Bank of Finland Bulletin is published
five times a year.

Editor-in-Chief
Erkki Liikanen

Steering Group
Päivi Heikkinen
Hanna Putkuri
Jouni Timonen
Jukka Vauhkonen
Kimmo Virolainen

Authors

Eeva Alho	Hanna Putkuri
Jyrki Haajanen	Pertti Pylkkönen
Päivi Heikkinen	Eero Savolainen
Kari Kemppainen	Heli Snellman
Risto Koponen	Katja Taipalus
Jenni Koskinen	Mervi Toivanen
Marko Myller	Jukka Vauhkonen
Jarmo Pesola	Hanna Westman

Technical assistants (texts, charts, tables)
Nina Björklund
Jonna Elonen-Kulmala

Translated and edited
by the Bank of Finland Language and
Publication Services

Subscriptions
Email: SPjulkaisut@edita.fi

Printed
Edita Prima Oy, Helsinki 2012

The contents of the Bulletin may be freely
quoted, but due acknowledgement is
requested.

ISSN-L 1796-539X (print)
ISSN 1796-5578 (online)

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

Bank of Finland Financial Stability Report

Soundly functioning financial and payment systems are essential for ensuring balanced development of the entire national economy. A stable financial system is capable of operating beyond reproach, of handling its basic tasks, such as the undisturbed transmission of finance and payments, pricing of financial instruments and efficient distribution of risk. Furthermore, the risk-bearing capacity of the financial market agents and public confidence in financial institutions and the financial markets must be sufficient to endure even larger disruptions in the operating environment.

One of the tasks of the Bank of Finland is to promote the stability, reliability and efficiency of the Finnish financial system and to participate in its development. The Bank's efforts are integrated with the objectives of the European System of Central Banks and also require close cooperation with other authorities.

The Bank's task is to evaluate the stability of the financial system, as a whole. The Bank evaluates the potential systemic risks and their sources within the financial system and the operating

environment of the financial institutions, the risk-bearing capacity of the domestic banking and insurance sector, the reliability and effectiveness of the payment and settlement systems critical to Finland as well as the measures necessary for preventing risks and strengthening the financial system.

This edition of the Bulletin, publishing the Bank of Finland's Financial Stability Report, is intended for all financial market agents, other authorities and the public to provide information and promote discussion on relevant topics. This serves the purpose of ensuring that these parties can take financial market conditions and stability outlook into account in their operations. In addition to the stability assessment, this issue of the Bulletin contains three other articles which cover some core special themes, from the point of view of financial stability and the development of the system.

The Bank of Finland has published its assessment of financial stability since 1998. Information presented in this report is based on data available on 02 May 2012.

Summary

Finland's financial system has functioned reliably in a challenging international operating environment. The stability of the financial system in the euro area was hanging in the balance towards the end of 2011. The stability situation improved in the early months of 2012, when the sovereign debt crisis entered a calmer phase in Europe and in many member countries of the euro area, in response to the balancing measures already applied. Investor confidence in the ability of some euro area governments to service their debts does, however, remain fragile.

Towards the end of 2011, the euro area faced the threat of a banking liquidity crisis. The threat receded somewhat during spring 2012, due to the strong measures taken by the ECB, in particular its two 3-year refinancing operations. Although many banks have strengthened their capital and liquidity positions, there still remain banks that are dependent on central bank refinancing and whose ability to lend is impaired.

The negative interlinkages between excessive public debt and the stability of the banking system have deepened. In countries suffering from the debt crisis, banks have increased their investments in their own country's government bonds. This has eased the financial position of the governments concerned, but increased the banks' exposure to the related credit and market risks.

The biggest risks to the stability of Finland's financial system are external in origin. An escalation in the debt crisis would impact on the Finnish economy through a decline in exports and greater difficulties for businesses in acquiring market-based funding. Although the risk

of a deterioration in the availability of short-term funding for Finnish banks has receded somewhat, an escalation in the crisis would impair financial institutions' access to long-term market-based funding.

In international comparison, the capital position of Finnish banks is strong. The majority of banks' own funds comprise common equity Tier 1 capital, which has the highest capacity to cover losses.

Finnish credit institutions' combined ratio of equity to non-risk-weighted assets (the equity ratio) has, however, clearly declined in recent years. The trend has been different in different institutions. Some banking groups have shifted their business onto the balance sheets of their subsidiaries operating in different countries, with the aim of using their capital more effectively. Thus, the equity ratios of Finnish credit institutions are also affected by the business decisions of international groups.

The Finnish banking system is concentrated: the three largest banking groups' share of the combined balance sheet and key banking activities of the sector as a whole is considerable. The concentration in the banking sector poses a long-term risk to the Finnish economy, as serious problems in a single major bank or group could damage the entire banking system and national economy. The risks of internal contagion in the Finnish banking system are, in fact, substantial.

The infrastructures of critical importance to Finland's financial system – payment and settlement systems and marketplaces – internationalised rapidly.

Adopting the use of international infrastructure makes it possible to broaden the field of operations and achieve benefits of scale. At the same, it is clear that the ability to exert influence and the survival of familiar, often high-quality services cannot be guaranteed.

Finland's current account moved into deficit in 2011. Thus Finland, as an economy, has begun to accumulate external debt. Finnish household debt has grown continuously since the turn of the millennium. These are worrying developments in a situation where the structure of Finland's economy is becoming more fragile.

Experiences from numerous economic and financial crises have shown that the stability risks related to indebtedness need to be recognised and dealt with by strong policy measures at a sufficiently early stage. The risk-bearing capacity of Finland's financial system and economy needs to be systematically reinforced if future financial crises are to be prevented as effectively as possible.

Based on the stability analysis, the Bank of Finland recommends the following measures:

1) The indebtedness of Finnish households should be held in check by increasing awareness of interest rate risks and of the risks attaching to large debts and the various different loan products. Banks must abide strictly by the Financial Supervisory Authority's recommendations on assessing the debt servicing ability of housing loan applicants and being cautious regarding loan-to-value ratios of over 90%. Banks and authorities should also adopt a cautious attitude towards the amortisation-free and interest only

housing loans that have become common in some countries.

2) Finnish authorities should be equipped with discretionary means to moderate excessively rapid growth in total lending and housing loans, at least. There is also reason to assess whether the authorities need discretionary means to restrict excessive growth in bank balance sheets and short-term market funding, among other things.

3) The steps taken to secure the long-term sustainability of Finland's general government finances should continue to be pursued in a determined manner. The long-term sustainability of the public finances is essential to the stability of the country's financial system.

4) Flexible access to funding for Finnish businesses needs to be secured. In developing the national capital markets, care needs to be taken to ensure that infrastructure services aimed at the financial markets continue to be both efficient and reliable and are flexibly available to the different market participants.

5) Supervisory authorities should more closely follow balance-sheet growth and declining equity ratios in credit institutions. Banks operating in Finland differ in terms of their structures and business models, which places special demands on regulation and supervision.

Helsinki 4 May 2012



Pentti Hakkarainen
Deputy Governor
Bank of Finland

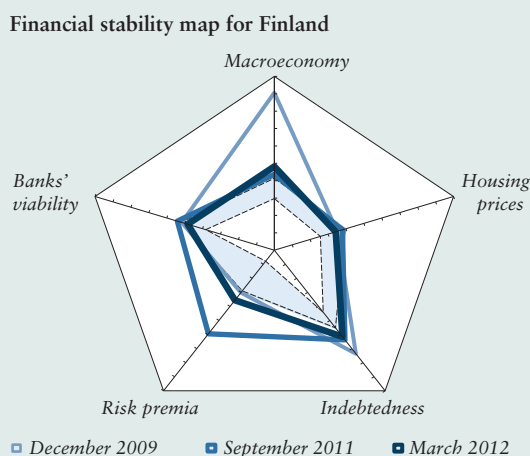
The biggest domestic risks to Finland's financial system relate to developments in debt and the real economy

The stability of Finland's financial system at any given moment can be illustrated by the 'stability map' presented in the attached chart, which summarises the trends in relevant key indicators over approximately the past two and a half years. In the chart, the further the pentagon is from the origin, the weaker the macroeconomic outlook and the higher the risks and the stress. The blue zone portrays the two middle quarters of the indicator's previous values.¹

The upper angle of the stability map illustrates the macroeconomic situation in Finland based on the forecast speed of growth in GDP. The trend in the domestic economy depends on

¹ For details on the indicators and the technical design of the chart, see *Kaukoranta, I (2010) Raboitusmarkkinoiden vakauden visualisointi ('Visualising financial stability'), BoF Online 8/2010 (in Finnish only).*

Chart.



Sources: NASDAQ OMX Helsinki, banks, Statistics Finland and Bank of Finland.

international developments in both the macro economy and the financial markets. The financial crisis of 2008–2009 had a strong negative impact on Finnish GDP, which is reflected in the map as a large variation in the macroeconomic dimension. The macroeconomic situation in spring 2012 is slightly weaker than in autumn 2011 on account of the sluggish outlook for the euro area.

The angles on the right side of the map illustrate developments in long-term structural threats to stability. The trend in housing prices has levelled off over the past year and prices have come down relative to the average earnings of wage earners, which is reflected on the map as a reduction in the points total for this dimension.

According to the stability map, the biggest domestic risk

focuses in the present situation around indebtedness. Although private sector debt has, since 2009, declined relative to GDP, the substantial level of indebtedness relative to the long-term historical trend indicates that the risks have grown.

The angles on the left of the map illustrate the risk-bearing capacity of the financial system and bottlenecks in financial intermediation. The relevant indicators are the stress index for the Finnish banking sector and the interest differentials (risk premia) on companies with AAA and BBB credit ratings, which indicate their risk-bearing capacity and access to market-based funding.

The escalation of the debt crisis towards the end of 2011 slightly raised the banking sector stress index, but it had a much stronger effect in pushing up risk premia, indicating a deterioration in access to finance. Compared with September 2011, developments in the early months of 2012 have been positive, with both indicators revealing that the situation is stabilising. A renewed escalation of the debt crisis could, however, rapidly reduce the risk-bearing capacity of the financial sector and access to finance.²

² For details on the macroeconomy, financial intermediation, debt accumulation and housing prices, see the chapter 'Operating environment', and for the state of the Finnish banking sector, see the chapter 'Banking and insurance sector', both below.

Operating environment

Strong actions taken in Europe at least temporarily calmed the euro area sovereign debt crisis in early spring 2012. A sustainable solution to the debt crisis requires determined implementation of necessary adjustment measures particularly in countries suffering most from the crisis, as well as strong recovery in economic growth. If adjustment measures and structural changes remain inadequate, the crisis may re-escalate. The main risks to the Finnish financial system remain external in origin. However, household indebtedness displays certain features that give cause for concern.

The overall sentiment of European financial markets turned positive in the first months of 2012, as strong economic policy actions taken towards the end of 2011 succeeded in breaking the prevailing spiral of market distrust. Financial markets actually recovered in the early part of 2012, as market

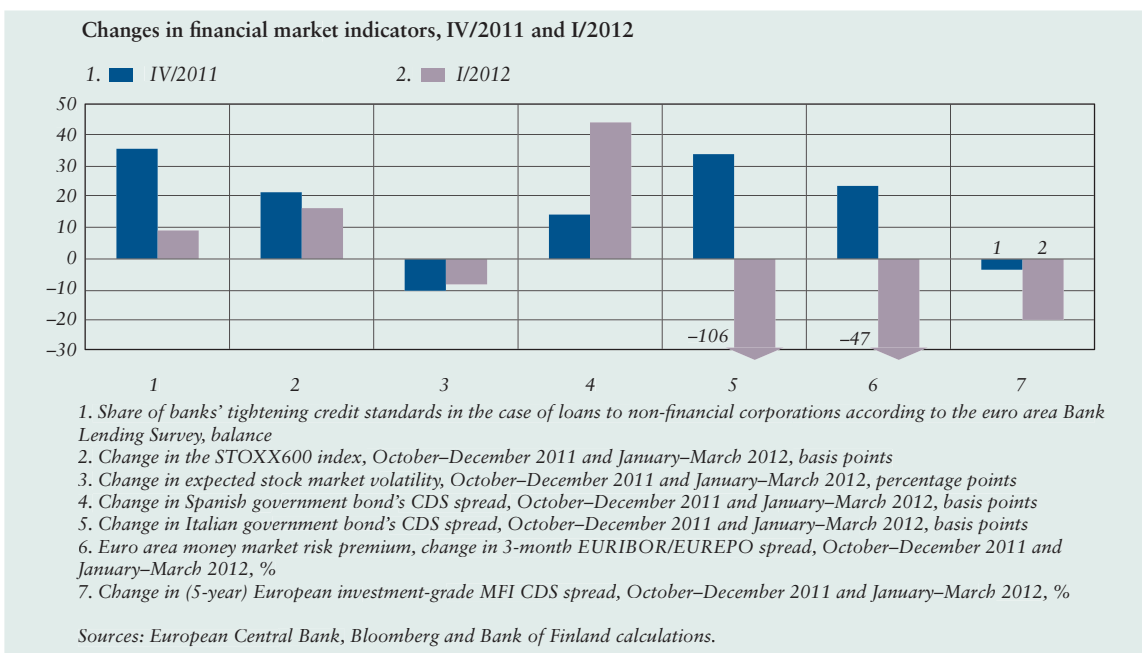
liquidity was restored, stock markets rebounded and CDS spreads in government bond markets narrowed (Chart 1). However, the positive trend in euro area financial markets came to a halt in April 2012.

Favourable financial market developments have not been reflected much in variables for the real economy. Growth in the euro area MFI corporate loan stock, for example, remained modest in the first quarter of 2012. Consequently, in its forecast released in March 2012, the Bank of Finland revised downwards its expectations of economic growth in EU20 countries in 2012.¹ According to the forecast, economic growth in these countries will decline in 2012.

The three-year longer-term refinancing operations conducted by

¹ Bank of Finland Bulletin 1/2012.

Chart 1.



the European Central Bank (ECB) facilitated the difficult financing situation of euro area banks, removing financial market concerns about banks' immediate liquidity crisis. Nevertheless, the position of European banks remains divergent, with weak banks still dependent on central bank refinancing. As regards banks with high credit ratings, unsecured debt issues implemented in early 2012 point to partial normalisation of the financial markets.

European banks have improved their capital adequacy in accordance with the recapitalisation requirements of the European Banking Authority (EBA). Recapitalisation bolsters banks' risk resilience and ability to provide credit to the private sector, thereby boosting economic growth.

In the first quarter of 2012, lending by European banks grew more slowly than in the fourth quarter of 2011. Differences across countries are

significant. In crisis countries, there are signs of banks' tightening corporate lending and credit standards. Countries with high corporate indebtedness and a large relative amount of bank loans held by non-financial corporations are particularly vulnerable (Chart 2).

Financial system risks still considerable

Despite an improvement in the situation, the debt crisis has not yet been resolved with finality. The main risk lies on the downside, with the prospect of further erosions in governments' debt-servicing ability. This slower-than-expected economic growth could trigger a negative spiral where access to finance would be impaired for financial institutions, households, non-financial corporations and the general government, where investors would sharply cut back their risk-taking and where the outlook for the real economy would deteriorate. These factors would lead to mutually reinforcing negative developments (Chart 3).

The respective standing of banks and governments are still strongly intertwined, and the feedback loop has even strengthened to some extent following banks' acquisitions of more government bonds. A worsening debt crisis would increase banks' impairment losses on government bonds, while weaker-than-forecast economic growth would burden the banks' operating environment and increase traditional credit risks. A deteriorating debt crisis would constrain access to market finance for both banks and governments, thus increasing the cost of

Chart 2.



finance. Excessive and unnecessarily swift deleveraging in the banking sector poses another potential threat that could hinder both lending to the private sector and nascent economic growth (Box 2). Oversized cuts in bank lending would be likely to hit hardest small and medium-sized enterprises, whose chances of accessing alternative sources of finance are limited.

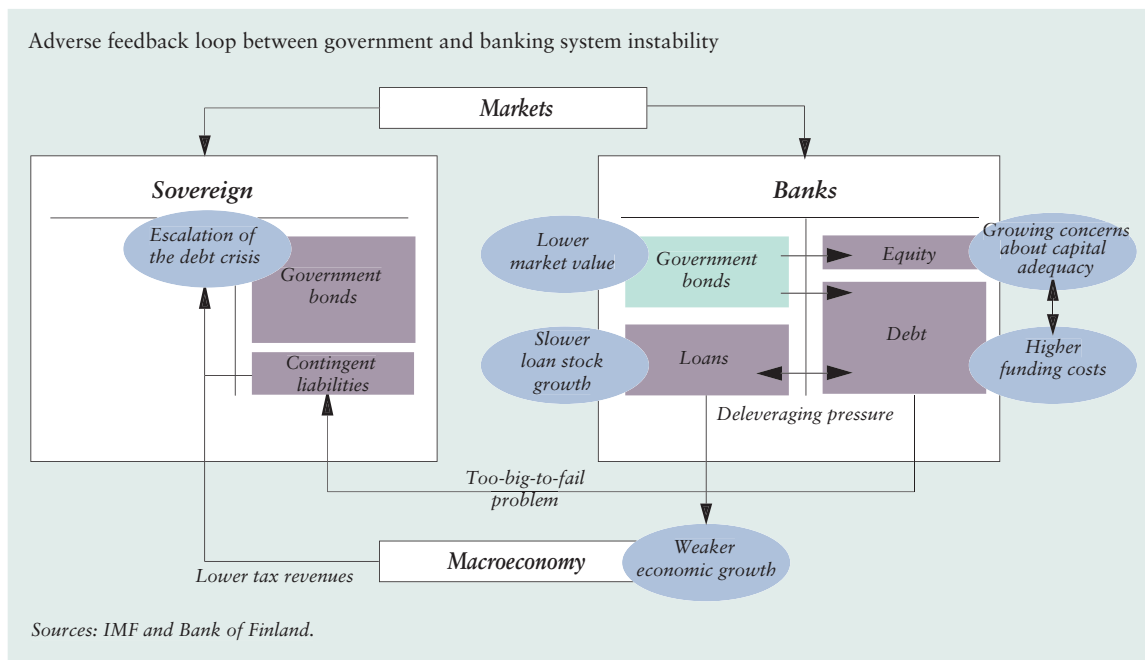
If the sovereign debt crisis were to re-escalate, its management and stabilisation would be increasingly difficult, as governments' fiscal room for manoeuvre has considerably diminished. From the perspective of stable European developments, it is important to carry out all promised adjustment measures without delay, simultaneously taking care of ensuring the stability of the banking system. This is crucial not only for the promotion of

economic growth, but also for the reason that a prolonged drastic tightening of bank lending would lead to a change in financial transmission mechanisms with the concomitant danger that 'shadow banking', operating outside the reach of regulation, could increase its share of financial intermediation.

Finland is not isolated from fluctuations in international financial markets; rather, a renewed escalation of the debt crisis would strongly impair the outlook for Finland's GDP growth, scale down exports, increase unemployment and hamper the acquisition of market funding by non-financial corporations and financial institutions.

Escalation of the debt crisis would pose a problem for Finland, as the structure of the Finnish economy is becoming markedly more fragile. The

Chart 3.



recent turning of the current account to deficit is one indication of increased vulnerability in the Finnish economy.

In the baseline scenario, with no anticipation of a renewed escalation of the European debt crisis, economic growth in Finland is expected to remain muted in the immediate years ahead.² Domestic growth prospects are depressed particularly by export performance, which lags clearly behind world trade developments. Investment growth is predicted to be more sluggish than in the previous year, with housing investment expected to increase slowly and not to pick up until 2013. Improvements in the employment situation have slowed, and weak GDP growth is forecast to lead to a slight increase in unemployment in 2012.

Better-than-expected economic performance may also entail risks

With interest rates remaining low, fast-growing countries may become exposed to risks related to economic overheating over the medium or the long term in respect of asset prices, increasing indebtedness and stronger risk-taking. Investments in interest-earning, higher-risk assets could reallocate capital, for example, to emerging economies, which would add to overheating pressures in these countries. Therefore, particular attention needs to be devoted to a timely absorption of excess liquidity from the financial system.

On the upside, more favourable developments than anticipated could also interrupt the implementation of necessary restructuring and deleverag-

² Bank of Finland Bulletin 5/2011: Economic outlook.

ing, thereby leaving the structures of the general government and the banking sector exposed to future shocks. The banking sector, for example, faces the danger that non-viable banks permanently dependent on central bank refinancing will be shored up by public funds over extended periods of time.

In an upside scenario, Finland's systemic risks would be related to intensified debt accumulation especially in the household sector. The danger of overheated asset prices could not be excluded either.

Corporate demand for external financing increased slightly

Finnish listed non-financial corporations' profitability is estimated to have weakened in response to decelerating economic growth in 2011.³ As the anticipation is for slow GDP and export growth to continue, no significant increase in investment demand and thus in external corporate financing is in view.

The annual number of corporate bankruptcies has remained at about 3,000 since 2009, compared with an average of fewer than 2,300 prior to the onset of the global financial crisis, in 2005–2007. Finnish non-financial corporations' Expected Default Frequency rose again at the end of 2011 close to the level seen in 2009, but has slightly fallen since (Chart 4).

Growth in domestic banks' corporate loan stock has re-accelerated to some extent since the slowdown that

³ The assessment is based on the pre-tax profits of the 30 largest non-financial corporations listed on the Helsinki Stock Exchange.

commenced at the end of 2010 (Chart 5). This is deemed to be due in part to temporary factors. Low investment and strong financial positions will keep non-financial corporations' credit demand relatively small over the longer term. In Finland, there have been no signs of a broadly-based weakening in the availability of credit and other financing (credit crunch) or a threat thereof. Non-financial corporations obtain financing mainly for working capital purposes and for ensuring their liquidity positions.

Overall, the financial position of non-financial corporations is sound: the Finnish corporate sector's net lending amounted to EUR 5.2 billion in 2011. Corporate indebtedness in gross terms still remains at its recent years' level that can be deemed modest by European standards.⁴ Interest-bearing corporate debt totals nearly EUR 120 billion, ie slightly more than 60% of GDP (Chart 6). Outstanding debt relative to the corporate sector's aggregate balance sheet has declined since 2009.

The rise in average interest rates on corporate loans granted by Finnish banks changed into a moderate fall in the latter part of 2011 (Chart 5), with no marked interest rate hike in sight. However, banks seek to take corporate risks better into account in setting interest rate margins on individual loans.

Diversified financing sources must be ensured

Aggravating sovereign funding problems would probably have a crowding-out

⁴ This analysis of Finnish non-financial corporations' relatively low level of indebtedness, presented in the Bank's previous Financial stability review, is still valid. See Bank of Finland Bulletin 2/2011, Box 3, p. 15.

Chart 4.

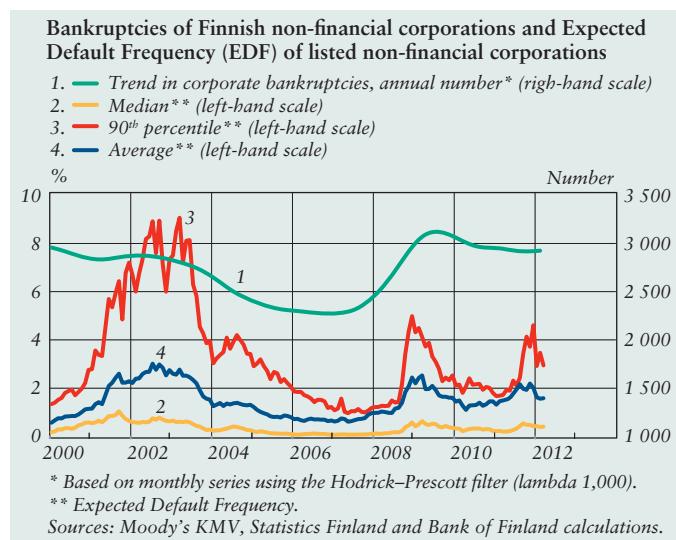
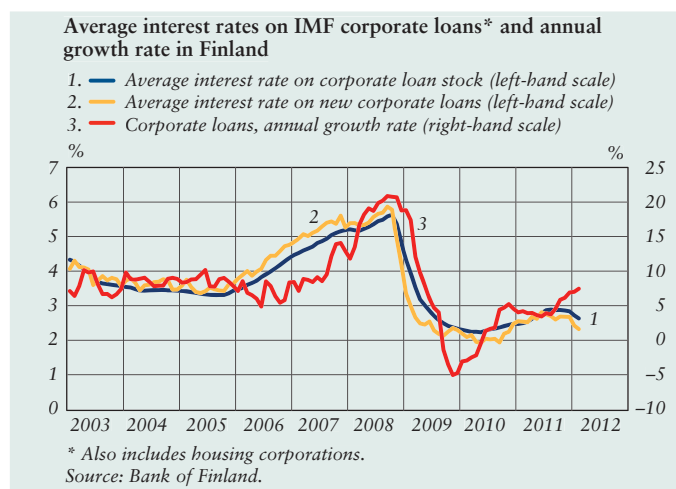
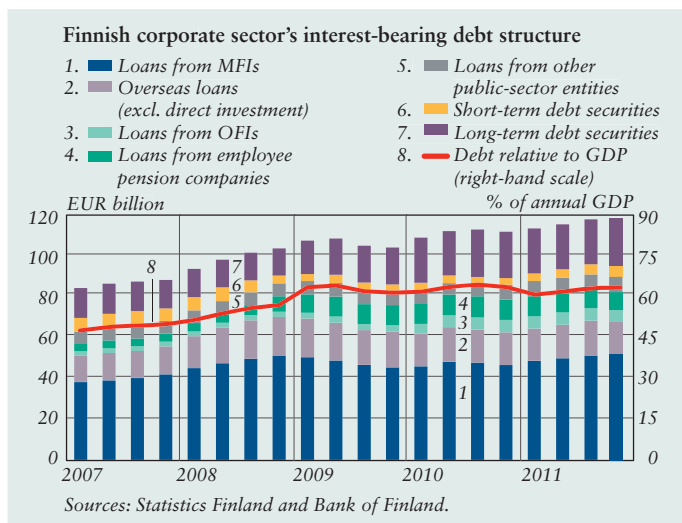


Chart 5.



and cost-increasing effect on financing for Finnish non-financial corporations, as well. The corporate sector has an abundance of different loan agreements due to mature in the next few years; nevertheless, in particular financially sound and competitive non-financial corporations operating on international markets have not – at least for the time being – perceived funding access as a constraint on their operations. In 2011,

Chart 6.



non-financial corporations concluded or rolled over a number of credit line agreements. Even so, the most growth-oriented small and medium-sized enterprises have increasingly suffered from payment difficulties and encountered problems in the availability of finance.

Regulatory reforms concerning financial institutions are also likely to increase, at least slightly, the cost of bank funding for non-financial corporations. The implications may be felt mainly by small and medium-sized enterprises that are essentially dependent on local bank financing. Their export finance, among others, could be hampered, especially if exports were to rebound promptly. If financial bottlenecks begin to surface, readiness to take appropriate policy action must be in place.

Over the longer term, deterioration in Finland's real competitiveness could impair the availability of local financing. There is a threat that an ageing low-productive Finland will withstand global competition poorly

and production capacity will migrate abroad. This will weaken the earnings and savings capacity, and the share of foreign ownership in the Finnish corporate sector may increase, which would further lower barriers to overseas relocations of production. In the worst case, the basis of the Finnish economy will be eroded, the country will lose its attraction as an investment target and risk premia for finance to Finland will increase.

The number of heavily indebted households still increased

Realisation in Finland of systemic risks related to household debt accumulation is conversely dependent on the evolution of the same macroeconomic factors that have fuelled households' indebtedness and improved their debt-servicing ability in recent years. Low interest rates, the improved employment situation and households' ongoing confidence in their own finances have maintained credit demand despite uncertainty surrounding the euro area crisis. This has supported the Finnish economy; at the same time, however, risks related to indebtedness have continued to grow. Higher interest rates and increasing unemployment, should they materialise, could force households to reduce their usual consumption and trigger extensive debt-servicing problems if debt accumulation and housing prices were to rise to unsustainable levels.⁵

Finnish households' loan stock at the end of 2011 amounted to almost

⁵ Identification of excess credit growth is discussed in Karlo Kauko's article in this Bulletin.

EUR 110 billion, which is about 107% of disposable income in the same year. If households' estimated share of housing corporations' loans is added to the debt, the debt ratio rises to about 114% (Chart 7). In the European comparison, Finnish households' indebtedness is at the same level as the EU average, but lower than in other Nordic countries (Chart 8).

Although Finnish households' debt burden is not alarmingly high by international standards, recent debt accumulation displays certain features that give cause for concern at national level.

Firstly, the number and relative significance of households that are heavily indebted with regard to their incomes increased throughout the first decade since the turn of the millennium (Chart 9). At the end of 2010, the debt ratio exceeded 500% for about 4.5% of indebted households. These households' average debt amounted to EUR 250,000, in the aggregate accounting for nearly 17% of total household debt. The most heavily indebted households also have the largest interest expenditures, and these households' interest payment burden is most sensitive to interest rate changes.

Secondly, an increasing number of persons with housing debt are heavily indebted in view of their collateral assets. A considerable part of new loans to first-time home buyers have been granted even entirely without any self-financing share.⁶

Thirdly, the bulk of housing loans are tied to variable interest rates, which

⁶ Financial Supervisory Authority (2011) Otantatutkimus henkilöasiakkaiden asuntoluotoista (A sample survey of housing loans granted to personal customers, in Finnish only).

Chart 7.

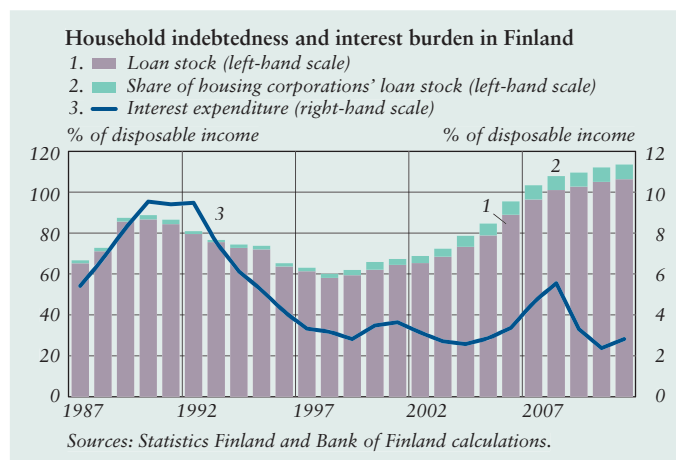
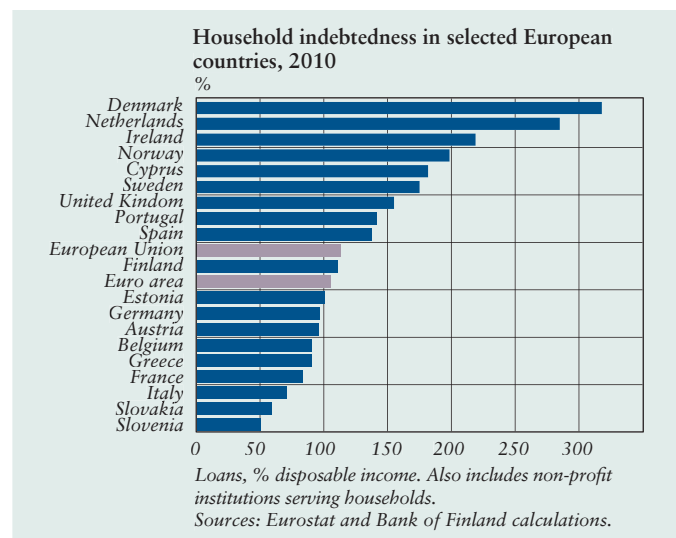


Chart 8.



exposes households to interbank money market disruptions, thus increasing the vulnerability of the economy as a whole to interest rate volatility. In Finland, interest rates on new housing loans are currently among the lowest in the euro area and households' interest expenditures relative to their incomes small, on average (Chart 7). This may involve a risk of over-indebtedness if households are not adequately prepared for a potential increase in interest expenditure.

Indebtedness should be reined in beforehand

Household indebtedness should be reined in beforehand, for example, by increasing awareness of risks associated with large debts and various loan products.⁷ Consequently, since spring 2010, the Financial Supervisory Authority (FIN-FSA) has recommended to Finnish banks that they should be cautious towards loan-to-value (LTV)

⁷ Exerting influence on lending and indebtedness by regulation is addressed in the section 'Financial system policy'.

ratios in excess of 90% in lending for house purchase and assess loan applicants' financial margin in the event of a minimum interest rate of 6% and a maximum repayment period of 25 years. Compliance with these recommendations is important not only for the protection of borrowers but also for financial stability and with a view to ensuring stable developments in the economy as a whole.

Early identification of risks related to household indebtedness is important for a number of reasons. International developments in recent years have shown that lending for house purchase and indebtedness have a key role to play in cyclical fluctuations and that imbalanced trends in credit and housing markets may lead to the build-up and deepening of serious financial and economic crises. During a crisis, interest rates, the employment situation and housing prices may change rapidly, whereas the unravelling of excessive debt levels is a slow and difficult process. Macroeconomic costs arising from large-scale over-indebtedness and debt-driven asset price bubbles are, in fact, invariably high.

Chart 9.

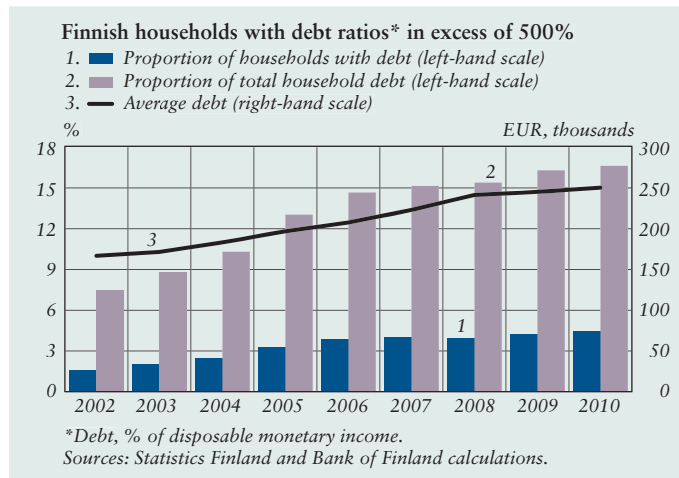
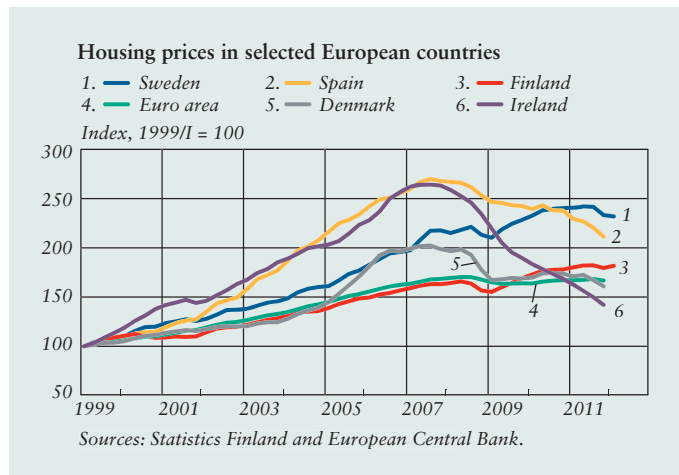


Chart 10.



Housing price rises slowed

Housing price developments have levelled off in Finland in the last twelve months. In recent years, housing prices have risen slightly faster than the euro area average, but prior to 2009 the rise was more sluggish than average. In countries that have run into difficulties in the wake of the financial crisis, the rise in housing prices was rapid before the crisis while the fall has been protracted and considerable during the crisis (Chart 10).

The bulk of estimates concerning Finland do not point to an apparently unsustainable level of housing prices. Such estimates are, however, always surrounded by a high degree of uncertainty. The situation may become more vulnerable in the immediate years ahead, especially if households expect housing prices to continue their rapidly rising trend far into the future or consider recent years' exceptionally low interest rate level as permanent.⁸

Outstanding debt of central and local governments on the increase

Excessive debt accumulation by the public sector has often been one of the most important causes or consequences of economic and financial crises. It is therefore necessary to also assess the financing and debt situation of the Finnish public sector and its outlook from the perspective of financial stability.

Finnish central and local government debt relative to GDP contracted during many years in the first decade since the turn of the millennium. After the recession year of 2009, however, central and local government finances turned negative. The worst year was 2010, when the combined central and local government deficit accounted for almost 6% of GDP. At the end of 2008, central government debt to GDP still remained below 30% but, by the end of 2011, the debt had already risen to nearly 43% of GDP. The local government deficit in

⁸ Lauri Kajanoja (2012) Asuntojen hinnat, kotitalouksien velka ja makrotalouden vakaus Suomessa (Housing prices, household debt and macroeconomic stability in Finland). BoF Online 2/2012 (in Finnish only).

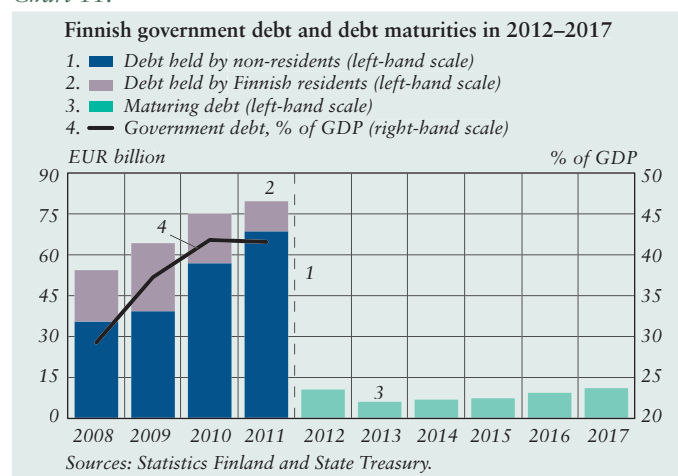
2011 accounted for 5.8% of GDP.⁹ The whole public sector's EDP debt¹⁰ at year-end amounted to EUR 93 billion, ie 48.6% of GDP.

Finnish government net borrowing requirements are estimated at a good EUR 7 billion in 2012. Government borrowing is concentrated on long-term bond markets. The bulk of the bonds are sold to international investors. For example, at the end of 2011, non-resident investors held about 85% of Finnish government debt (Chart 11). At year-end, the duration of government debt was about 3 years, with an average maturity of 5.5 years. Owing to the Finnish government's low level of indebtedness from the European perspective, government bond yields have remained low and government interest expenditure is expected to remain at a good 1% relative to GDP in the years to come.

⁹ Statistics Finland (2012) General government deficit and debt 2011.

¹⁰ EDP debt (Excessive Deficit Procedure) refers to combined consolidated general government debt. EDP debt is used for assessing member states' public finances in connection with the EU's Stability and Growth Pact.

Chart 11.



Local governments have already been in deficit for a number of years, financing their activities and investments by rapidly increasing borrowing. Local governments' loan stock has grown at a rate of almost 10% in recent years, with outstanding debt at the end of 2011 already expanded to well over EUR 10 billion.¹¹

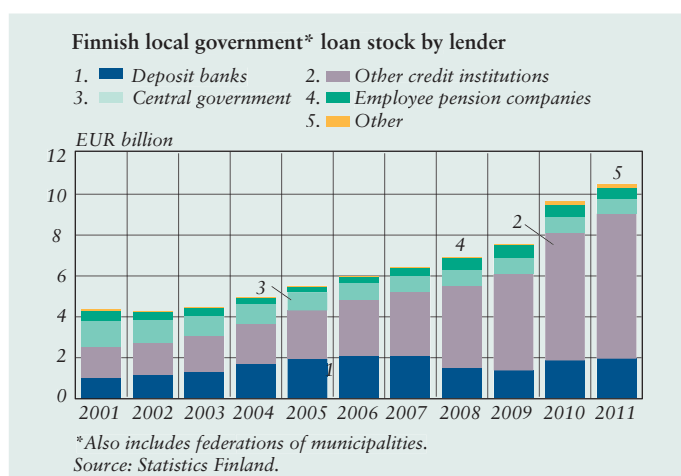
The sources of debt financing for local governments have changed considerably in the last ten years. The role of the central government, banks and employee pension insurance companies as providers of finance to local governments has diminished. Other MFIs engaged in financial intermediation, of which the most important is Municipality Finance owned by the general government sector, have become the main sources of financing for local governments. The share of Municipality Finance in the local government loan stock began to increase strongly in the middle of the 2000s and already accounts for almost two thirds of the entire loan stock (Chart 12). Muni-

pality Finance has been able to finance local governments at more favourable terms and conditions than banks. Its advantageous competitive position is largely based on guarantees issued by the Municipal Guarantee Board. Municipality Finance raises almost all its funding from international capital markets. The crisis has shown that considerable risks are attached to one-sided funding structures and strong balance sheet growth; the company's management and governance must pay particular attention to the control of such risks.

By international standards, external financing for Finnish central and local governments is exceptionally strongly obtained from abroad. Potential crises in the international economy or financial markets could at worst significantly hamper funding for the public sector in a situation where the sector's long-term expenditure pressures remain substantial because of population ageing, among other issues.¹² Improving the long-term sustainability of Finland's public finances is thus indispensable for safeguarding both public-sector financing and the stability of the financial system.

¹¹ Statistics Finland's loan stock data.

Chart 12.



¹² Kinnunen H – Railavo J (2011) Analysis of the macroeconomic effects of population ageing using a general equilibrium model. Bank of Finland Bulletin, Economic outlook 5/2011.

Bank deleveraging both a threat and an opportunity

The debt crisis has brought to light the term ‘deleveraging’, meaning the reduction of debt in balance sheets. As a consequence of the crisis, the need to cut down debt levels applies in principle to all heavily indebted sectors in the economy (such as governments, non-financial corporations and households). However, as banks have a central role to play in the economy as financial intermediaries, concerns about excessive leverage have focused on the banking sector, in particular.

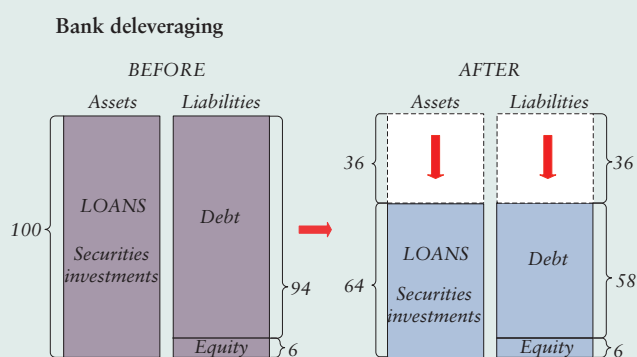
The need for deleveraging is also emphasised by the necessity for banks to increase their equity capital because of the new more stringent capital adequacy requirements (Basel III and the EU capital exercise by the European Banking Authority, EBA) and impairment losses caused by the fairly weak

economic situation and the debt crisis. In addition, banks’ own fund raising has occasionally been very difficult during the crisis. These factors may have restrained banks’ ability to maintain their previous levels of lending.

If banks do not succeed in raising their equity capital adequately, their only means of improving capital adequacy is to shed risk-weighted assets (incl. loans to the general public) (Chart).¹ Economic debate has thus evoked the idea of an excessively sharp contraction in banks’ credit supply, ie a credit crunch.

¹ The capital adequacy ratio is obtained by dividing a bank’s equity capital by its risk-weighted assets. Banks are able to improve their capital adequacy by either increasing their equity capital (increasing the numerator) or reducing its assets, such as loans (reducing the denominator). This box examines only risk-weighted assets.

Chart.



If a bank is unable to increase its equity capital (6), it must reduce its risk-weighted assets in order to improve its capital adequacy. In this simplified example, the bank’s initial capital adequacy is 6% (= 6/100) and after the reduction of risk-weighted assets it stands at 9.4% (= 6/64).
Source: Bank of Finland.

Estimates of the magnitude of banks’ deleveraging needs

In practice, it is difficult to assess the magnitude of balance sheet adjustments implemented by banks, as it is not self-evident how the scale of deleveraging should be calculated. According to analysts’ assessments, European banks’ deleveraging needs amount to EUR 500 bn –3,000 bn.²

There is, however, some evidence of banks’ efforts to improve their balance sheets since the latter part of 2011. European banks have curtailed their dollar-denominated lending and, for example, syndicated loans and project finance at the same time as they have shed balance sheet items with high risk weights (such as investment banking operations), operations outside of the core business area and operations beyond Europe (by selling subsidiaries, for instance). From the banks’ point of view, withdrawal from such operations is an effective means of improving capital adequacy, as in relative terms it leads to major cuts in risk-weighted assets, thus releasing capital.

There are, however, significant differences between countries and banks. Crisis banks have reduced their balance sheets partly in connection with

² For example, BIS Quarterly Review (March 2012). See http://www.bis.org/publ/qtrpdf/r_qt1203.htm and IMF Global Financial Stability Report (2012).

winding-up procedures or restructuring, whereas – thanks to their robust capital positions and easy access to market funding – there have been no significant pressures on Finnish and Nordic banks, for example, to shrink their balance sheets. In crisis countries, pressures on the banking sector to deleverage sharply have been augmented by higher loan losses and almost non-existent possibilities of accessing market finance.

A threat or an opportunity?

It is not clear how great a threat the ongoing deleveraging process at European banks will pose to the real economy. For example, withdrawal from corporate lending by those European banks that have reduced their balance sheets would not appear to have significantly hampered corporate finance at the end of 2011, as other providers of finance have compensated for banks' lower provision of credit to non-financial corporations. For large companies, the improved market situation has also facilitated funding via securities markets. There is no certainty either whether, after all, sales of subsidiaries have mainly consisted of transfers of business operations to other banks or investors that continue the operations as before. Buyers may even be in a better capital position and capable of expanding the operations acquired.

Growth in loans granted by euro area MFIs to non-financial corporations and households slowed in the euro area in January–February 2012, although the pace of growth still remained positive. However, developments in the loan stock are also affected by credit demand, which has been weak in many countries.³

On the basis of data collected by the European Banking Authority (EBA), the plans of large EU banks for raising their core capital adequacy to the required higher level, include only a limited reduction of lending to the real economy.⁴

In general, it would currently appear that slower loan stock growth has not markedly impaired the private sector's situation in Europe as a whole. Differences across countries are, however, substantial.

Balance sheet reduction and deleveraging constitute part of a necessary adjustment process that will have positive effects over the long term. It is rather a question of how and when deleveraging will be implemented and which sectors or geographical areas will be affected by the process. Reduced lending by the banking sector is detrimental to the real

economy if it retards or prevents nascent economic growth. Financing constraints arise if the private sector does not get the funds needed and is therefore unable to make investments supporting economic growth.

Deleveraging is – despite potential adverse effects – necessary, as many private-sector agents and banks are overly indebted. Following the crisis, certain parts of the banking sector (particularly unprofitable banks dependent on subsidies) need to be restructured. Putting bank balance sheets on a sounder footing and implementing structural changes in the banking sector enable the restoration of market confidence and strengthen the stability of the financial sector. If no deleveraging is undertaken, there will be a danger of protracted deterioration in the operating capacity of the banking system, ineffective transmission of credit to the private sector and weaker productivity in the economy.⁵ The challenge is to deleverage (in respect of governments, banks and the private sector balance sheets) in such a way that economic growth will not be jeopardised at the same time.

³ See the European Central Bank's bank lending survey for the euro area, April 2012, http://www.ecb.int/stats/pdf/blssurvey_201204.pdf?813a6211e384b1748952f2902c03e28b.

⁴ See <http://www.eba.europa.eu/News-Communications/Year/2012/The-EBAs-Board-of-Supervisors-makes-its-first-agg.aspx>.

⁵ See http://www.boj.or.jp/en/announcements/press/koen_2012/ko120111a.html/.

Banking and insurance sector

The capital adequacy of the Finnish banking sector has remained strong and the risk bearing capacity good in terms of the systemic risks related to developments in the operating environment. However, the Finnish banking system is exposed to both significant cross-border and indigenous contagion risks. Banks' operating profits are projected to remain unchanged in 2012, as the fall in market rates will pass through to retail interest rates and loan losses will remain higher than usual in the context of the sluggish economic development. In the future, the impact of these factors will recede and the performance outlook for banks will improve in response. A large amount of banks' long-term market funding is due to mature over the next few years. In refinancing it, it is crucial for banks to maintain a diversified funding structure. The performance and solvency of insurance companies has deteriorated slightly in the challenging operating environment.

Banking sector profitability has improved

The performance of the Finnish banking sector has been favourable. Operating profits net of impairment losses on loans and other receivables, which measures the profitability of the primary banking business, remained at the same level as the year before. As impairment losses declined, banks' operating profits increased by 11%, to EUR 2.3 billion.¹

Banks' income posted mixed developments: net interest income and net fee income increased, whereas net

income from trading and investments declined. Growth in total income fell back to 2%.

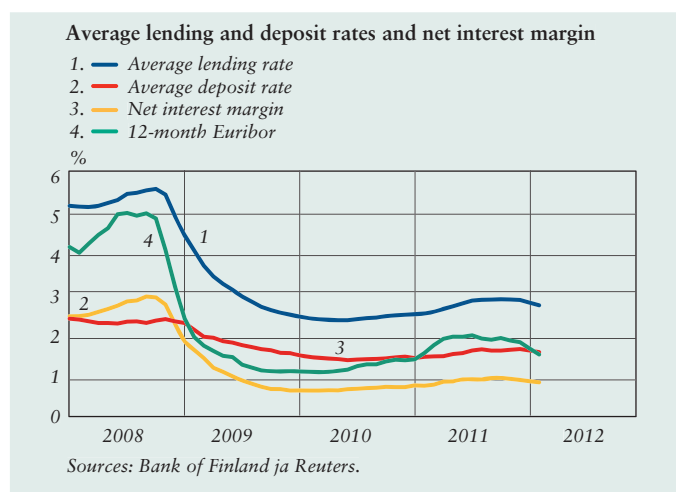
The rise in short-term market rates, which started in spring 2010, fed through to loan rates during 2011, with net interest income (excl. derivatives) growing by 11%. However, the increase in net interest income started to moderate in the latter half of the year, following a downturn in market rates (Chart 13).

Net gains on trading and investments remained below the exceptionally high levels witnessed in 2009–2010. Still, net income was considerably higher in 2011 than in pre-crisis years.

Net fee income increased by 3% in the course of 2011. Fee income from lending and payments continued to grow at a relatively steady pace, but there was a contraction in fee income from savings and investments, which is sensitive to stock market developments.

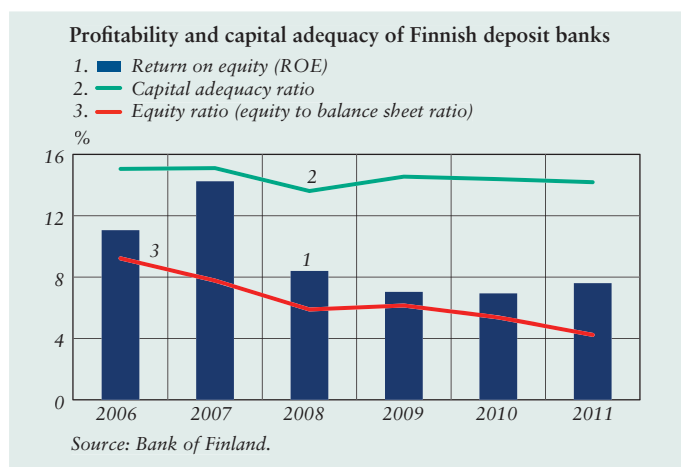
Banks' staff expenses rose by 7%, after a slight decline the year before.

Chart 13.



¹ Incl. the insurance business of financial conglomerates. See also Financial Supervisory Authority (2012): Financial position and risks of supervised entities 1/2012.

Chart 14.



Other expenses posted moderate growth, and total expenses were 4% higher than in 2010.

Net loan losses for the banking sector were halved from the year before. Most of the impairment losses suffered by the banks were related to corporate loans, with households accounting for less than one fifth of the losses.

Notwithstanding the results' improvement, the profitability of the banking sector fell short of the exceptionally high level witnessed in pre-crisis years (Chart 14). In 2007, aggregate operating profits for banks amounted to EUR 3.8 billion and return on equity (ROE) was 14.2%.² In 2011, the ROE ratio fell back to 7.6%. The difference in profitability is even higher if measured by return on assets (ROA), which stood at 0.4% in 2011, against 1.2% in 2007. The lower ROA ratio is attributable not only to the poorer performance of the banking

² Underlying the results' improvement in 2006–2007 was certain significant non-recurring income from a restructuring of the banking sector.

sector, but also to the expansion of banking sector balance sheets, which have doubled since 2007.³

Economic growth and market rates as the key makers of future operating profits

Slackening economic growth, together with a low level of interest rates, will continue to provide for a challenging operating environment for banks over the next few years. However, the Finnish banking sector is expected to remain in good health in view of the surrounding developments. Operating profits for the banking sector are projected to grow moderately over the next few years. Profitability is expected to remain unchanged in 2012 and to improve in 2013.

Net interest income is expected to stagnate in 2012. If interest rates turn slightly up towards the end of 2012, consistent with market expectations, the net interest margin between lending and deposit rates will widen, boosting renewed growth in net interest income. Net income from trading, investments and insurance is projected to remain at a good level.

Due to the efficiency measures undertaken, banks' expenses are projected to grow only moderately. Loan losses are expected to remain clearly below the levels witnessed during the recession of the Finnish economy in 2009–2010.

Banking sector profitability remaining unchanged from the level of

³ This doubling is attributable to the strong expansion of the balance sheet of Nordea Bank Finland (NBF), from EUR 147 billion in 2007 to EUR 399 billion in 2011. NBF accounted for 72% of the balance sheet total of the Finnish banking sector in 2011.

the past few years will bolster banks' capital adequacy, which is projected to remain strong.

The major caveats surrounding the foreseen performance of the banking sector pertain to the operating environment. A lower-than-expected level of interest rates would depress net interest income, while loss of investor confidence would reduce net income from trading and investments, which is always surrounded by a certain degree of uncertainty. Lower-than-projected economic growth would result in higher losses on corporate loans, especially.

Capital adequacy of the banking sector remains strong

The capital adequacy of the banking sector remained strong, although capital adequacy ratios fell slightly from the year before. The capital adequacy ratio stood at 14.2% at the end of 2011, against 14.4% the year before.

Recently, authorities and market participants have highlighted the importance of the Core Tier 1 capital ratio calculated on unrestricted capital of the highest quality. The Finnish banking sector holds capital of good quality, which was reflected in a Core Tier 1 capital ratio of 13.1% at the end of 2011.

Banks' own funds declined by around EUR 600 million in 2011, largely due to the maturation of Tier 2 debt instruments. Correspondingly, the regulatory own funds requirement fell by around EUR 200 million, mainly reflecting a lower capital charge for credit risk. In response, the regulatory

capital buffer of the banking sector contracted to EUR 9.1 billion over the year, from EUR 9.6 billion the year before. This buffer is designed to support unexpected risks inherent in the banking business.

The strong performance of the official measures of capital adequacy based on risk-weighted assets also reflects the low level of risk present in the business models of Finnish banks. However, market participants have started to focus increasing attention on non-risk-weighted measures of capital adequacy. The equity to balance sheet ratio, the equity ratio, for the Finnish banking sector has been on a declining trend ever since the financial crisis. Banks have showed mixed developments, which is largely explained by the internal organisation of business activities in large banking groups. Authorities and banks must also pay close attention to movements in the equity ratio.

Funding and liquidity remain the sources of risk

Deposits have retained their position as the major source of funding for banks. Finnish MFIs' deposits from the public have grown at a stronger rate than loans to the public ever since the latter half of 2010. In 2011, the average annual growth rate for deposits from the public accelerated to 8.6%, compared with a mere 5.9% for loans to the public. The significance of deposits was especially pronounced in the latter half of 2011, when access to market funding was essentially constrained.

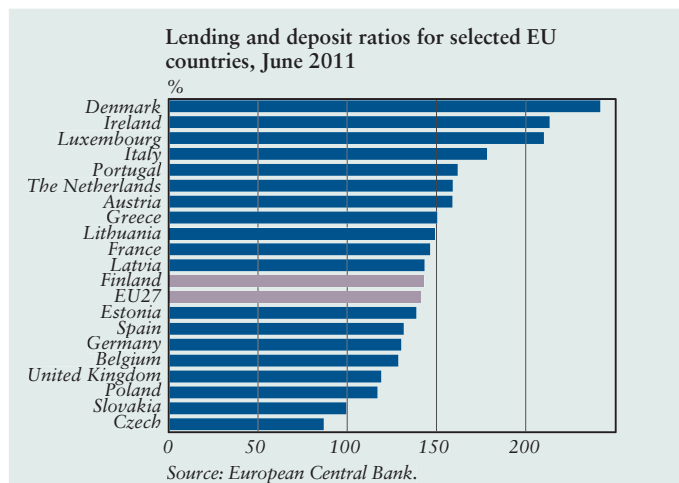
The loan-to-deposit ratio for Finnish banks is close to the EU average (Chart 15). The situation is similar in the Baltic countries, whereas the ratios are clearly higher in the other Nordic countries.⁴ Overall, loan-to-deposit ratios are higher in Europe than in major economic regions outside Europe.

Finnish banks' access to short-term market funding has remained good. Banks have succeeded in raising the amount of debt financing needed in the market at favourable prices. In addition, funding maturities have been extended.

With the exception of the market for covered bonds, the European market for long-term funding practically closed down for the latter half of 2011. Banks were able to raise funding with covered bonds, but at a higher cost due to the uncertainty prevailing in the market.

⁴ The ratio for Denmark was 242% in June 2011. Data for other Nordic countries is not included in the ECB consolidated banking statistics that was used as the source. Other sources indicate that the ratios for Sweden and Norway are also essentially above the EU average.

Chart 15.



In December 2011 and February 2012, the European Central Bank (ECB) offered banks refinancing with a maturity of three years. The immediate effect of these operations on the Finnish banking sector was negligible. Although the amount of central bank liquidity held by the Bank of Finland's counterparty banks has grown, its contribution to banks' funding remains moderate.⁵ However, market sentiment improved considerably in response to the refinancing operations. The European market for banks' long-term bond issues was reopened, with bonds other than covered bonds also issued by Finnish banks.

Despite the recent positive developments, uncertainty continues to prevail in the market, and the liquidity risks of banks still need to be very closely monitored. Over the next few years, banks will have to refinance a large volume of long-term funding that is due to mature. Similarly, a large volume of government funding is nearing maturity, and sovereigns will compete with banks for funding in bond markets. It is also foreseen that the Basel III and Solvency II regulations will bring about a shift in the attractiveness of debt securities through their effects on both demand and supply factors.

Not only the availability but also the cost of funding plays a role. In particular rates of unsecured senior bonds have remained high. This will weigh on the profitability of banks in the long run.

⁵ In March 2012, the claims related to longer-term refinancing operations in the Bank of Finland's balance sheet amounted to EUR 3.7 billion. Total MFI funding (loans to the public and debt securities) for the same period amounted to EUR 226 billion.

Covered bonds still on the rise

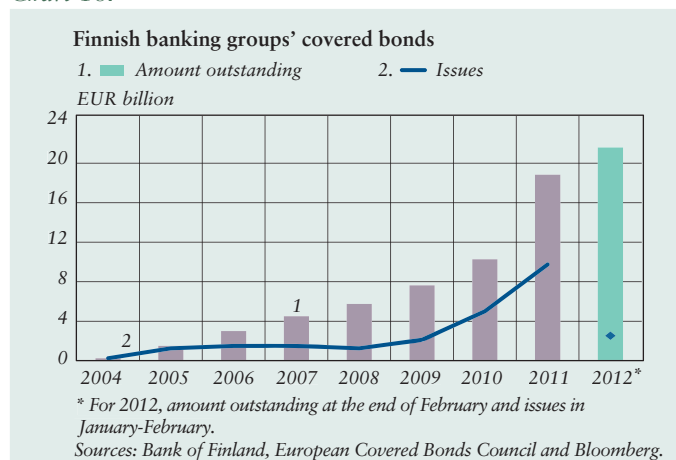
Mortgage-backed covered bonds issued by banks have turned out to be a good source of market funding during the crisis. Save for some short spells, covered bond markets have stayed open. Compared with unsecured bonds, covered bonds have provided a clearly more advantageous source of long-term market funding for banks.

The advantage of covered bonds lies in their security in the event of the default of the issuer. The primary collateral of a covered bond usually consists of a pool of mortgage loans. Should the issuer default, the claims of covered bond holders are preferential to the claims of other debtors and are first to be settled out of designated collateral assets. If the collateral does not provide full coverage of the claims, covered bond holders are placed on an equal footing with holders of unsecured bonds. Thus, covered bond holders enjoy double security: primarily the bond is covered by designated collateral and, where necessary, by the issuer's other assets.

The growing popularity of covered bonds is, however, not entirely without risk. Covered bonds weigh on the issuer's balance sheet, in that they reduce the pool of readily available collateral in the balance sheet. When part of balance sheet assets is allocated as collateral for covered bonds, holders of unsecured bonds will find themselves in an inferior position if the issuer defaults.⁶ The higher the proportion of covered bonds, the

⁶ In addition to covered bonds, eg repurchase agreements also weigh on the balance sheet.

Chart 16.



smaller the amount of balance sheet assets readily available for payment of unsecured bonds. In response, investors place a higher yield requirement on the issuer's unsecured bonds.

The stock of covered bonds issued by Finnish MFIs has expanded rapidly over the past few years (Chart 16), doubling between the end of 2010 and February 2012. Notwithstanding this, further growth is not held back by a shortage of available collateral, considering that the volume of covered bonds amounted to EUR 22 billion in February, which accounts for around one fourth of the housing loan volume of Finnish MFIs.⁷

Materialisation of credit risks depends on overall economic developments

The materialisation of credit risks in Finland is related to the developments taking place in the domestic and international operating environment. Finnish banks' loan losses have fallen

⁷ Incl. Finnish credit institutions and Finnish branches of foreign credit institutions.

over the past year, but levels of corporate bankruptcies and nonperforming assets,⁸ which signal future credit risks, have remained relatively high (Chart 17). In light of the near-term economic projections, no marked change in the credit risk outlook is to be expected. However, the development of the operating environment and, therewith, the risk outlook are surrounded by a high degree of uncertainty due to the euro area sovereign debt crisis. The slowdown of economic growth increases the probability of loan losses, whereas the low level of interest rates underpins the debt servicing capacity of households and companies alike.

Finnish banks' lending and guarantees nationally and internationally amounted to a total of roughly EUR 234 billion at the end of 2011.⁹ Of this, roughly 45% was accounted

⁸ Refers to assets in arrears for 90 days, including guarantee assets and zero-interest assets.

⁹ Statistics of the Finnish Financial Supervisory Authority.

for by domestic households and 28% by domestic companies and housing corporations. More than three quarters of household loans are housing loans. An industry breakdown shows that the real estate and manufacturing industries account for the highest lending volume, together standing for more than half of all corporate loans. There is, hence, a strong correlation between credit risks and the debt servicing ability of households and manufacturing companies, on the one hand, and developments in housing and export markets, on the other.

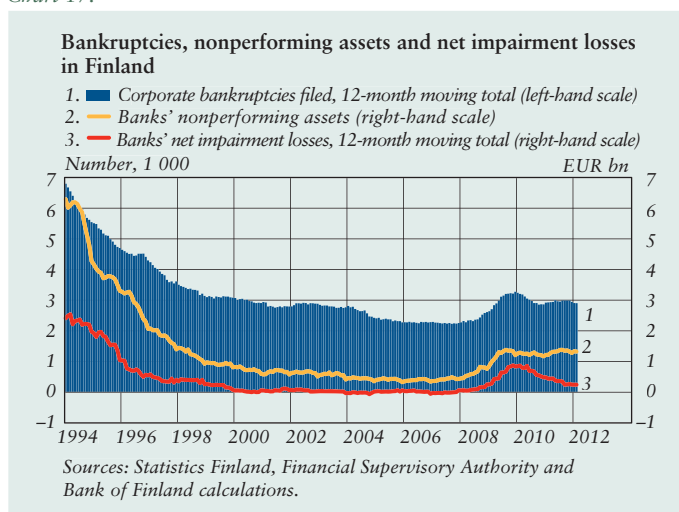
The lending and guarantee volume had grown by nearly EUR 32 billion (16%) year on year, ie from the end of December 2010 to the end of December 2011. Most of the growth (nearly EUR 25 billion) came from foreign lending. This includes repurchase agreements, which have increased strongly over the past year. Most of these repos are denominated in a foreign currency and entered into with non-euro area financial institutions (other than MFIs).¹⁰ A smaller contribution to lending growth was made by loans to domestic households and companies, especially in the real estate sector (including housing corporations).

Net impairment losses down

Net impairment losses for Finnish banks stood at roughly EUR 285 million in 2011, which is less than half of the losses suffered in the previous year. Net impairment losses on assets

¹⁰ A repurchase agreement or a repo refers to an arrangement creating an obligation to the securities seller to repurchase the securities for a certain price at a certain time. See also Bank of Finland (2012) Financial Statistics – Annual Review 2011.

Chart 17.



individually assessed was actually higher (around EUR 368 million), but this was offset by net recoveries from impairment losses on assets collectively assessed in the amount of approximately EUR 84 million.

Most of the banks' net impairment losses on assets individually assessed in 2011 was related to loans to Finnish companies (Chart 18). Net impairment losses for both companies and households were lower than in the preceding two years but higher than before the 2009 recession.

Nonperforming assets up

Finnish banks' nonperforming assets stood at approximately EUR 1.3 billion at the end of February 2012. The amount of nonperforming assets was roughly 13% higher than at the end of 2010, when the lowest amount during the crisis was recorded (Chart 17).

At the end of 2011, nonperforming assets accounted for less than 0.6% of the stock of lending and guarantees. This was slightly less than in the year before, owing to lending growth. An industry breakdown of banks' nonperforming assets indicates that proportionately they were at their highest for cyclically sensitive industries, such as the accommodation and food service industry and the construction industry (Chart 19). However, taken together, the contribution of these sectors to the lending volume is very low, roughly 2%.

The amount of nonperforming assets related to household loans increased by around 16% in 2011, whereas nonperforming assets as a per cent of the household lending

Chart 18.

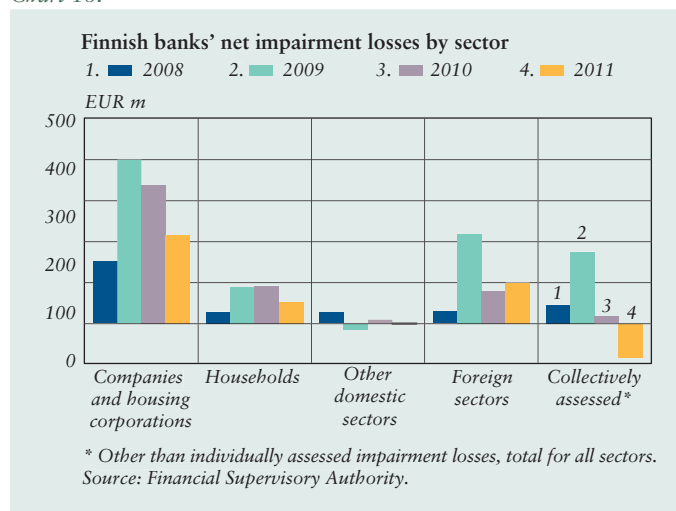
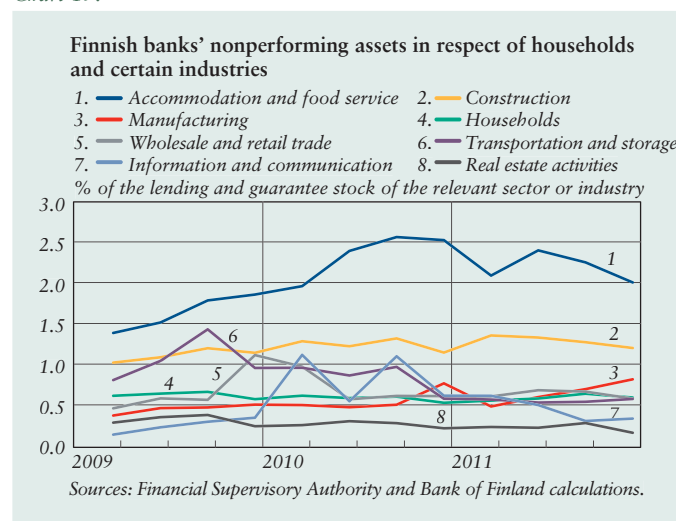


Chart 19.



volume remained in the region of 0.6%. Finnish households generally pay monthly amortisations on their loans and there are few Finnish households with interest-only home loans, which are widespread in the other Nordic countries.¹¹ However, projections are that increasing use will be made of flexible means of

¹¹ See eg Swedish Financial Supervisory Authority (2012) The Swedish Mortgage Market.

repayment, such as amortisation free periods.¹²

Systemic risks slightly above average

Systemic risks refer to risks the materialisation of which would expose vulnerabilities in the overall financial system and the real economy. Systemic risks mainly arise from banks' simultaneous exposure to risks in the real economy and in the form of contagion risks transmitted via the links between banks, markets and sovereigns.

¹² Federation of Finnish Financial Services (2012) Banks' economic outlook indicator I/2012.

The level of systemic risk is often assessed by a combined set of indicators measuring the overall health of the banking sector. The stress index for the Finnish banking sector has been compiled from data on banks' share prices, interbank deposits, profitability, equity and loan losses. The higher the value of the index, the higher the level of systemic risk (Chart 20).

According to the stress index, the build-up of risk in the Finnish banking sector in 2011 was due above all to stronger volatility in bank share prices. Calculations show that the risks have receded in the early part of 2012.

The overall standing of Finnish banks is also measured by the distance to default indicator based on share market and banks' balance sheet data (Chart 21). This indicator points to a deterioration in the standing of Finnish banks since the latter part of 2011. Although having stabilised during the first few months of 2012, the overall standing of banks, as measured by this indicator, still remains somewhat below the long-term average.

Chart 20.

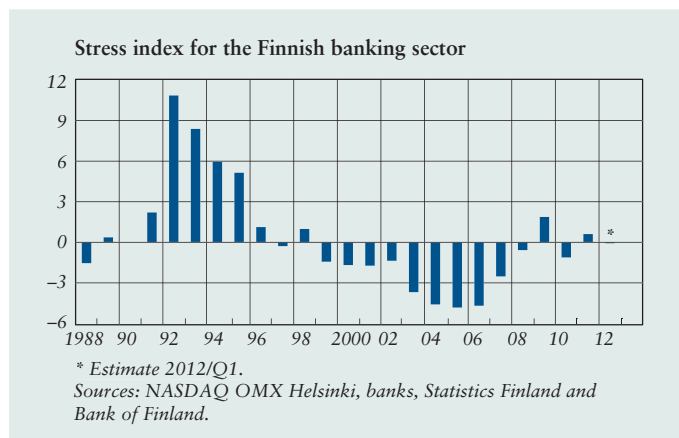
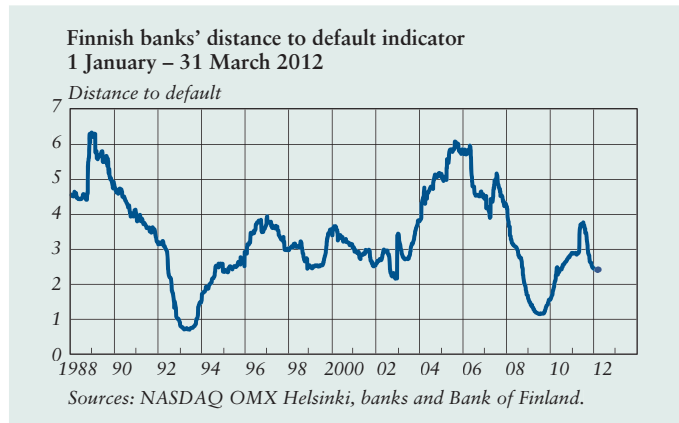


Chart 21.



Contagion risks

The financial crisis has highlighted the importance of contagion risks in the banking sector. Interbank assets and liabilities create contagion channels through which the problems of one bank may, in the worst case, spill over to other banks operating in financial markets. The negative spillover effects from contagion risk may, hence, also affect the Finnish banking sector, although the Finnish banking system is in good health overall.

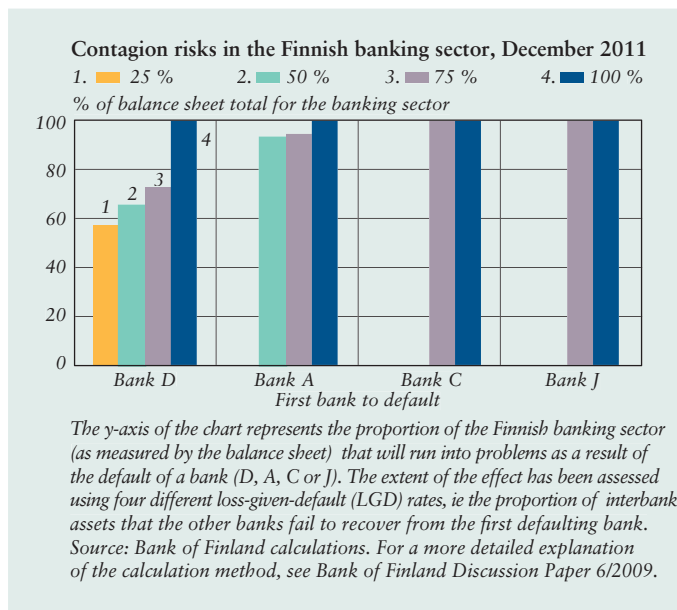
The significance of contagion risks in the banking system may be assessed using a simulation method.^{13, 14} The method analyses the broad spillover effects of the liquidity problems of one single bank for the entire banking sector. A bank is assumed to run into problems and default if the bank's capital adequacy falls below the regulatory limit of 8% following losses. The magnitude of the effect is essentially dependent on whether the first problem-ridden bank is Finnish or foreign.

The simulations show that when a Finnish bank is the source of contagion risk, four banking groups operating in the Finnish banking market could have triggered a domino effect in December 2011 if they had run into serious problems (Chart 22). If the first defaulting bank causes major losses to the rest of the banking sector, nearly the entire banking sector will run into difficulties. If the loss given default is lower, the resulting domino effect will not be by far as strong. The findings partly reflect the high degree of concentration of the Finnish banking sector, which explains why the spillover to a few key players would have adverse system-wide effects. However, considering that the capital adequacy of the Finnish banking sector is strong

¹³ For further information on the method see the Bank of Finland's discussion paper (6/2009), 'Financial interlinkages and risk of contagion in the Finnish interbank market' and Bank of Finland Bulletin 3/2009 article 'Are contagion risks possible in the Finnish banking sector?'. Both publications are available on the Bank of Finland's website (www.bof.fi).

¹⁴ This section does not address indirect contagion risks. Such risks may arise for instance when the problems faced by individual banks make investors suspicious of the entire banking sector.

Chart 22.



overall, it is highly unlikely that the contagion scenario will materialise.

Two large banks operating in the Finnish market are under foreign ownership, which makes the Finnish banking sector more exposed to external shocks. The major counterparties of the Finnish banking sector are Nordic banks. Should the standing of foreign parent banks deteriorate, the problems would also be reflected in the Finnish banking system. The significant market share held by foreign-owned banks is also reflected in the simulations: the banking groups operating in the Finnish market would be highly vulnerable to payment defaults of foreign banks. From the perspective of the Finnish banking sector, stabilisation of the European financial sector and strengthening of the banking sector's capital adequacy are desirable development trends.

Uncertainty in the operating environment has eroded the performance and solvency of insurance companies

The instability of the international operating environment has, for a long time, been reflected in the business of Finnish insurance companies. As a consequence of the euro area sovereign debt crisis, investment returns have been poor at times, which weighs on the solvency and profitability of the sector.

Premiums written by insurance companies posted mixed developments in 2011. Premiums written by life insurers fell by close to one third,¹⁵ whereas premiums written by non-life and employee pension insurers alike rose by around 6%.

The share price fall has put the profitability and solvency of insurance companies to a test, but levels of

¹⁵ Premiums written in 2010 increased by exceptional portfolio transfers to life insurance companies, following the dissolution of industry-wide pension plans.

solvency capital have, nevertheless, remained fairly good, on average.

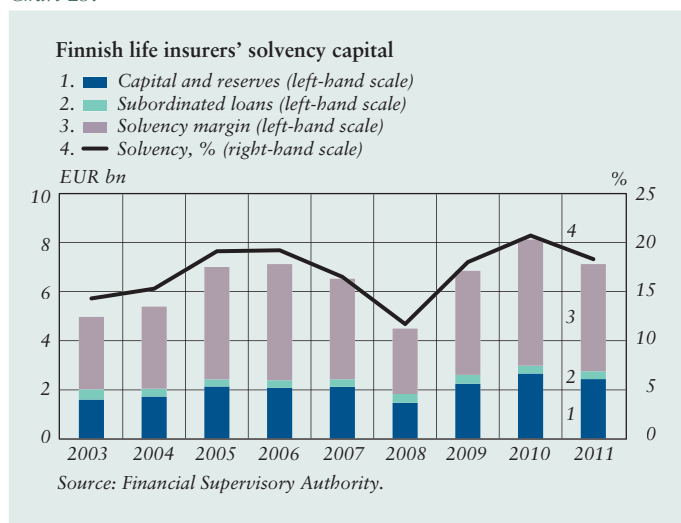
The aggregate business result for non-life insurers declined in 2011, but remained barely positive at EUR 67 billion.¹⁶ The total result based on changes in the fair value of investments was around half a billion negative. Life insurers' solvency capital as a per cent of technical provisions declined in the course of 2011 (Chart 23). The deterioration in solvency, nevertheless, came to a halt towards the end of the year, and no marked change in the situation was apparent in the first quarter of 2012.

Premiums written by life insurers have changed substantially in composition over the past ten years. At the beginning of the 2000s, unit-linked insurance still accounted for as little as 30% of aggregate premiums written, against more than 70% in 2011. Despite the fairly rapid change in the make-up of premiums written, guaranteed-interest life insurance savings still represented roughly 60% at the end of 2011.

The profitability of non-life insurers declined in 2011. This was related not only to poor investment returns but also to the clearly stronger growth rate for claims paid than for premiums written as well as to changes in the technical bases, which resulted in higher technical provisions and claims expenditure.

The aggregate business result for non-life insurance companies moved slightly into loss. The business result based on changes in the fair value of investments increased to a little over

Chart 23.



¹⁶ Financial Supervisory Authority (2012) Financial position and risks of supervised entities 1/2012.

EUR 70 million.¹⁷ Non-life insurers do not have as large equity holdings as other insurers, which contain losses in the fair value of investments on these holdings.

The solvency of non-life insurers as a percentage of both premiums written and technical provisions declined in 2011 but was still satisfactory if not good (Table 1). The situation has improved in the first quarter of 2012.¹⁸

Average return on capital employed for employee pension insurers was negative by 2.9% and the total

result based on the fair value of investments plunged into a loss of EUR 4.4 billion. Listed shares was the only asset category yielding a clearly negative return (–18.1%). However, the weight of listed shares remained unchanged from one fifth, which depressed total investment income.¹⁹

In the course of 2011, the solvency ratio of employee pension insurers, ie the solvency margin as a per cent of technical provisions, dropped by 7 percentage points to 21.8% (Table 1), but still remained at a fairly good level. Employee pension insurers have bolstered their capital adequacy by

¹⁷ Financial Supervisory Authority (2012) Financial position and risks of supervised entities 1/2012.

¹⁸ Financial Supervisory Authority (2012) Financial position and risks of supervised entities 1/2012.

¹⁹ See www.tela.fi/tyoelakesijoitukset/sijoitusten_tuotot (in Finnish).

Table 1.

Solvency of life, pension and non-life insurers					
	12/2011	12/2010	12/2009	12/2008	12/2007
<i>Life insurers</i>					
Capital and reserves, EUR m	2,439	2,663	2,252	1,475	2,127
Solvency margin, EUR m	4,366	5,137	4,237	2,665	4,096
Solvency capital, EUR m	4,511	5,306	4,407	2,865	4,274
Solvency margin, % of minimum amount	4.00	4.58	3.82	2.43	3.59
Solvency capital, % of technical provisions	18.3	20.7	18.0	11.7	16.5
<i>Employee pension insurers</i>					
Capital and reserves, EUR m	338	347	334	325	311
Solvency margin, EUR m	15,106	19,443	14,681	8,952	17,663
Solvency margin, % of minimum amount	10.91	14.41	11.65	7.67	2.90
Solvency margin, % of technical provisions	21.8	28.8	23.3	15.3	29.9
<i>Non-life insurers</i>					
Capital and reserves, EUR m	1,826	1,852	1,737	1,387	1,686
Solvency margin, EUR m	2,449	2,470	2,208	1,760	2,244
Solvency capital, EUR m	4,392	4,667	4,381	3,784	4,184
Solvency margin, % of minimum amount	3.72	3.92	3.61	2.89	3.75
Solvency capital, % of technical provisions	53.7	60.6	58.1	51.8	59.4
Solvency capital, % of premiums earned over 12 months	134.3	149.3	143.9	126.9	145.7

Source: Financial Supervisory Authority.

reducing the equity risk of the asset portfolio. The portfolio share of equity holdings fell by around 6 percentage points to less than 30% in 2011. There was a portfolio shift away from equity holdings towards various debt instruments. The proportion of real estate holdings increased slightly, standing at a little over 10% at the end of 2011.

Insurance sector prospects and risks

The domestic operating environment of Finnish insurance companies has remained fairly stable. The deceleration of economic growth, however, still holds back growth in premiums written and casts a shadow on the earnings prospects of the insurance sector.

The low level of interest rates is another factor clouding the future of insurance companies. The persistent low level of market rates makes it more difficult to attain the promised return on guaranteed-return life insurance contracts. On the one hand, this may result in a reduction of the technical rate of interest, which would depress the results of both life and non-life insurers, if the technical provisions need to be supplemented in response to the higher exposures following from the interest rate reduction. On the other hand, a low level of interest rates also impairs investment return prospects. In the context of the ongoing uncertainties surrounding the economy and financial markets, the level of stock market risk continues to be elevated.

The regulatory changes looming, of which Solvency II is the most important, will bring significant

additional challenges for the insurance business. On average, the Finnish insurance sector stands relatively well prepared for the impending changes, and there are no major recapitalisation needs in sight for the insurance companies.

The Finnish life and non-life insurance sectors have not undergone any significant reorganisation for many years. However, in response to stronger competition and the imminent regulatory amendments, the competitive situation of both life and non-life insurance is undergoing major transition, with mergers and acquisitions either currently underway or impending in the insurance market, which will become more concentrated as a result. Problems of a single large life or non-life company could jeopardise financial stability, while market concentration will narrow down the alternatives available for consumers in the insurance market.

The profitability of Nordic banks restored through efficiency measures

The profitability of international banks has recovered from the steep fall caused by the financial crisis. Many banks have reported that they seek to restore return on equity (ROE) to pre-crisis levels.

The profitability of Nordic banks was not hit so hard by the crisis. Average ROE ratios reached 13% at the end of 2011, albeit remaining below pre-crisis levels. The ROE ratios of European banks have been low historically, compared with Nordic and other international banks.

A decomposition of ROE into contributing factors permits an analysis of the origins of the changes in banks' profitability and of the potential risks to stability associated with changes in profitability.¹ Improvements

¹ The analysis method based on profitability decomposition has been explained in the 2009 Financial Stability Issue of the Bank of Finland Bulletin.

in profit margin, operating margin and risk-adjusted return performance reflect a favourable development in terms of banks' resilience, whereas an increase in returns based on higher risk taking and leverage may reduce banks' resilience to shocks (Table).

The strengthening of the regulatory capital of banks, as required in regulatory reforms and by investors, impairs the achievement of the ROE ratios witnessed in peak years. Before the 2008 crisis, the performance improvement of European banks was driven by higher leverage. By contrast, total return on assets (ROA) has remained largely stable and relatively subdued. In fact, the leverage of European banks has been relatively high. Leverage levels declined in 2008–2009, stabilising at the same level as for Nordic banks. Deleveraging by large investment banks whose debt ratios posted the strongest

increase before the crisis has been particularly noticeable.

The improvements in the profitability of Nordic banks do not appear to be related to increasing risk taking (Chart). The profit margins of Nordic banks have returned to pre-crisis levels. Also measures of cost-efficiency have contributed to the recovery of returns on equity from the dip caused by the crisis.

An analysis based on the same approach shows that the recovery of the profitability of European banks, which mainly operate as retail and corporate banks, has been based on the expansion of profit and operating margins. Also risk taking has been reduced.

Table.

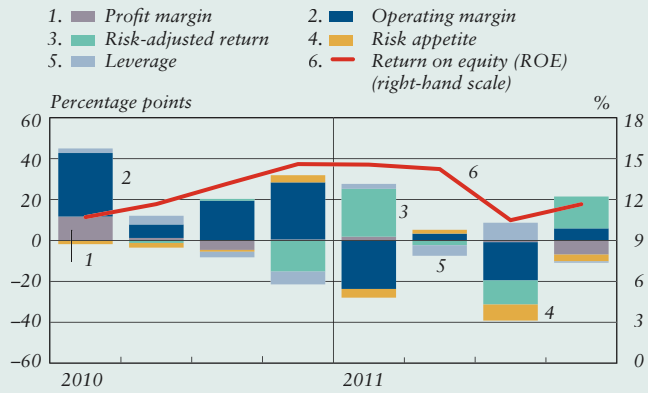
Factors affecting profitability

<i>Profit before taxes</i>	=	<i>Profit before taxes</i>	x	<i>Profit before loan losses</i>	x	<i>Net income</i>	x	<i>Risk-weighted assets</i>	x	<i>Assets</i>
<i>Equity</i>		<i>Profit before loan losses</i>		<i>Net income</i>		<i>Risk-weighted assets</i>		<i>Assets</i>		<i>Equity</i>
<i>Profitability</i>		<i>Profit margin</i>		<i>Operational marginal</i>		<i>Risk-adjusted return</i>		<i>Risk profile</i>		<i>Financial leverage</i>

Banks with a decentralised business model have fallen short of former return levels mainly due to a sharp contraction of profit margins. However, calculations show that both the basic and the decentralised banking model have produced more or less the same ROE ratios over the long term, whereas ROE ratios of investment banks have been more volatile, remaining below average.

Chart.

Contributions to changes in Nordic banks' profitability from previous quarter, by contributing factor



Sources: Banks' interim reports, Bloomberg and Bank of Finland.

Financial market infrastructure

The infrastructure serving the Finnish financial markets is undergoing change. Old systems are being developed and new ones are being created, systems are being constructed so that they are interoperable, and market practices are changing. Authority requirements are also changing: particularly in the securities markets, significant EU legislation will be introduced shortly, and the international oversight principles for financial market infrastructures are being revised.

As a result of financial market integration, a significant portion of the infrastructure services for Finnish markets are already now international. This development can be expected to continue. Integration has an impact on the operating conditions and competitive situation of the Finnish market participants. In order to meet the challenges brought about by changes and to benefit from the international infrastructure, market participants need to have strategic insight and to devote sufficient resources to change management. The same is required of financial market authorities.

Payment systems critical for Finland

Well-functioning payment systems are a prerequisite for the smooth operation of financial markets. In addition to payments, they enable financial intermediation and the implementation of monetary policy, thereby supporting financial stability.¹

Retail payment systems

Payment systems form a multifaceted network and are usually interconnected.

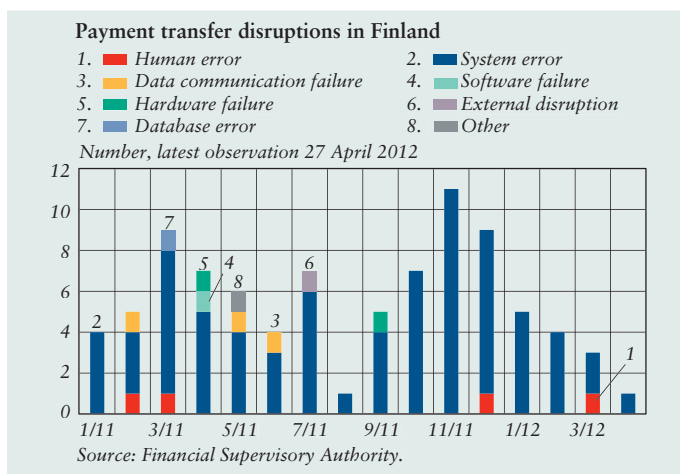
¹ A summary of infrastructure critical for Finnish financial markets is available in Appendix 1.

Retail payment systems are critical particularly for maintaining the everyday operation of society and public confidence. Problems in retail payment systems may also have wider repercussions. Of the total value of payment transactions, approximately 80% are executed in intrabank systems, ie within a single bank. The reliability of intrabank systems is the foundation for all payment traffic. The Financial Supervisory Authority (FIN-FSA) supervises the condition and risk management of individual banks' systems.

Following the migration to the Single Euro Payments Area (SEPA), the most significant retail payment system for Finland is the pan-European automated clearing house STEP2. All interbank credit transfers are nowadays SEPA-compliant and they are executed via STEP2, instead of the former domestic system. In the event that STEP2 or banks' own payment transfer systems are experiencing problems, the end-customers receive payment later than usual. This erodes public confidence in payment transmission.

Disruptions in payment transfers have been fairly frequent in connection with the migration to the new system (Chart 24). The disruptions have been payment delays – payment transmission has not been threatened. The Bank of Finland has requested banks operating in Finland to improve their risk management and thereby the resilience of overall retail payment transmission in Finland. The Federation of Finnish Financial Services is currently taking action in this respect.

Chart 24.



The service level must not weaken as a result of changes in payment systems. System operators should be required to provide a sufficiently high level of services and to ensure the functioning of continuity arrangements. Infrastructure policy decisions are high-level strategic decisions that have a far-reaching impact on the payment services provided for Finnish private and corporate customers and changes often require significant investments.²

Consumers' everyday life is most affected by the problems related to the use of payment instruments. If a payment card does not function, cash is not necessarily easily available. During the past year, there have been some relatively short disruptions in the functioning of EFTPOS terminals, but they have nevertheless caused confusion among consumers.

² The management of infrastructure changes is discussed in more detail in an article by Päivi Heikkinen and Kari Kempainen, available in this publication.

The card payment process has several participants, for example retailer, card issuer, supplier of the EFTPOS terminal and acquirer. Each participant in the card payment chain must manage their risks, because this network operates only as smoothly as its weakest participant. Payment transfer involves also other service providers. Some of these new participants are payment institutions subject to supervision, some are outsourcing partners. The use of such partners is justifiable from the business point of view, but from the perspective of risk management, final responsibility for operations cannot be outsourced.

Data security risks are a major concern in connection with certain payment instruments, for example in internet payments. EU central banks and banking supervisors discuss these risks in the European Forum on the Security of Retail Payments (SecuRePay), which will issue risk management recommendations for market participants.³ Authorities will apply these recommendations in their work. The European Commission has issued a Green Paper on the current landscape and challenges of card, internet and mobile payments. It provides a basis for the Commission's future steps for ensuring the security and efficiency of payment.⁴

³ The consultation on the Recommendations for the security of internet payments was launched on 20 April 2012 on the ECB's website (<http://www.ecb.int/press/pr/date/2012/html/pr120420.en.html>).

⁴ Green Paper: Towards an integrated European market for card, internet and mobile payments. COM (2011)941 final (<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0941:FIN:EN:PDF>).

Large-value payment systems

Large-value payment systems are the most significant in terms of the management of systemic risk. For example, the TARGET2 payment system⁵ maintained by the Eurosystem is the backbone of euro-denominated payment traffic: it processes not only individual large-value transactions between participants, such as those related to interbank funding, but also many ancillary systems, ie other payment and settlement systems, settle in TARGET2. In TARGET2, transactions are settled between the participants' central bank accounts, in real time and on a gross basis, ie with immediate finality. As the payments are booked on the customers' accounts only after the interbank settlement, the payment transmission does not involve credit risk. In 2011, TARGET2 processed a daily average of nearly 350,000 transactions, with an average daily value of nearly EUR 2,400 billion.⁶

TARGET2 risk management is handled in cooperation with the system operators and overseers. The system has been assessed thoroughly. The assessments are based on oversight principles, the collection of data, monitoring and oversight cooperation between national overseers. All incidents are analysed carefully and appropriate measures are taken to prevent the reoccurrence of problems.

⁵ Trans-European Automated Real-time Gross settlement Express Transfer system.

⁶ For additional information, see the ECB report 'TARGET Newsletter issue number 5' (www.ecb.europa.eu/paym/t2/shared/pdf/newsletter/Target%20Newsletter_Q1%202012_issue_5.pdf?335dc5580df9e24a5c527f08a668d1ca).

The management of operational risk in TARGET2 is crucial as significant technical problems would fairly rapidly also affect the operation of other systems in a number of countries, including Finland. Liquidity risk in a system is the risk that the counterparties do not have sufficient funds for immediate settlement. Hence the problems could spread also to banks that are expecting payments. In TARGET2, the participants can use collateralised intraday credit to remove liquidity bottlenecks. Finnish participants have had abundant liquidity for payment transfers.⁷

In 2011, approximately half of Finnish foreign trade was extra-EU trade.⁸ Non-euro-denominated payments are usually executed via a correspondent banking system. These arrangements are bilateral, and the related risks are managed in connection with the banks' management of counterparty risk. Foreign exchange transactions can be settled either bilaterally or via the CLS system.⁹ The use of the CLS system is recommended as it eliminates the settlement risk involved in foreign exchange transactions by settling the transactions on a payment versus payment (PvP) basis. The major banks operating in Finland use the CLS system, either directly or via a third party, for the settlement of foreign exchange transactions.

⁷ TARGET2 liquidity is discussed in for example in the Bank of Finland publication Korhonen – Kurri (2012) Euroalueen kriisi ja keskuspankkien taseet (Euro area crisis and central bank balances, in Finnish only). BoF Online 6/2012.

⁸ Finnish Customs website (http://www.tulli.fi/en/finnish_customs/statistics/index.jsp).

⁹ Continuous Linked Settlement; www.cls-group.com.

Settlement systems critical for Finland

The systems of Euroclear Finland, the Finnish central securities depository, have operated reliably and have not been subject to any significant disruptions. The company's profitability has remained good, despite a decline in the number of transactions settled, which is due to the introduction of central counterparty clearing in the Finnish market in 2009.

Euroclear Finland's system for money market instruments fulfils the requirements of the ESCB user standards. As part of the joint oversight of Euroclear Group, the Bank of Finland and the Financial Supervisory Authority (FIN-FSA) coordinated in 2011 on analysis of stakeholder input in the group's CSDs. The results of the assessment have been communicated to the CSD and its stakeholders.

The Bank of Finland and FIN-FSA have launched a joint assessment of Euroclear Finland, based on the recommendations of the ESCB and Committee of European Securities Regulators (CESR)¹⁰ for securities settlement systems. The eligibility criteria for central securities depositories' access to TARGET2-Securities (T2S) services requires that Euroclear Finland complies with these recommendations.

European regulation together with the T2S infrastructure project causes extensive changes, the impacts of which all the market participants have to

¹⁰ So-called ESCB-CESR Recommendations: Recommendations for Securities Settlement Systems and Recommendations for Central Counterparties in the European Union.

analyse. In the next few years, the national CSD has to invest in operations redesigning and in its system development. The first step in local system development is settling on the same technical platform for debt and equity instruments.

The operations of the European Multilateral Clearing Facility N.V (EMCF) have been reliable. EMCF serves as a central counterparty for stock exchange trades in the shares of large companies in the Finnish market. In 2009, when EMCF was chosen as a provider for central counterparty services, market participants' expected that a competition be launched and that several central counterparties enter the market. The plan was to introduce competitive central counterparty (CCP) clearing at the Helsinki stock exchange in April 2012. OMX Nordic who operate the (Helsinki stock exchange) decided to postpone the introduction of competitive clearing, referring to the as yet unfinished regulatory framework. A new timeline for introduction has not yet been set. Competition between four CCPs has already started at the multi-lateral trading facility BATS CHI-X Europe, and it is spreading to other similar trading venues. Although this is a new and challenging operating model, market participants have not reported any problems.

The project of euro area central banks to create a shared platform for securities settlement (TARGET2-Securities, T2S) is on schedule, and the platform will go live in 2015. CSDs that will join T2S are expected to sign the Framework Agreement by the end of

June 2012. Participants in the Finnish market recommended unanimously in autumn 2011 that the Finnish CSD Euroclear Finland join T2S.

T2S is expected to benefit the market participants via for example, post-trade harmonisation and increased competition between service providers. For example, the settlement costs of cross-border securities transactions are expected to decrease immediately after launch of T2S, and the platform is also expected to lower the cost of domestic post-trade transactions in the long term. The challenge for the Finnish market is to establish practices and system solutions that will enable market participants to reap the full benefits of T2S, including lower settlement costs for domestic securities transactions. Therefore market participants must take active part in both national and European preparations for T2S. They must also ensure that the efficiency gains achieved through T2S are transferred forward in the value chain of securities transactions, all the way to issuers and final investors.

Particular challenges for the Finnish capital market infrastructure

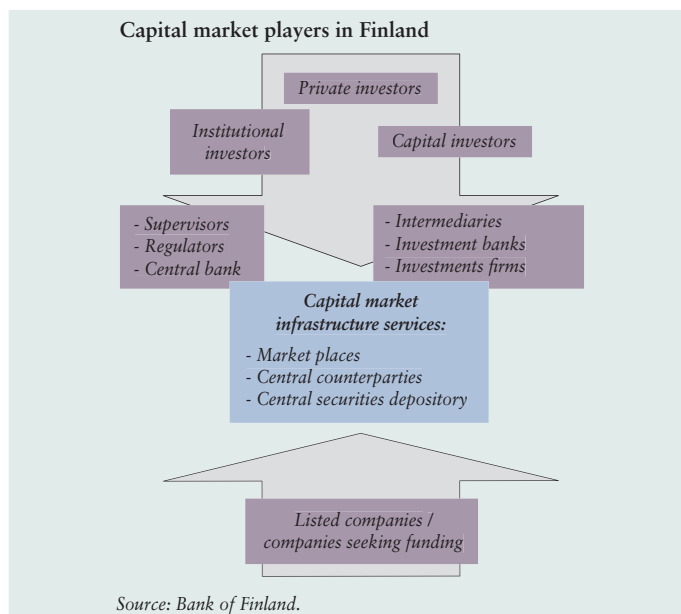
At the initiative of the Council of State, a working group prepared a strategy for developing the national capital market. The objective is to develop the financial markets so that it fosters Finland's international competitiveness, secures growth funding for businesses and enhances stability. Efficient and appropriate infrastructure services are a prerequisite for the functioning of

capital markets. The development and more efficient utilisation of infrastructure services are of utmost importance for supporting financial stability. The infrastructure of the Finnish securities market is already tightly connected with the Nordic and European market. The Finnish central securities depository Euroclear Finland (EFi) is part of the international Euroclear Group, CCP clearing is provided by the Dutch company European Multilateral Clearing Facility (EMCF), and the Helsinki exchange is part of the global NASDAQ OMX Group. A considerable portion of trading in Finnish shares and debt securities has moved to foreign marketplaces, and several significant domestic infrastructure participants are in foreign ownership.

It is natural that decisions on the international infrastructure are taken primarily in the interest of the large markets. For a small local market like Finland's, it is of key importance to ensure the availability and quality of services. The services should be competitive and appropriate for the end-users. Particularly services for smaller companies and private investors should be available near-by, in the customers' native language.

It is also crucial that the markets have a true opportunity to be heard and have an influence on the services. This challenges the market participants to be active and participate in the governance of the services they use. Finnish authorities' powers and access to information related to a nationally critical infrastructure must also be ensured in the longer term.

Chart 25.



Global capital markets and their clearing and settlement systems use technology that enables the automation of functions. Constructing and maintaining a system is an expensive investment, and it is inefficient to operate a heavy infrastructure everywhere. In the provision of infrastructure services, the survivors are those who are able to benefit from the economies of scale and transfer the benefits to customers in the form of low transaction costs while, at the same time, producing efficiently new value-added services for their customers.

In securities services, transferring the economies of scale to local service provision has been challenging. For example, Euroclear Group abandoned an intra-Group project to consolidate all the services provided by the group (including those of the Finnish CSD)

onto a single platform. The efforts to consolidate the Nordic CSDs had already failed prior to this. National, differing practices and regulation hamper competition and consolidation and the utilisation of economies of scale. Significant EU legislation on post-trade clearing and settlement is in the pipeline. The purpose of this regulation is to safeguard the stability of critical infrastructures – particularly CCPs and CSDs – and to remove the barriers to cross-border competition. Free cross-border competition gives the market participants the opportunity to choose the best and most cost-effective service providers. This also leads to the harmonisation of national practices, which, in turn, promotes consolidation and allows the reduction of costs, enabled by economies of scale.

The downside to consolidation is however that every country does not necessarily have a national CCP or CSD anymore. In such a situation, it must be ensured that at minimum the current level of domestic services is maintained and that authorities have sufficient powers to oversee, supervise and influence a foreign provider of critical services to the home market.

Financial system policy

Finnish authorities should have at their disposal means to contain at least 1) aggregate credit growth and 2) growth of lending for house purchases, when these are regarded as being excessive. In addition, it should be assessed in Finland whether the authorities need discretionary tools to contain 3) excessive growth of banks' balance sheets and short-term market-based funding as well as 4) systemic risks related to national systemically important financial institutions.

The Finnish financial system has emerged from the global economic and financial crisis that started in 2008 with very limited damages. Nevertheless, policy tools available for authorities responsible for the stability of the Finnish financial system should be strengthened so that systemic risks and financial crises endangering financial stability could be countered as effectively as possible.

In line with international recommendations, Finnish authorities, too, should have at their disposal a sufficient number of discretionary macroprudential tools.¹ This subsection examines the applicability of selected macroprudential tools in Finnish circumstances. The tools examined are included either in the work underway to overhaul financial regulation or in recommendations of international organisations.

The countercyclical capital buffer requirement

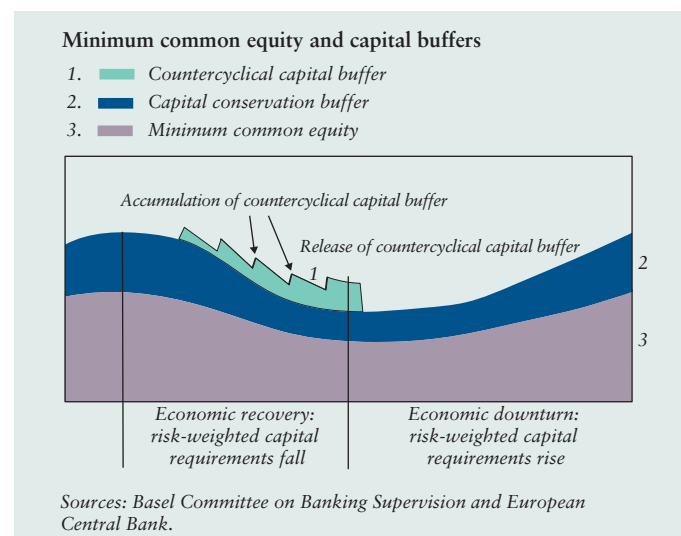
The global reform of banking regulation introduced by the Basel

Committee on Banking Supervision (BCBS, the Basel Committee) in autumn 2010 – the Basel III framework – gives national authorities the possibility to impose a requirement of an additional capital buffer on banks if they assess that total lending to the private sector has grown to excessive levels.² The capital buffer requirement is also included in the EU's forthcoming Capital Requirements Directive and will therefore also be introduced in Finland.

For the countercyclical capital buffer requirement to be effective, it should be imposed at a sufficiently early stage, ie already in good times (Chart 26). The Basel Committee recommends that the main – but not the only – criterion for setting an additional capital buffer should be a larger-than-normal deviation of private sector credit-to-GDP ratio from its trend. The size of the additional capital buffer should in turn be based on the

² Countercyclical capital buffers are discussed in more detail in Karlo Kauko's article in this Bulletin.

Chart 26.



¹ See eg Bank of Finland Bulletin 2/2011, p. 3–4 and 37–38, as well as Bank of Finland Bulletin 5/2011, p. 73–74.

level of credit-to-GDP ratio, based eg on the formula proposed by the Basel Committee.

Preliminary estimates suggest that the indicator recommended by the Basel Committee would not have worked particularly well for Finland in connection with the past two large financial crises. The indicator would have warned of the banking crisis of the 1990s a little too late. At the end of the 2000s the indicator would in turn have given an apparent false alarm.

On the basis of these findings, Finnish authorities should not apply the Basel Committee's indicator mechanically as grounds for setting a capital buffer. Instead, they should also use a wide set of other appropriate indicators

based on supervisory, macroprudential and financial market data.

Loan-to-value ratio

Excessive growth of lending for house purchase has been one of the reasons behind major economic and financial crises, including the Finnish banking crisis of the 1990s and the latest global financial turmoil. Housing loans account for a very large share of lending by Finnish banks, which also emphasises the need for macroprudential tools related to housing loans.

The most common indicator used globally for containing excessive growth of lending for house purchase is the loan-to-value (LTV) ratio, which expresses the maximum percentage of a housing loan of the price of the

Table 2.

Example of the impact of increase in loan-to-value ratio of housing loan on household's interest expenditure					
<i>Purchase price of housing: EUR 200,000</i>					
<i>Required loan excluding self-financing: EUR 200,000</i>					
<i>Available annual income: EUR 50,000</i>					
<i>Indebtedness ratio: 400%</i>					
	<i>Amount, EUR</i>	<i>Share, %</i>	<i>Interest, %</i>	<i>Interest expenditure, EUR/month</i>	<i>Interest expenditure, % of income</i>
<i>Housing loan</i>	200,000	100	3.0	500	12.0
<i>Housing loan</i>	180,000	90	3.0	450	10.8
<i>Unsecured loan</i>	20,000	10	6.0	100	2.4
<i>Total</i>	200,000	100		550	13.2
<i>Housing loan</i>	170,000	85	3.0	425	10.2
<i>Unsecured loan</i>	30,000	15	6.0	150	3.6
<i>Total</i>	200,000	100		575	13.8

Source: Bank of Finland calculations.

house to be purchased.³ In spring 2010 the Financial Supervisory Authority gave a non-binding recommendation that banks operating in Finland should abstain from applying a higher than 90% LTV ratio in private customers' housing loans.

It is necessary to assess means to make the LTV ratio more binding. One possibility would be to make the LTV ratio fully binding, in which case it would determine the maximum size of a housing loan relative to the value of housing collateral. However, persons applying for a housing loan could borrow the share of the loan exceeding the LTV ratio eg in the form of a more expensive unsecured consumer credit. Determined in this manner, lowering the LTV ratio would increase households' interest expenditure and could therefore potentially restrain housing loan growth.

Table 2 presents a calculation example of growth in a household's interest expenditure when the LTV ratio is first set to 90% (calculation in the middle) and then further tightened to 85% (the lowest calculation). Setting a binding LTV ratio, or tightening of the ratio, would likely contain credit growth and indebtedness also by increasing households' risk awareness and maintaining banks' sound credit granting practices.

An alternative method to make the LTV ratio more binding would be to link housing-loan risk weights used in

³ Application of the LTV ratio as a macroprudential tool is discussed in more detail in an article on macroprudential tools and means to affect household indebtedness ('Kotitalouksien velkaantumiseen vaikuttaminen: makrovakaustyökalut') by Putkuri and Vauhkonen, BoF Online 3/2012.

banks' capital adequacy calculations to LTV ratios of credit granted. In this alternative, the LTV ratio would have an impact on growth in housing loans and indebtedness mainly via housing loan supply.

Macroprudential tools influencing growth of banks' balance sheets and short-term funding

Several banking crises have been preceded by a very sharp increase in banks' balance sheets and, in particular, short-term market-based funding. The leverage ratio and the net stable funding ratio included in Basel III contribute in restricting banks' scope for building up their balance sheets and increasing short-term funding.

However, some countries are going beyond the Basel Committee's recommendations and are planning to use especially the leverage ratio as a discretionary macroprudential tool.⁴ This discretionary nature would allow authorities to exceed the minimum leverage ratio determined by the Basel Committee and adjust the level as necessary. In connection with common EU regulation on the leverage ratio and capital adequacy requirements, Finnish authorities should assess the need for national regulation on the matter.

Identification of systemically important banks

Large risk exposures and high indebtedness of systemically important banks were among the most important

⁴ See eg the Bank of England Financial Policy Committee statement from its policy meeting, 16 March 2012.

reasons for the latest economic and financial crisis and its escalation. At the onset of the crisis, problems rapidly spread across financial institutions and countries, especially via interlinkages of and between systemically important banks. Taxpayers in a number of countries have in turn suffered from huge costs, as public funds have been used to bail out systemically important banks that authorities have considered as ‘too big to fail’.

The ongoing initiatives to reform banking regulation aim to mitigate problems related to systemically important banks in a number of ways (Chart 27). Three key reform initiatives should be mentioned separately. Firstly, global systemically important banks (G-SIBs) will be subject to more stringent capital adequacy requirements than other banks. The purpose is to mitigate insolvency risk for G-SIBs and insolvency-related externalities. The Basel Committee has issued a recommendation on the amount and determination of capital surcharges for G-SIBs.⁵

Secondly, the reforms aim to make it possible that, as necessary, any bank

⁵ Financial Market Report 2/2011, see www.bof.fi/en.

facing serious problems could be required to suspend its operations or be restructured without such measures endangering the stability of the financial system or causing large costs to taxpayers. For this aim to be realised it is essential to create credible crisis management systems for banks (see subsection ‘Bank crisis management and resolution’).

Thirdly, some countries are prohibiting retail banks from pursuing activities regarded as very risky.⁶ The European Commission has also set up a high-level expert group to assess the suitability of these direct restrictions in supporting financial stability and economic growth.⁷

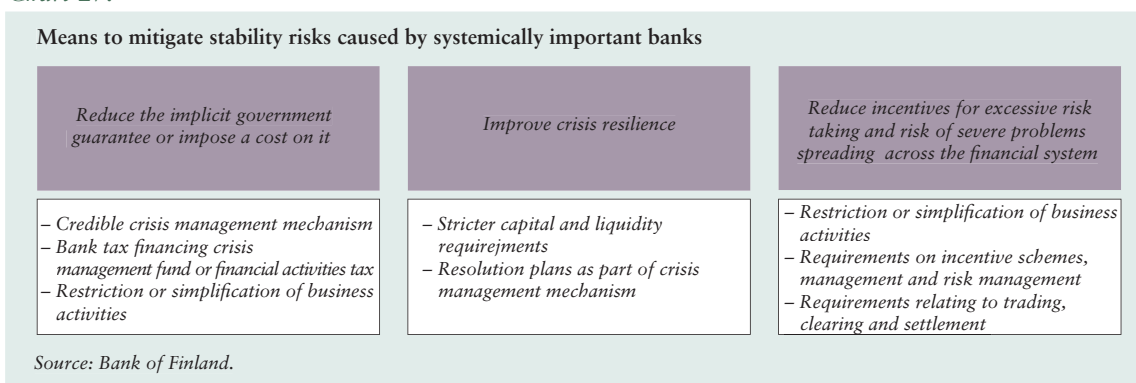
Systemic importance of Finnish banks

The first phase in assessing regulatory needs related to systemically important banks is to determine indicators for systemic importance and, on the basis of these indicators, identify systemically important banks at global and national level.

⁶ Financial Market Report 1/2012, see www.bof.fi/en.

⁷ See the European Commission’s press release of 22 February 2012: <http://europa.eu/rapid/pressReleases-Action.do?reference=MEMO/12/129&format=HTML&aged=0&language=EN&guiLanguage=en>.

Chart 27.



Based on its criteria, the Basel Committee has identified 29 banks as G-SIBs.⁸ From the Nordic countries, Nordea is included in this group. The purpose of the international regulatory community operating under auspices of the G20 is to also create criteria for the identification of domestic systemically important banks (D-SIBs) and other systemically important financial institutions. The Basel Committee has been mandated to determine criteria for the identification of D-SIBs and their recommendations are expected to be published in the latter part of 2012.

Some countries, such as Switzerland, Sweden and the United Kingdom, have drawn their own conclusions about the tightening of regulation and supervision of systemically important banks, without waiting for the international regulatory community's decisions. The most important reason for these countries' action is the large size of their banking sectors and individual banks.

The European Systemic Risk Board (ESRB) recommends that national authorities be given the powers to identify and specify national systemically important financial institutions and infrastructures. A preliminary mechanical calculation of the level of systemic importance of banks operating in Finland can be made by using as criteria both the asset-to-GDP ratio (Chart 28) and, as applicable, the Basel Committee's G-SIB identification methodology (Charts 29). Banks

included in the comparison are Nordea Bank Finland, OP-Pohjola Group, Sampo Bank, Aktia Bank and Bank of Åland.

Looking at the banks' total assets relative to GDP, Nordea Bank Finland stands out from the others in two ways (Chart 28). Firstly, its assets relative to GDP are significantly higher than those of the other banks: in 2011 the ratio was over 200%. Secondly, the ratio has increased significantly over the past five years. The growth of Nordea Bank

Chart 28.

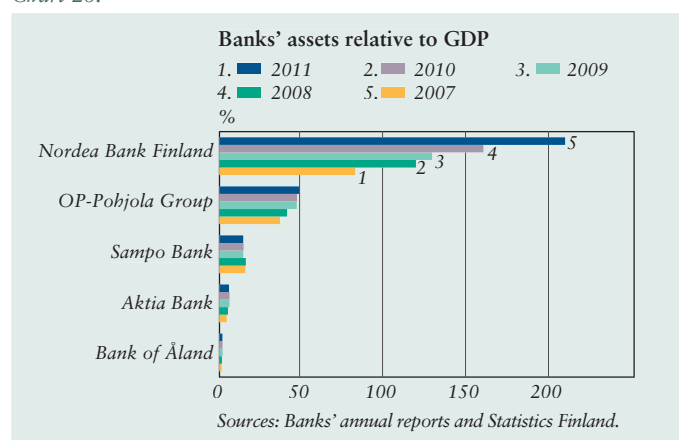
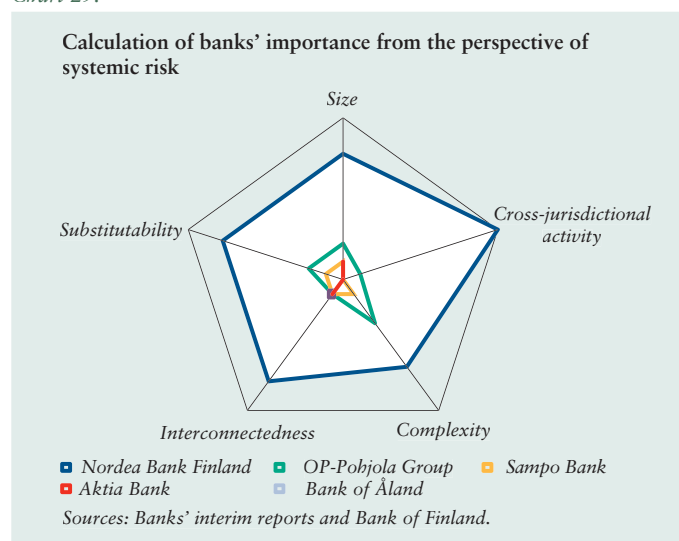


Chart 29.



⁸ Financial Stability Board (November 2011) Policy measures to address systemically important financial institutions.

Finland's balance sheet is partly explained by the strong increase in Nordea Group's derivative trading recorded in Nordea Bank Finland's balance sheet. Nordea also began to concentrate its capital market activities in Finland in 2010.

The G-SIB identification methodology proposed by the Basel Committee takes account of five dimensions of systemic importance for banks: banking group's size, scope of cross-jurisdictional activity, interconnectedness, substitutability and complexity. Each of the dimensions is rated against one to three indicators.

In the calculation in Chart 29, the indicator used for banking group's size is balance sheet total, not total exposures as recommended by the Basel Committee. As in the Basel Committee's methodology, assets and liabilities vis-à-vis other countries reflect a bank's cross-jurisdictional activity, and assets and liabilities vis-à-vis credit institutions as well as the share of market-based funding reflect interconnectedness.

In the calculation, complexity and substitutability are measured by two indicators instead of three. The amount of illiquid assets, the size of trading book and value of financial assets reflect complexity, whereas the value of payments settled in TARGET2 and estimated customer assets under custody reflect substitutability. The calculation does not consider the notional value of OTC derivatives (complexity indicator), nor values of underwritten transactions in debt and equity markets (substitutability indicator).

The value of a single indicator for each bank is proportionate to the sum of the five banks' values for that respective indicator. The calculation is mainly based on the averages of these proportioned indicators for 2007–2011. Inside the dimension, the indicator averages are weighted evenly.

It should be emphasised that the calculation is a highly mechanical application of the Basel Committee's G-SIB identification methodology. It is possible that the forthcoming recommendations on D-SIB identification criteria deviate significantly from this methodology. The calculation does not aim to predict what these criteria might be.

The purpose of the calculation is not to assess potential domestic regulatory needs for systemically important financial institutions in Finland, either. Such an assessment should consider the special features of the Finnish banking system, such as relatively divergent structures and business strategies between the largest banks and banking groups in Finland.

Bank crisis management and resolution

Banking is necessary, single banks are not

Banks provide services that are necessary for society. Hence, banks' problems have broad-based effects on the whole economy and society.

However, when assessing banks' role, a difference should be made between actual banking and individual institutions pursuing banking activities. Banking is necessary for society, single banks are not. It is important to ensure

Benefits from economies of scale and scope in banking smaller than estimated

Prior to the financial crisis, large banks grew even bigger and expanded into less traditional banking activities in the pursuance of economies of scale, new income sources and diversification benefits. The assumption that the government will come to their aid, especially when large banks run into problems (implicit government guarantee), may have contributed to the tendency of banks to pursue high-risk activities (moral hazard). The implicit government guarantee also reduced banks' funding costs, which motivated large banks to grow even more.

There was also demand for the expansion of activities. A number of enterprises growing on international markets were looking for services of banks that were operating on a geographically large scale. The demand for new products and services increased as well. Risk management products were particularly popular. The easing of financial market regulation since the 1970s, first in Europe and then in the United States, also facilitated diversification of banks' business activities.

To solve the too-big-to-fail problem, it has been proposed that bank sizes and structures should be subject to regulation. Economies of scale and scope

should be fully understood so as to better assess the cost effects of potential regulatory proposals.

Economies of scale in banking have been extensively studied. Research results are unambiguous, especially with regard to very large banks. Some studies imply that the gains from increasing bank size decrease when a bank becomes very large (assets exceed about USD 25 billion).¹

It is possible that a bank's optimal size is even smaller than this.² A recent study suggests that economies of scale are considerably smaller than estimated when the impact of the implicit government guarantee on funding costs is taken into account.³

There are also dissenting views of the magnitude of economies of scope. According to traditional portfolio theory, diversification of activities reduces risks especially if business lines react in different ways to external shocks. There is for example evidence that diversified banks were more resilient during the financial crisis

than investment banks.⁴

However, there is also evidence that expansion into non-traditional banking activities, securities trading in particular, increases a banking group's risk level. Hence, risk-adjusted benefits from diversification seem to be limited.⁵

One factor explaining the research results is that a diversified business strategy that combines very different business lines may be difficult to manage and monitor.⁶ Transparency of a complex business strategy is limited, which makes it more difficult especially for outsiders to create a comprehensive picture of operations. A diversified business model also enables non-optimal use of assets. For example, it is possible that funds from traditional banking activities are used to support more volatile investment banking activities. A diversified business model imposes therefore great demands on bank management and financial supervisors.

⁴ ECB (September 2010) *EU banking structures. Special feature on the future evolution of the EU banking sector.*

⁵ Stiroh – Rumble (2006) *The dark side of diversification: the case of US financial holding companies*, *Journal of Banking and Finance* 30(8); Laeven – Levine (2007) *Is there a diversification discount in financial conglomerates?*, *Journal of Financial Economics* 85(2).

⁶ Westman (2011) *The impact of management and board ownership on profitability in banks with different strategy*. *Journal of Banking and Finance*, 35(12).

¹ Mester (2008) *Optimal industrial structure in banking*. *Handbook of Financial Intermediation*.

² Haldane (2010) *The \$100 billion question*. *Speech at the Institute of Regulation & Risk*. Hong Kong.

³ Davis – Tracey (2012) *Too big to be efficient? The impact of implicit funding subsidies on scale economies in banking*. *Mimeo*.

Pressure to change put on banks' business models

The most recent financial crisis, which has triggered significant macroeconomic and social costs, caused a loss in the confidence of banks' ability to adapt to risks and the self-correcting moves within the markets. Extensive reform of banking regulations has been prepared, based on experience garnered from the crisis. These affect banking operations, worldwide.

The central objective of these regulations, from the macroeconomic perspective, is to secure critical banking operations by remedying the structural defects in the European banking sector that the crisis has revealed. These have been the problems appearing, for example, in imbalances in funding, particular dependency on short-term market funding, inadequate quality and level of capital as well as legacy assets, which have caused uncertainty over the adequacy of the banks' solvency margins.

The European banking sector is heterogeneous and the pressure to change varies between countries. This article looks at the key pressures for change affecting the entire sector.

Companies' changing lending terms

The Basel III reform, that will be introduced worldwide, in stages,

until fully enforced by 2019, will have a broad-ranging effect for example on banks' funding and indirectly on banks' operating models. The new elements are the quantitative regulations on liquidity, which encourage banks to extend the maturity on their funding, increase the share of retail deposits and reduce their dependency on wholesale funding.

Changes in the structure of funding and maturities have tended to increase the average cost of banks' funding which otherwise have risen in recent years, as investors have changed their attitude to the risks associated with banks. The result of which is that credit worthy sound large firms have started to get cheaper financing from the market than banks. From the point of view of development of Europe's corporate bond markets it could be considered positive if corporate bonds are issued more generally alongside banks' corporate lending and increasingly more companies can get funding directly from the market.

At the same time, banks would, at least in principle, be able to free up capacity for example to extend credit to small and medium-sized companies, as SME lending could anyway become less attractive business as a consequence of the liquidity

coverage requirement for banks. The regulations create incentives to favour more liquid investment targets such as bonds of financially sound issuers.

Simplification of business models

Regulatory reform has been used to tackle banking operations' excessive risks. The pressure to change has focused on investment banking operations in particular and the pricing of risk. Tightening capital adequacy requirements can reduce a certain amount of high risk business activity, such as the attractiveness of short-term securities trading. Business activities that tie up relatively little capital, such as the provision of investment services can, on the other hand, become far more appealing.

One of the characteristics of the European banking system is its diversified operating model, in which banks operate broadly on retail and corporate banking markets as well as on capital markets. From the perspective of the financial sector's stability, it is essential to evaluate whether the so-called general banks or specialised banks weathered the latest financial crisis better. From the European point of view, it would appear that the large

general banks survived the crisis better than the specialised investment banks.¹

Dismantling financial institutions' linkages

One of the objectives of the regulatory framework reformations is to stabilize the financial system by reducing financial institutions' excessive linkages. Basel III also guides banks to reduce their contagion and counterparty risks on the interbank loan markets.

New forms of restrictions are being placed on banks' financial ownership. Due to the Basel III reforms, banks' large shares in other financial institu-

¹ See Box 3 and, for example the article *Special feature of the future evolution of the EU banking sector in the EU banking structures*, publication by the ECB, September 2010.

tions have become less attractive to banks. The international banking sector has already seen the breaking up of the bank-insurance company structure. Interlinkages between financial institutions could anyway increase the use of innovative financial instruments and arrangements, such as with the so-called shadow banking sector parties, if regulations affect different market participants unevenly and financial institutions seek means of making their balance sheet management more effective.

Segmentation in the sector while large banks converge

Even though the regulatory changes affecting banks' funding and risks support a shift toward a

more simplified operating model, the sector may still be subject to amalgamation if the banks begin to look for better profits, in this time of a tightening operating environment, by seeking the benefits of economies of scale. The regulatory reforms that are currently being prepared, affecting systemically significant financial institutions and EU-level crisis-resolution mechanisms for banks in serious difficulty, are aimed at reducing the vulnerability of the European banking system. If, through the introduction of the reforms, the implicit public subsidies enjoyed by the large banks are reduced, their borrowing costs will probably rise due to better pricing of risks in the banking sector. As a result, the European banking sector may

Table.

Pressure to change banks' operations and the structure of the banking sector caused by the financial crisis and regulatory framework

<i>Forces of change</i>	<i>Possible impact</i>
<i>Banks' tightening liquidity and solvency requirement</i>	<ul style="list-style-type: none"> • Increase in significance of retail deposits • Reduced appeal of long-term lending • Reduction in significance of bank loans as financing source for large companies
<i>Tightening of risk weighting and requirements imposed on systemically significant banks</i>	<ul style="list-style-type: none"> • Simplification of business models • The provision of banking services segments to large supranational banks and basic local banks
<i>Limitation of financial institutions' joint business activities and cross-affiliation</i>	<ul style="list-style-type: none"> • Banks ownership structure is simplified and funding diversified • New interlinkages formed between financial sector and counterparties outside the regulatory scope
<i>Banks' need for balance sheet deleverage, to protect national banking operations against disturbances</i>	<ul style="list-style-type: none"> • Withdraw from peripheral markets and concentrate on domestic markets • Create functionality into company structures that limit disturbance contagion

stratify yet more clearly into large supranational banks and banks operating at a basic, more local level.

Banks refocusing on domestic markets

The EU single market area has contributed to the growth in cross-border banking operations while responsibility for banking supervision and rescuing banks in difficulties remains mainly a national matter. The experience gained through the crisis of rescuing banks may result in the tendency to isolate domestic banks within a banking group, from the problems potentially caused by non-domestic elements, for example by creating a

company structure in which a subsidiary's fundraising is not dependent on the parent company. Banks that have sourced their financing locally did not suffer as badly from market disturbances as supranational banks that have centralised their financing.²

As a result of the crisis, banks have increasingly directed their operations at the domestic market and withdrawn from peripheral markets. This might turn out to be a passing phenomenon. Concentration on domestic markets is partly linked to the simplification of banks' business models and partly to banks gaining a competitive edge in an area they know best.

² *European Commission, European financial stability and integration report 2010.*

that banking as a business is reliable and runs as smoothly as possible also in times of crises, but there is no reason for not allowing single banks to fail. This goes for large and small banks alike, regardless of the fact that it is more challenging to wind up a large bank without disruptions than a small bank.

Banks' special status not sufficiently taken into account in bankruptcy legislation

Despite banks' special status, bank failures are dealt with on the basis of legislation pertaining to general business activities. However, general liquidation and bankruptcy legislation does not well applicable to banking mainly for two reasons. Firstly, the primary aim of bankruptcy legislation is to safeguard creditors' rights, not the stability of the financial system. Secondly, bankruptcy legislation can be applied to safeguarding smooth banking services too late, ie when a bank has already become insolvent.

The most recent economic and financial crisis has clearly demonstrated the need for an own specific liquidation and insolvency legislation for banks. The current legislation is only limitedly suited for the restructuring and liquidation of small national banks, but does not work in case of systemically important banks.

The current legislation is particularly defective in wide-scale crisis situations where winding up a bank's business may be a worse solution for society than bailing out the bank at

taxpayer's cost. A better result can only be achieved by creating an own crisis management and resolution legislation for banks.

EU-level crisis management legislation is deficient

EU-level legislation on bank crisis management and resolution has paid relatively significant attention to the stabilisation of banks facing severe problems via preventive measures. By contrast, sufficient attention has not been paid to crisis management and resolution of problem banks in the legislation.

Deficient common EU-level regulation and diverging national legislation pose a considerable problem when European financial markets experience cross-border disruptions. Crisis management is particularly difficult when large cross-border banks operating in several countries run into problems.

The European Commission is preparing a common crisis management framework for the EU. The guiding principle of the Commission's proposal is that all financial market institutions should be able to fail, without causing significant disruptions in the financial markets or costs for taxpayers.

Commission's proposal is a step in the right direction

The Commission's forthcoming crisis management proposal consists of three aspects: 1) prevention of single banks' crisis situations, 2) early supervisory intervention and 3) resolution of distressed banks. The proposal aims to

harmonise national crisis management and resolution legislation and create minimum requirements for it. The Commission's initiative is a very welcome step forward. However, it leaves certain key issues open.

One of the most difficult problems to solve is treatment of large banking groups in crisis situations. Large banking groups' complex structures and differences between business structures and juridical structures pose considerable problems for crisis management especially in cross-border crisis situations. The concept of banking group applied in the Commission's proposal is largely based on home-country supervision and does not pay sufficient attention to banking groups' juridical structures. Crisis management and resolution measures should, however, pertain to banking groups' juridical units, not to business lines.

The Commission's proposal does not include establishment of a common EU-level resolution authority. Instead, it is based on more harmonised national regulation. Further harmonisation of insolvency legislation helps in situations where different countries' authorities voluntarily seek to find a joint solution for a distressed cross-border bank. However, it does not force authorities to minimise total costs from crisis resolution, and hence it does not always enable selecting the optimal resolution alternative overall. There is a risk that, in the end, member states will continue to look for crisis resolution options that are best from their respective national perspectives.

Crisis management of global banks will remain problematic

Establishment of a joint global bank resolution authority is not a realistic aim, at least in the next few years. Therefore, the primary objective of authorities should be to harmonise national legislation as far as possible. This could be promoted by international cooperation and standards on crisis management and resolution. More harmonised legislation would facilitate management of crises caused by large global banks, albeit it would hardly solve problems related to the management of crises of very complex banks, such as Lehman Brothers.

Finland should consider separate liquidation and insolvency legislation for banks

Looking at the long term, it should be considered whether improved crisis management and resolution for large global banks require the establishment of an EU-level bank resolution authority. Common crisis resolution regulation and authority would enable considerably better resolution of large cross-border banking groups' crisis situations.

However, bank-specific insolvency regulation is not enough. Authorities should also have wider powers to intervene in the operations of distressed banks already at a sufficiently early stage. In severe crisis situations, authorities should be able to take even substantial resolution measures already before a bank has failed.

In Finland, the Act on the Government Guarantee Fund enables

takeovers and restructuring of distressed banks, but winding up and insolvency measures are still taken in line with principles pertaining to general business activity. This means in practice that banks' problems are largely dealt with on taxpayer's risk and cost.

Nothing prevents Finland from creating separate national liquidation and insolvency legislation specifically for banks. National legislation could well go beyond the Commission's proposal. Similar decisions have already been made in some countries, such as the United Kingdom and Germany. Authorities in Finland could also be better equipped to address national and international crises alike.

Bank crisis management legislation is closely connected with potential EU-level regulatory changes and initiatives relating to banking structures and scope of business activities. Extensive and effective resolution legislation would reduce pressures to restrict banks' complex structures and business models by law.

Appendix

Infrastructure critical to the Finnish financial market

System	Description	Oversight responsibility	Assessment
TARGET2	Eurosystem's technically centralised RTGS-system based on a single shared platform.	ECB (lead overseer), Eurosystem.	The system fulfils the oversight requirements for systemically important payment systems (SIPS). By and large, operations have been reliable.
TARGET2-Suomen Pankki system	Bank of Finland TARGET2 component system.	Bank of Finland oversight; adherence to common principles with other Eurosystem TARGET2 participants.	Operations have been reliable. Several Nordic banks settle payments via the system, in addition to Finnish banks.
CLS	A significant settlement system for foreign exchange transactions.	US Federal Reserve (lead overseer), ECB (overseer of settlement in euro).	Operations have been mainly reliable. Heightened importance in the management of settlement risks relating to foreign exchange transactions during the financial market uncertainty.
EBA EURO1	EBA Clearing's transfer system for euro-denominated large-value payments.	ECB (lead overseer), Eurosystem.	The system mainly fulfils the oversight requirements. EURO1's liquidity management function has been further enhanced, and operations have been reliable.
POPS	Banks' online system for express transfers. Domestic large-value payment system.	Bank of Finland oversight.	Assessed as fulfilling the oversight requirements. No changes have been made to the system, and operations have been mainly reliable.
EBA STEP2	Pan-European automated clearing house (PE-ACH) for euro-denominated retail payments.	ECB (lead overseer), Eurosystem.	A critical system for Finnish retail payments; fulfils the oversight requirements. The oversight assessment of the special features used in Finnish payment traffic is currently underway.
PMJ	Domestic retail payment transfer system; operates as an ancillary system to TARGET2.	Bank of Finland oversight.	Fulfils the oversight requirements; operations have been mainly reliable. Number of payments has declined, as domestic credit transfers are processed by STEP2. The technical life of the TARGET2 interface will run until the end of 2013.
ACH Finland	Clearing house set up by some Finnish banks. Operations started in March 2009.	Bank of Finland oversight.	Assessed as fulfilling the oversight requirements; operations have been mainly reliable.
European Multilateral Clearing Facility (EMCF)	Provider of central counterparty clearing services to the Nordic stock exchanges of NASDAQ OMX.	An oversight group coordinated by the Dutch authorities.	A central counterparty reduces the counterparty risk of securities trades, and by netting the transactions of the counterparties, it reduces the liquidity needs of the system. The service provider's operations have been reliable.
Euroclear Finland's (former APK) systems.	Central Securities Depository operating settlement systems for stock and money market instruments.	Bank of Finland oversight.	Operations have been reliable. The settlement system for debt securities (Ramses) and its collateral management services fulfil the requirements of the Eurosystem user standards. Comprehensive assessment based on ESCB-CESR recommendations jointly with FIN-FSA is currently underway.
Euroclear SA	Parent company of the Euroclear Group central securities depositories, providing common services to the Group entities.	An oversight group coordinated by the Belgian authorities.	Cooperation covers common services provided to Euroclear Group entities. Bank of Finland and FIN-FSA conducted in 2011 a joint governance assessment on stakeholder input.
Information networks			
SWIFT	Most significant provider of messaging services to the financial markets; an entity managed by its members.	Oversight group headed by the central bank of Belgium.	SWIFT is a critical provider of services for financial market infrastructure. Its operations have been reliable. SWIFT has continuously strengthened its operational reliability, and it meets the high-level oversight expectations.
Pankkiverkko 3	Domestic closed interbank network used by for example PMJ and POPS.	Bank of Finland oversight.	Subject to oversight monitoring. Operations have been reliable.
ATM networks	Networks critical for the supply of cash to individual members of the public.	Bank of Finland oversight.	Subject to oversight monitoring to ensure acquisition of data and secure preparedness for crisis management. Operations of the ATM network have been mainly reliable.

Countercyclical capital buffers in Finland

11 April 2012

Banks have been found to step up their credit supply in a cyclical upswing and to cut it back in a downswing. This tends to both amplify cyclical fluctuations and increase the threat of banking crises. According to the relevant draft directive, in order to ease this procyclicality problem, authorities could tighten the capital adequacy requirement in response to an overly fast credit stock growth. Internationally proposed criteria for setting an additional capital requirement may not perhaps be suitable for a country like Finland that is sensitive to economic fluctuations.

Banking is often perceived as being procyclical, in that it amplifies economic fluctuations. In a cyclical upswing, banks step up their credit supply, which contributes to reinforcing the upswing and reducing credit risks over the short term but may add to long-term stability problems. In a downswing, banks cut back their lending, which exacerbates the downturn and is indirectly instrumental in increasing credit and market risks.

Responses to the recent years' international financial crisis have included the imposition of new regulations on financial institutions. For example, the meeting of G20 finance ministers and central bank governors in São Paulo in November 2008 issued a communiqué emphasising, for example, the necessity of putting in place financial market regulation to mitigate procyclicality. The Group of Central Bank Governors and Heads of Supervision, the oversight body of the Basel Committee on Banking

Supervision (BCBS), commissioned the Committee on 7 September 2009 to prepare proposals for countercyclical capital buffers, among other issues. Finland is not directly represented on the G20 or the oversight body of the BCBS.

The extensive reform package for bank regulation, the Basel III regulatory framework, published by the BCBS in December 2010, includes a proposal for the setting of a countercyclical capital buffer requirement on banks. The proposal applies to situations where, in the national authorities' estimation, growth in the stock of credit granted to the private sector is too fast. This reform is aimed at inducing banks to operate differently from their usual manner. Banks have typically let their capital positions weaken in an upswing, whereas their capital adequacy has generally been strengthened in times of recession.¹ This is likely to have magnified cyclical fluctuations. Consequently, the main objective of the proposal is to bolster banks' capital positions in an upswing, thereby protecting banks against the realisation of excessive lending risks in a downswing and thus possibly helping to prevent credit stock growth in an upswing.

The additional capital requirement should be met by Tier 1 capital, such as share capital. The requirement would apply to all banks, also to those whose lending has grown only moderately. The capital surcharge should be abandoned



*Karlo Kauko
Research economist
Monetary Policy and
Research*

¹ Jokipii, T – Milne, A (2008) The cyclical behaviour of European bank capital buffers. *Journal of Banking and Finance* 32/2008, 1440–1451.

as soon as the situation within the banking system worsens. The additional capital requirement would be determined by the borrower's, not the bank's, domicile. For banks with credit exposures in several countries, the additional capital charge would be set as the weighted average of national requirements. National authorities would mutually recognise each other's additional capital requirements. Thus, if a Finnish bank granted credit in Estonia, these loans would be subject to the requirement imposed in Estonia.

Criteria for setting an additional capital requirement

In order for an additional capital requirement to be effective, it should be set in an upswing in sufficiently good time ahead of banks running into serious problems. Drehmann et al.² tested the predictive power of seven indicators in respect of some future banking crises, using data that covered 36 countries and about 30 years. They ended up recommending that the main criterion for setting an additional capital requirement should be a larger-than-normal deviation of the credit-to-GDP ratio from its trend, ie from its slowly changing natural level. The trend should be estimated using the Hodrick-Prescott filter.³ If, taking account of total output in the economy, the volume

of credit is markedly higher than deemed normal on the basis of recent past developments, the authorities should impose an additional capital requirement. A surge in housing prices also appeared to warn of banks' future problems, but poor availability of data constrained the possibilities of performing a closer assessment of the ability of this variable to predict financial crises. By contrast, credit stock growth, bank profitability and realised loan losses appeared to be less promising warning indicators.

This ratio has also been criticised. For example, Repullo and Saurina⁴ showed that, in most large advanced countries, economic growth correlated negatively with the proposed trend deviation, meaning that an additional capital requirement would often be set in a downswing. The evolution of the credit stock tends to follow GDP developments with a lag; thus, as economic growth decelerates but the stock of credit continues to grow, the trend deviation increases. In the light of the findings by Repullo and Saurina, a mechanistic imposition of the buffer requirement in accordance with the proposed criterion might even exacerbate the procyclicality problem rather than alleviate it at all.

The problem raised by Repullo and Saurina may be particularly pronounced in Finland, where fluctuations in the outstanding credit-to-GDP ratio have frequently – at least in the past – stemmed mainly from GDP

² Drehmann, M – Borio, C – Gambacorta, L – Jiménez, G – Trucharte, C (July 2010) Countercyclical capital buffers: exploring options. BIS Working Papers 317.

³ For a description of this statistical method, see eg Kydland – Prescott, Business cycles, real facts and monetary myth. Federal Reserve Bank of Minneapolis. Quarterly Review, spring 1990.

⁴ Repullo, R – Saurina, J (2011) The countercyclical capital buffer of Basel III: A critical assessment; CEPR discussion paper series 8304.

changes. Only a few advanced countries have in the last three decades experienced as strong GDP volatility as Finland. Unusual sensitivity to economic fluctuations may well be a relatively permanent structural feature of the Finnish economy. The outstanding credit-to-GDP ratio will increase sharply in a short period of time if the denominator of the ratio recommended by the Basel Committee on Banking Supervision is to decline as fast as it did in Finland in 1991 and 2009. In Finland, this indicator based on trend deviation would have temporarily peaked in the third quarter of 2009 and the additional capital requirement would have been raised to its maximum in the depths of a severe recession (Chart).

In such a recession, the distortion of the ratio is apparent, and the setting of a buffer requirement would be unlikely in this situation. A more severe problem is related to situations where, because of a cyclical slowdown in economic growth, a rather normal increase in the stock of credit appears to be fast. Moreover, strong credit growth may seem normal in terms of the ratio if credit expansion has led to an economic overheating and very rapid GDP growth. The problem could be solved by using as the denominator of the ratio, instead of most recent GDP data, for example the five-year moving average of GDP growth, which would prevent abrupt GDP fluctuations from affecting the ratio very strongly. The latest GDP observation could also be replaced by a seasonally-adjusted trend value. A ratio based on adjusted GDP

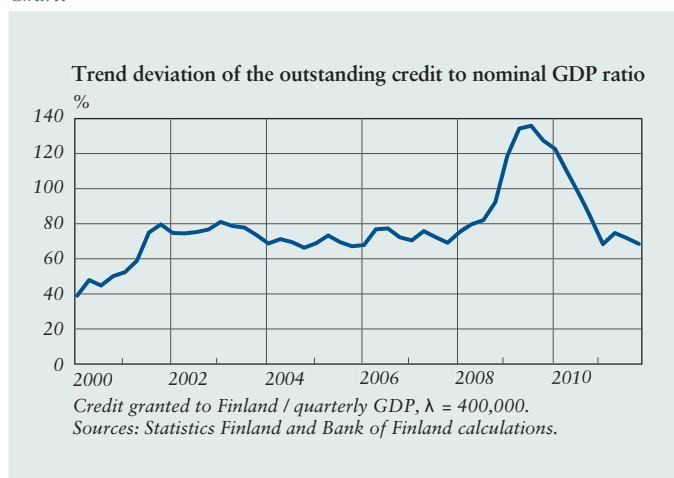
data would not identify a deep recession as a sign of excess credit growth, and rapid GDP growth in an environment of economic overheating would not make strong credit growth appear harmless.

One of the features specific to Finland is the concentration of the banking industry. As a few largest banking groups dominate the bulk of the markets, even the actions of an individual bank may have an impact on the value of the indicator used for setting an additional capital requirement. In the worst case, a change in the operating methods of an individual bank could have a material impact on the selection of the loans included in domestic credit stock statistics. Actually, a sufficiently large bank could knowingly seek to influence the data on the basis of which an additional capital requirement is set.

An additional capital requirement should be removed as soon as the credit cycle turns down in order to prevent it from hampering access to credit and

Unusual sensitivity to economic fluctuations may be a relatively permanent structural feature of the Finnish economy.

Chart.



deepening the recession. However, the extent to which the release of buffer requirements can strengthen banks' lending capacity in a downswing is unclear. Firstly, such a decision is politically uncomfortable. Alleviating the capital requirement may perhaps not appear a sensible official measure in a situation where risks begin to materialise and the public starts to doubt about banks' capital adequacy and liquidity. Secondly, even if the additional capital requirement were removed, banks might not necessarily wish to see their capital positions weaken for fear of reactions from the providers of finance to deteriorating capital levels in the pessimistic atmosphere of economic downturn. Thus, capital adequacy may actually weaken only after years have elapsed since the removal of the buffer requirement. In the worst case scenario, however, capital buffers would be unwound in a disorderly manner, irrespective of official decisions, and credit and other losses would erode bank capital.

Draft directive

As it currently stands, legal provisions governing countercyclical capital buffers are likely to be included in the EU's new directive dealing with credit institutions' capital requirements, among other issues. A regime according to the draft directive would be very similar to what is proposed by the Basel Committee on Banking Supervision. As a rule, the imposition of a capital buffer requirement should be based on the deviation of the outstanding credit-to-GDP ratio from its long-term trend.

In Finland, decision-making powers regarding the setting of additional capital requirements on banks would probably rest with FIN-FSA.

Authorities should take particular account of credit growth relative to GDP and related guidance from the European Systemic Risk Board (ESRB). The additional capital charge would account for a maximum of 2½% of the credit institution's risk-weighted assets. As an EU member state, Finland would also introduce a framework according to the directive.

Pursuant to the proposed directive, each member state must designate an authority responsible for quarterly setting the level of the countercyclical capital buffer rate for exposures located in that member state. The programme of Prime Minister Jyrki Katainen's Government states as follows: *'Macro-prudential supervision can be built on existing institutions. It is necessary to ensure that the Financial Supervisory Authority has the requisite powers to deploy macro-prudential policy instruments among other things to prevent excessive corporate and household debt accumulation.'* This formulation probably means that the final decision regarding the level of countercyclical capital buffers at each particular time would rest with the Financial Supervisory Authority (FIN-FSA) and its Board. In preparing decisions on additional capital requirements, it must be possible to make use of both reliable statistics and broadly-based expertise in macroeconomic, financial and prudential spheres. As growth in the stock of credit is basically a macroeconomic phenomenon, use must be made of macroeconomic analysis in preparing the setting of a countercyclical capital buffer

requirement, regardless of the body that has the final power of decision on the imposition of the requirement.

The wording of the draft directive leaves some room for interpretation as to how the deviation of the credit-to-GDP ratio from its trend must be assessed. The Hodrick-Prescott filter is not separately mentioned in the draft directive. The wording of the proposal would appear to permit the application of a GDP measure smoothed in one way or other. Nor does the draft directive mention any particular threshold for the ratio that, if exceeded, would trigger the setting of the capital requirement. Moreover, according to the proposed directive, national authorities would be allowed to make decisions regarding the requirement on the basis of any other variables that they consider relevant. At least a surge in housing prices and an expanding current account deficit have frequently anticipated banking crises that have materialised later. As examples can be cited the banking crises in Finland and Sweden at the beginning of the 1990s and those in Ireland, Spain and the United States in the first decade after the turn of the millennium. The diminishing relative share of deposits as a source of finance for banks is another potential warning indicator, especially if non-core finance is acquired from abroad.⁵

Timing of measures

Timing has traditionally posed a problem for countercyclical policy. The

⁵ Hahm – Shin – Shin (September 2011) Non-core bank liabilities and financial vulnerability. A study presented at the Federal Reserve and JMCB conference in Washington.

need for action is often identified after a certain period of time, because all available data illustrate past developments. Decision-making also takes its time. Nor is immediate implementation of the decisions possible, and the implications of the decisions are not likely to be seen at once. These same difficulties also apply to the regime of countercyclical capital buffers.

Calculating the credit-to-GDP ratio requires an abundance of statistics. Data should be available promptly, and they should be reliable. The problem is of minor importance for lending by domestic banks and foreign credit institutions' branches located in Finland, as the publication lag of almost final statistics is short. The situation is more complicated for lending from abroad to Finland. In principle, data on these credit flows are obtained from balance of payments statistics. If others than the general government and financial institutions borrow from abroad off the balance sheets of the domestic banking sector, this gross debt should be added to the domestic lending stock, when the imposition of an additional capital requirement is being considered. If the provider of finance is located abroad, the compilation of assets and liabilities statistics is slower and, above all, more unreliable than in the case of domestic loan agreements. A frequently occurring problem regarding balance of payments statistics is the fairly large difference between preliminary and final figures. This is a worse dilemma in Finland than in many other countries, because the economy is highly integrated inter-

The imposition of additional capital requirements should be based on reliable and promptly available data.

nationally. Large companies, in particular, often obtain finance via syndicated loans, in which funds are borrowed simultaneously from several banks all over the world.

Banks must be given time to meet the additional capital requirements imposed by the authorities, which makes the timing problem increasingly difficult. According to the draft directive, the countercyclical capital buffer requirement would enter into force mainly 12 months after the date of the announcement of the relevant decision. Granting an essentially shorter period of time for adaptation would be unfair, as banks cannot alter their capital positions in a minute. In practice, however, banks would probably react to an additional capital requirement sooner than in a year's time. Banks have often sought to fulfil pre-announced, forthcoming requirements very quickly, much earlier than their entry into force. The reason for this may be reputational risk. If a bank is failing to meet upcoming requirements, it may become subject to distrust.

Policy decisions should be forward-looking. This would argue for making decisions on the basis of most recent forecasts rather than last observations. In Finland, too, future economic growth has already been forecast for decades. However, despite the accumulation of abundant experience and the development of analytical methods, cyclical turning points tend to occur unexpectedly. Developments in outstanding credit have also been projected at the Bank of Finland for a long time. In general, the

predicted trends of almost all variables have been more balanced than actual developments, because extreme changes are hardly ever projected. If an additional capital requirement were to be set on the basis of forecasts rather than observations, the applicable thresholds should probably be markedly lower than in the case of reliance on statistics illustrating actual developments. Indicators calculated on the basis of forecasts that avoid extremes reach values in excess of any alarm limits much more seldom than do indicators based on considerably more volatile actual developments.

Other questions

Hardly any interest group thinks to directly benefit from an increase in capital requirements. Banks and many of their borrowers may feel instead that they will suffer from such a measure, especially if banks raise their lending rates because of the additional capital requirement. Setting an additional capital requirement is likely to be an unpopular decision. Consequently, those responsible for making the appropriate decision should be able to act as independently as possible. Paradoxically, such a decision, if it succeeded in preventing the occurrence of a crisis, could later become subject to particularly severe criticism: the justification for the unpopular decision was the threat of a banking crisis but, as no problems surfaced, the measure may in retrospect appear useless and counter-productive.

The banking sector's strong capital base is one of the characteristics specific

to Finland. The banks' capital adequacy is, on average, much more robust than foreseen in the domestic statutory requirements based on international recommendations and EU legislation. If the minimum capital requirement is increased by, say, two and a half percentage points, this may perhaps not affect the operations of those banks whose capital adequacy in any case clearly exceeds the minimum requirements. An additional capital requirement may therefore be an ineffective tool in Finland's case, except if the banks' current strong capital positions are to weaken at any time in the future.

Key words: Basel III, macroprudential tools, countercyclical capital buffer

Changes in payment and settlement systems require effective risk management

12 April 2012

Integration of the Finnish financial system into the global markets is reflected for example in the increasing provision of critical infrastructure services from abroad. Market integration may, through economies of scale, lower transaction costs. The challenge is to ensure that the level of domestic services does not decline and that efficiency gains are maintained. Market participants' decisions on payment and settlement systems are strategic: they define the longer-term future operating conditions for the markets and the service level of the infrastructure. The impacts of these decisions therefore require thorough analysis, from the perspective of both individual participants and the entire market. The Bank of Finland assesses infrastructure solutions at the system-level and induces change, where necessary.

The infrastructure of the Finnish financial markets has witnessed strong internationalisation in recent years, as is clearly illustrated by an examination of the key payment and settlement systems serving the Finnish markets. The European systems providing key infrastructure services for the Finnish market include the large-value payment systems TARGET2 and EURO1 and the retail payment system STEP2. The Finnish central securities depository Euroclear Finland is part of the Belgian Euroclear Group, and central counterparty services are provided by the Dutch clearing company EMCF. The purely domestic payment systems, ie PMJ and POPS, are rapidly losing significance.

The integration of systems may improve efficiency, as a result of

economies of scale and lower transaction costs. In addition, it may bring new types of services to the markets and open new opportunities for domestic participants also in larger markets. But market integration is also a challenge for ensuring the level of services in the national market. International services have to be available also for smaller market participants and it must be possible to maintain the efficiency gains achieved for end-customers through automated processes. It must be possible to maintain established procedures if they benefit the end-users. Adequate continuity and contingency arrangements are an integral part of the service level.

Migration to an international infrastructure changes the procedures of both service providers and users, and may create new counterparty and system level risks. Change management is challenging for both system participants and the service providers maintaining the systems. The system participants and operators often see the implementation of changes as extensive IT projects that require major resources and high-cost investments. At the same time, infrastructure solutions are also strategic decisions that specify the future provision of services and operating conditions. Therefore the decisions have to be taken at a sufficiently high level. The changes may have a major impact also on the systems of the end-customers. Significant changes to systems should be presented to



*Päivi Heikkinen
Head of Division
Financial Stability and
Statistics*



*Kari Kemppainen
Economist
Financial Stability and
Statistics*

System changes require effective risk management.

relevant authorities well in advance so that the perspectives of oversight and financial supervision are taken into account.¹

Payment and settlement systems are network services in which the system operator and the participants have to interoperate smoothly. In system development projects and the introduction of new systems it does not suffice that individual entities optimise their own solutions; instead it also requires risk management at system level. The reconciliation of views may create conflicting pressures. The task of the central banks is to assess and ensure the reliability and efficiency of payment and settlement systems also at the national level.²

Impacts of changes require careful analysis

As part of the migration to the Single Euro Payments Area (SEPA), Finnish domestic credit transfers have been replaced by SEPA credit transfers and are now processed by the pan-European automated clearing house STEP2.³ When customers place payment orders with their bank, the bank directs the payments addressed to other banks' customers to STEP2 for processing. This enables the processing of all SEPA payments in the same system. On the basis of payment data, STEP2 calculates

each bank's net credit or debit positions per settlement cycle and delivers the data to TARGET2 where interbank payments are settled. After receiving confirmation of settlement, STEP2 transmits the payment data to recipient banks that credit their customers' accounts.

STEP2 has processed payments in three cycles, ie in the morning, afternoon and during the night. The night-time cycle is a practice developed for the transfer of Finnish payments, and over 99% of Finnish credit transfers, including recurring payments such as wages and salaries and pensions, are processed during the night-time cycle. The successful completion of the night-time cycle is of key importance for ensuring that the level of services provided to Finnish customers is maintained. If, for some reason, the processing of payments in the night-time cycle has been unsuccessful, the payments have not necessarily made the morning cycle, and have been processed only in the next afternoon cycle.

There have been disruptions in the payment transmission effected via the night-time cycle, for various reasons, resulting in payment delays. To reduce the disruptions, the Bank of Finland and the Financial Supervisory Authority (FIN-FSA) required banks to take corrective action, and measures are being taken, headed by the Federation of Finnish Financial Services, to remedy the situation. Bringing forward the night-time cycle has been considered one of the ways of reducing the risks of night-time processing. The problem with the night-time cycle has been that banks

¹ Section 26 of the Act on the Bank of Finland, and FIN-FSA Standard 4.4b, section 6.8.

² The Bank of Finland's statutory task is to participate in maintaining the reliability and efficiency of the payment system and overall financial system and participate in their development (section 3 of the Act on the Bank of Finland).

³ The operation of STEP2 is described in the Bank of Finland Bulletin 2/2011, p. 33.

have had very little time to correct possible errors in night-time electronic data processing. In February, STEP2 introduced three additional settlement cycles that take place in the early morning, at noon and in the evening. As STEP2 has increased the number of settlement cycles, it may be considered whether changing to an earlier evening cycle would improve the reliability of the settlement of domestic payments, or whether there are other ways of improving the reliability of the night-time cycle.

Deliberations on whether to change from the night-time cycle to the evening cycle are a concrete example of changes in the procedures of system participants that have a direct impact on liquidity risk and the successful settlement of payments and thereby on the level of services provided to customers.

When banks are planning system changes, for example a possible change from the night-time cycle to an earlier evening cycle, prior to decision making, they should describe the change and the new payment transfer process, the related risks and risk management, and show that the change can be justified by improvements in operational reliability and service level. A change in the settlement schedule does not in itself improve reliability, unless the extra time can be used for making corrections.

The example discussed above entails specific risk management issues. The liquidity risks of the system and the participants depend on how the practical implementation of the change is brought about. In the event that the

banking sector's total transaction volumes were not moved to the evening cycle simultaneously but were instead processed in different cycles, it would be increasingly difficult for individual banks to estimate their liquidity needs and the benefits of netting would diminish. A coordinated move by the banks to the use of the evening cycle would reduce the need for additional liquidity, thus preventing the creation of liquidity risks.

The successful completion of a night-time settlement cycle depends on the adequacy of liquidity of the participating banks. Currently only Finnish banks participate in the night-time cycle. In principle, the settlement cycle could however, include all the banks using STEP2, ie over 100 direct participants from all over Europe. Based on current rules, the entire settlement is cancelled and will be effected in the next cycle if two or more banks had insufficient funds for settlement. The operational model could thereby create a situation in which a large volume of Finnish payments are delayed, due to banks that are participating in the cycle and are exchanging only smaller volumes of transactions. Banks should prevent the emergence of such situations in cooperation with the system operator.

The continuity and contingency arrangements for Finnish retail payments must be planned so that they correspond with the new operating environment. Banks must analyse the criticality of systems also from the perspective of how long they can survive without the services provided

Continuity and contingency arrangements must be ensured in a changing environment.

by the system, and whether the system operator can guarantee the restoration of services within the required recovery time. Financial market developments in recent years have shown that it is also necessary to prepare for risks that are highly unlikely. Thus continuity and contingency arrangements should also be considered for situations in which the recovery time promised by the system operator is not materialised.

Utilisation of oversight standards in market participants' risk management

A central bank assesses infrastructural changes and their impact on the risks to payment and settlement systems based on internationally accepted oversight principles. Central banks require that systems that are subject to oversight comply with the applicable Core Principles. Although the Core Principles apply to financial market infrastructures and their compliance is monitored by the authorities, they benefit also market participants when they, as system users or owners, consider for example, the impact of system changes. This enables them to make use of and take into account in decision-making the oversight requirements imposed on the systems.

As a result of the financial crisis, a number of initiatives have been launched to improve financial stability, for example by requiring the use of systems that are subject to oversight. The aim was also to improve the resilience of the infrastructures by imposing more specific requirements. The Committee on Payment and

Settlement Systems (CPSS) and the International Organization of Securities Commissions (IOSCO)⁴ published in mid-April 2012 revised principles for financial market infrastructures, and they replace the existing sets of system-specific standards. The new standards harmonise and strengthen the existing standards on systemically important payment and settlement systems.⁵ The standards are principles that are applied with the help of key considerations and detailed questions. These enable the authorities to examine the structures, rules and procedures of the system that are of key importance in terms of risk management, and to assess the system's level of compliance with the set principles. Authorities worldwide are committed to applying these principles.

The revised harmonised international standards for infrastructures are in many ways a positive development for ensuring the reliable and smooth operation of the payment and settlement systems. They take into account the institutional differences between the financial market infrastructures and incorporate specific minimum requirements for managing credit, liquidity, and general business risk. The interdependencies of systems and risks created by indirect participation are addressed in specific principles. The standards take into account that

⁴ The Committee on Payment and Settlement Systems (CPSS) operates under the auspices of the Bank for International Settlements (BIS), and IOSCO refers to the International Organization of Securities Commissions.

⁵ The standards apply to systemically important payment systems, securities clearing and settlement systems, central securities depositories (CSDs), central counterparties (CCPs), and trade repositories. For more information on the standards, see <http://www.bis.org/publ/cpss101.htm>.

financial markets and the infrastructures that provide services to them are international by nature and that they should be governed by harmonised rules. The standards also seek to promote the operation of the national markets by defining as one of the criteria of efficiency that the system also takes into account the structure of the local market and its conventions.

The standards also include obligations on the authorities responsible for financial market oversight, supervision and regulation. They should be granted sufficient powers and resources to fulfil their responsibilities, and they should clearly define and disclose their regulatory, supervisory and oversight policies. Matters of particular importance are the responsibilities and exchange of information regarding international infrastructures: the systemic importance of the infrastructures in each country must be taken into account in establishing cooperative arrangements, and the statutory mandates of the authorities are to be acknowledged. For Finland these principles are of key importance, as critical infrastructure services are largely provided from abroad.

Level of services must be ensured in infrastructure development

The Bank of Finland's statutory task is to contribute to ensuring that the infrastructures used by the participants can guarantee the reliability and efficiency of the payment and settlement system services used by the Finnish market. The performance of these tasks requires

new procedures and competencies, due to the fundamental changes in market structures in the wake of deepening integration and because infrastructure services for the Finnish financial system are increasingly provided from abroad. The revised international oversight standards provide strong support in this work.

With the ongoing changes in infrastructures, the selected systems and procedures of the participants must be such that they ensure that the service level of also the national markets is maintained and developed. Payment and settlement systems are network services in which the overall functioning of the system must be ensured while, at the same time, individual participants seek to optimise their operations. Changes in the systems and in the procedures of the participants have a direct impact on the participants' risks and on the level of services they provide to end-customers. Financial market participants must decide on their strategic infrastructure solutions at a sufficiently high level. The impact of the decisions has to be analysed carefully, both at the level of individual participants and the entire system. In the assessment of systemic risks, the Bank of Finland cooperates with market participants and infrastructure service providers, in compliance with international oversight principles.

Key words: financial market infrastructure, integration, oversight standards, payment and settlement systems, risk management

Infrastructure solutions are strategic by nature.

The effects of debt crisis-related policy decisions in European sovereign bond markets

24 April 2012

The article discusses the effects of policy decisions related to the management of the European debt crisis on long-term government bond yields in seven euro area countries. According to the results, some of the policy decisions have had a significant impact on sovereign bond yields and have succeeded in increasing stability. As uncertainty is high during crisis, it is important that policy measures are as concrete and as transparent as possible, as is the case for the ECB's long-term refinancing operations. However, temporary liquidity support is not enough to stabilise the markets; rather, confidence is gained by fiscal consolidation and improved solvency.

The pricing of euro area sovereign bonds has undergone large fluctuations ever since the establishment of the euro area. Following the creation of the monetary union, yields on euro area sovereign bonds began to converge rapidly, which was regarded as a result of the elimination of inflation and exchange rate risks from bonds of individual countries, risk weights of government bonds in capital adequacy regulation and the European Central Bank's practice of valuing all euro area countries' bonds as equal collateral for central bank credit to banks. The period of convergence was followed by a few-year phase when sovereign bond yields remained stable and low despite divergent macroeconomic developments in euro area countries, particularly with regard to general government deficit and debt.

However, the assumption of stable euro area debt markets was premature.

Investors' focus turned back to sovereign debt risks soon after the collapse of Lehman Brothers in September 2008. Looking at the evolution of 10-year government bond yields for selected euro area countries in the past five years, it can be seen that there has been a clear regime shift in the pricing of European sovereign bonds in this period (Chart).

As the financial crisis intensified and spread to the real economy, European governments had to provide support to their banking sectors and use stimulus measures to boost their economies. Macroeconomic fundamentals deteriorated faster in some countries than others, and deficits accumulated during the apparently tranquil phase prior to the crisis rapidly became a problem for those countries which had a limited room to manoeuvre their fiscal policy. The crisis quickly led to a widening of euro area sovereign bond spreads.

Sovereign bond yields began to increase in countries with a weakened macroeconomic situation and fiscal position in particular (especially Greece, Ireland and Portugal). In contrast, in countries with stronger economic fundamentals (eg Germany, the Netherlands and Finland), long-term interest rates declined as a result of flight-to-quality. In mid-May 2010 the Greek sovereign debt markets fell into severe stress and the crisis began to spread to other European countries. Market-based funding dried up for Greece, Ireland and Portugal, forcing these countries, one after another, to seek financial support in the European



*Juha Kilponen
Research Adviser
Monetary Policy and
Research*

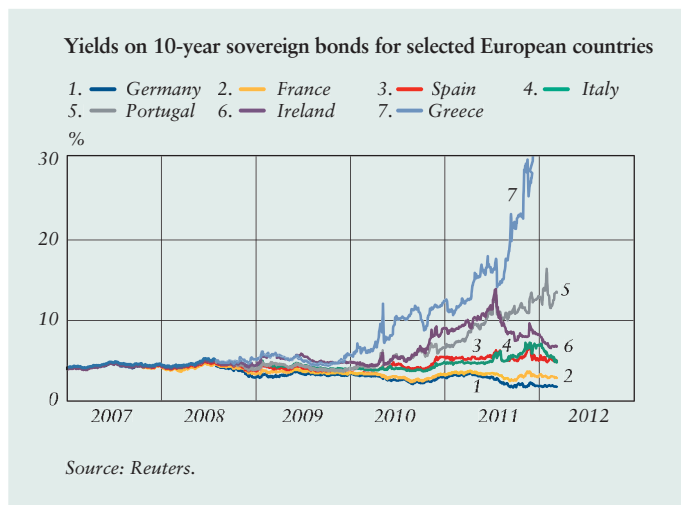


*Helinä Laakkonen
Research Economist
Monetary Policy and
Research*



*Jouko Vilhunen
Head of Research
Monetary Policy and
Research*

Chart.



crisis mechanisms and the International Monetary Fund.

The euro area debt crisis has led to a number of both temporary and permanent policy actions and initiatives. These include the establishment of the European Financial Stability Facility (EFSF), the European Financial Stabilisation Mechanism (EFSM) and the European Stability Mechanism (ESM). In addition, the European Commission has strengthened the Stability and Growth Pact and created regulatory initiatives to enforce euro area countries' commitment to a sustainable fiscal policy.

At the same time, the European Central Bank has conducted non-standard monetary policy measures to support financial markets and the banking system. Non-standard monetary policy measures, also used by a number of other central banks, are primarily aimed at safeguarding the functioning of the monetary policy transmission mechanism and easing

pressures in the euro area financial markets. The ECB has also maintained its policy rate at a historically low level, contributing to the availability of funding for enterprises, financial institutions and households.

This article examines the short-term effects of these policy decisions on 10-year sovereign bond yields in selected euro area countries and assesses whether the measures have contributed to restoring stability in euro area sovereign bond markets.

Risk factors affecting sovereign bond yields

Factors determining European sovereign bond yields have been studied extensively,¹ especially in recent years. In summary, the main risk factors determining bond yields are credit risk, liquidity risk and investors' general risk appetite or risk aversion.

The higher the probability that the debtor would default totally or partially, the higher the credit risk premium the investor requires. Liquidity risk premium is, in turn, the compensation required by the investor for not being able to sell or buy securities that are traded on a limited scale without substantial costs. Changes in investors' risk appetite may result for example from increasing uncertainty over future economic developments. As investors favour low-risk debt securities in times of uncertainty, interest rates on

¹ See eg Aßmann – Boysen-Hogrefe (2011), Beber – Brandst – Kavajecz (2009), Bernoth – Erdogan (2012), Bernoth – von Hagen – Schuknecht (2012), Favero – Pagano – von Thadden (2010), Gómez-Puig (2009), von Hagen – Schuknecht – Wolswijk (2011), Manganelli – Wolswijk (2009), Oliveira – Curto – Nunes (2012).

high-risk debt securities increase as a result of investors' portfolio adjustments. Also the volatility of high-risk debt securities typically increases in uncertain times, which could change the investors' preference to hold these instruments in their investment portfolios.

Risk perception affects the functioning of markets in general, whereas credit risk and liquidity risk are bond-specific. On the other hand, it has been found that a fall in investors' risk appetite has the most effect on bonds with the highest credit and liquidity risks. The relevance of the different risk factors for sovereign bond yields has also been found to change in time. A number of studies support the view that an increase in credit and liquidity risks has increased yields more during the recent financial crisis than before the crisis. Changes in the general risk appetite have also affected sovereign bond yields more during the crisis than before it.

Estimation of the effects of crisis management decisions

Below, we will examine the effects of policy decisions concerning the management of the European debt crisis on sovereign bond yields. We use an empirical model that includes policy decisions and explanatory variables for credit risk, liquidity risk and general risk appetite.² The dependent variable

² This article presents a simplified version of a broader empirical model whose results are presented in a forthcoming discussion paper by Kilponen – Laakkonen – Vilminen (2012). In addition to the variables presented in this article, the broader model includes additional explanatory variables for risk factors and variables aimed at capturing contagion effects between countries.

(denoted in the model as $y_{i,t}$, where i represents country and t represents time) is the yield spread between the 10-year government bond and the 10-year euro swap rate.³ The data set comprises 7 euro area countries: Germany, France, Spain, Italy, Portugal, Ireland and Greece. Daily data covers the period from 1 January 2007 to 20 March 2012.

Credit risk is measured by 10-year CDS spreads⁴ (denoted in the model as variable $CDS_{i,t}$) and liquidity risk by bid-ask spreads of 10-year bond yields (variable $BAS_{i,t}$). Both of the selected measures have been widely used in previous literature. One of the advantages is that CDS prices and bid-ask spreads are available on a daily basis. Several other indicators for credit and liquidity risk, such as general government statistics and outstanding government bonds, are generally only available on a monthly or quarterly basis. Such a frequency is not high enough to capture the impact of policy news. The main disadvantage of the selected measures is that they correlate with general risk appetite. This may bias the estimated parameter values.

General risk level in the markets is measured by two indicators. Of these, the VIX index⁵ (variable VIX_t) measures the risk appetite of global financial market investors, whereas the iTraxx

³ 10-year euro swap rate reflects risk-free return.

⁴ Credit default swap (CDS) is a financial swap agreement where the holder of a bond can buy protection against the debtor's potential default. The buyer of the CDS pays a premium to the seller because if the debtor defaults the seller of the CDS bears the losses on behalf of the buyer.

⁵ The VIX index is constructed by using the implied volatility of the S&P 500 index options. It reflects the market expectations of volatility in the US stock markets.

Table 1.

Categories of policy decisions
<p>ECB's interest rate decisions Up (ECBup): 8 Mar 2007, 6 Jun 2007, 3 Jul 2007, 7 Apr 2011, 7 Jul 2011 Down (ECBdw): 8 Oct 2008, 6 Nov 2008, 4 Dec 2008, 15 Jan 2009, 5 Mar 2009, 2 Apr 2009, 7 May 2009, 3 Nov 2011</p>
<p>ECB's liquidity support Short-term (ECBstls): 22 Aug 2007, 6 Sept 2007, 8 Nov 2007, 12 Dec 2007, 7 Feb 2008, 11 Mar 2008, 23 Mar 2008, 2 May 2008, 31 Jul 2008, 4 Sept 2008, 26 Sept 2008, 29 Sept 2008, 7 Oct 2008, 13 Oct 2008, 7 May 2009, 4 Jun 2009, 4 Aug 2011, 6 Oct 2011 Long-term (ECBltls): 10 May 2010, 8 Dec 2011</p>
<p>Government support packages Requests (SPreq): 21 Nov 2010, 8 Apr 2011 Decisions (SPdec): 11 Apr 2010, 10 May 2010, 28 Nov 2010, 16 May 2011, 21 Jul 2011, 20 Feb 2012</p>
<p>Decisions concerning the establishment of the European Stability Mechanism (ESM) 28 Oct 2010, 16 Dec 2010, 21 Mar 2011, 2 Feb 2012</p>
<p>Decisions concerning the functioning of the European Financial Stability Facility (EFSF) 20 Jun 2011, 21 Jul 2011, 29 Nov 2011</p>
<p>European Economic Recovery Plan (EERP): 26 Nov 2008</p>
<p>Other policy decisions made during the debt crisis (OD): 27 May 2009, 29 Sept 2010, 11 Mar 2011, 25 Mar 2011, 8 Nov 2011, 19 Dec 2011</p>

Europe index⁶ (variable $ITRAXX_t$) measures the general risk appetite particularly in the European debt markets. A number of other variables measuring the general risk attitude were also considered, but it was found that they had no impact on sovereign bond yields. These variables are described in more detail in the forthcoming Bank of Finland discussion paper by Kilponen, Laakkonen and Vilmunen.

To study the impact of policy decisions, two dummy variables are created for each policy decision. The first dummy variable equals one at the date of the announcement of the policy

decision. The second dummy variable equals one on the day following the announcement and zero otherwise. Some of the announcements may have been made in the evening when markets are already closed. In such a case the effects of policy decisions are reflected in bond yields on the day following the policy announcement. It may also be that the markets have difficulties in judging the effects of certain decisions on bond risks, in which case market reactions may take longer than one day and can even be reversed on the day of the announcement and the next day.

Because more than 50 important policy decisions were identified, policy decisions are combined in 10 categories

⁶ The Markit iTraxx Europe index comprises 125 equally weighted credit default swaps on investment grade European corporate entities.

Model.

$$\begin{aligned}
 \Delta y_{i,t} = & \alpha + \beta \Delta y_{i,t-1} + \gamma_{CDS} \Delta CDS_{i,t-1} + \gamma_{BAS} \Delta BAS_{i,t-1} + \gamma_{VIX} \Delta VIX_{t-1} \\
 & + \gamma_{ITRX} \Delta ITRAXX_{t-1} + \sum_{n=0}^1 \varphi_{ECBup_n} ECBup_{t-n} \\
 & + \sum_{n=0}^1 \varphi_{ECBdw_n} ECBdw_{t-n} + \sum_{n=0}^1 \varphi_{ECBstls_n} ECBstls_{t-n} \\
 & + \sum_{n=0}^1 \varphi_{ECBltls_n} ECBltls_{t-n} + \sum_{n=0}^1 \varphi_{SPreq_n} SPreq_{t-n} \\
 & + \sum_{n=0}^1 \varphi_{SPdec_n} SPdec_{t-n} + \sum_{n=0}^1 \varphi_{ESM_n} ESM_{t-n} \\
 & + \sum_{n=0}^1 \varphi_{EFSF_n} EFSF_{t-n} + \sum_{n=0}^1 \varphi_{EERP_n} EERP_{t-n} + \sum_{n=0}^1 \varphi_{OD_n} OD_{t-n} \\
 & + \varepsilon_{i,t}
 \end{aligned}$$

to avoid multicollinearity problems. Table 1 presents the categories of policy decisions and the dates when the decisions were made. A complete list of all policy decisions is available in the forthcoming discussion paper.

The first four categories include all policy decisions of the ECB: interest rate decisions and non-standard refinancing operations. Increases and decreases of the ECB policy rate are divided in two separate groups (variables $ECBup_t$ and $ECBdw_t$). The effects of the short- and long-term liquidity support measures are also examined separately (variables $ECBstls_t$ and $ECBltls_t$).

Financial support packages for Greece, Ireland and Portugal comprise an own category of policy decisions. The effects of requests for support packages and decisions to grant one (variables $SPreq_t$ and $SPdec_t$) are studied separately. The seventh category includes all decisions on the establishment of the European Stability Mechanism (variable ESM_t), the eighth decisions concerning the functioning of

the European Financial Stability Facility (variable $EFSF_t$). The decision on the implementation of the European Economic Recovery Plan (variable $EERP_t$) comprises the ninth and other decisions (OD_t) the tenth category.

The impact of policy decisions in the European sovereign bond markets was studied with the following model that was estimated using the ordinary least squares (OLS) method for all the countries in the data set (see Model).

In the model, α is a constant, β captures the first order autocorrelation of the dependent variable, the parameters for γ_n describe the effects of the risk factors, the parameters for φ_n capture the effects of the policy decisions and $\varepsilon_{i,t}$ is the error term of the model. Since many studies have noticed that bond yields are non-stationary, the model is estimated in differences, ie it assesses the effects of policy decisions on changes in sovereign bond yields.

Results of the empirical model

According to the estimation results, of the risk factors, the effects of the proxies

on both credit and liquidity risk proved to be mainly as expected, ie positive. However, the statistical significance of the risk factors differs by country (Table 2). Surprisingly, the coefficient for the liquidity risk variable was negative in the case of Portugal and Ireland. A negative coefficient may reflect the ECB's reaction within the scope of the Securities Markets Programme to heightened uncertainty and decreased liquidity in these countries' secondary bond markets. If this is the case, results suggest that the ECB's interventions have succeeded in decreasing liquidity risk.

Surprisingly, the coefficients for the variables measuring general risk

appetite were negative. The demand for large countries' debt securities due to flight-to-quality might explain the results especially for countries such as Germany, but flight-to-quality can hardly explain the results for all the other countries. On the other hand, both of the variables for investor's general risk aversion were high, particularly at the beginning of the financial crisis (especially in 2008), and hence might not necessarily have captured the current risk attitude among European sovereign bond investors very well.

The effects of the policy decisions vary. Apart for one exception, the ECB's decisions to raise the policy rate do not

Table 2.

Estimation results							
Parameter	Germany	France	Spain	Italy	Portugal	Ireland	Greece
β	-0.282 ***	-0.172 ***	0.086	0.040	0.148 **	0.239 ***	-0.007
γ_{CDS}	-0.010	0.118 ***	0.125 *	0.067	0.136 **	0.014	0.107 ***
γ_{BAS}	0.090 ***	0.002	0.048	0.058 **	-0.170 ***	-0.138 ***	0.116 ***
γ_{ITRX}	-0.110 **	-0.005	-0.037	0.043	0.034	0.064 ***	0.038
γ_{VIX}	-0.083 **	-0.076 **	-0.088 **	-0.115 ***	-0.079 ***	-0.074 ***	-0.012
φ_{ECBup_0}	-0.119	-0.371 *	-0.208	-0.103	-0.417	-0.424	-0.018
φ_{ECBup_1}	-0.153	0.270	0.460	0.502	-0.053	1.008	-0.049
φ_{ECBdw_0}	-0.250	-0.791 *	-0.293	-0.738 ***	-0.192	-0.504 **	0.276
φ_{ECBdw_1}	-0.541	-0.343	-0.028	0.326	-0.212 *	-0.041	0.119
$\varphi_{ECBstls_0}$	0.285	0.407 **	0.108	0.222	-0.014	0.021	-0.020
$\varphi_{ECBstls_1}$	-0.212	-0.472 **	-0.353	-0.215	-0.133	-0.312 *	-0.008
$\varphi_{ECBltls_0}$	0.631 **	3.152	0.326	1.423	-2.778	-4.284	-2.249
$\varphi_{ECBltls_1}$	0.134	-3.015 ***	-1.805 **	-2.058 **	0.493	1.268 **	-0.463
φ_{SPreq_0}	0.374	-0.066	-0.039	-0.483	0.087	-0.950	0.226
φ_{SPreq_1}	-0.317 **	-0.007	1.025	0.321	0.459	1.341	0.012
φ_{SPdec_0}	0.776 ***	-0.326	-1.366	-1.475	-1.880 **	-2.050 **	-1.411 *
φ_{SPdec_1}	-0.572 **	0.429	0.971 **	0.823 **	-0.057	0.136	-0.125
φ_{ESM_0}	0.755 **	-0.160	0.637	0.182	-0.060	0.156	0.003
φ_{ESM_1}	0.174 *	0.079	0.102	0.391 **	-1.510	0.626 **	0.789
φ_{EFSF_0}	-0.392	-0.844	-1.502 **	-0.794	0.440	-0.135	0.129
φ_{EFSF_1}	0.043	-0.814	-0.869 **	-0.681	0.413	-1.596 **	-1.213 **
φ_{EERP_0}	0.692 ***	-0.109	0.250 **	0.195 **	-0.224 ***	-0.175 ***	0.103 ***
φ_{EERP_1}	0.616 ***	0.439 ***	0.306 **	0.844 ***	-0.091	0.066	0.017
φ_{OD_0}	-0.559 ***	-0.332 *	-0.577 ***	-0.324	-0.325	-0.067	0.147
φ_{OD_1}	0.710	1.002	0.250	0.651	0.160	0.084	-0.260

The table presents the estimation results of the empirical model. Mean errors are robust to autocorrelation and heteroscedasticity. *, ** and *** denote significance levels of 10%, 5% and 1%, respectively.

seem to have had systematic effects. The ECB's decisions to decrease the policy rate seem to have had expected effects on long-term sovereign bond yields in most of the countries.

The ECB's short-term liquidity support decisions do not seem to have had a significant impact on long-term government bond yields in general. By contrast, the long-term liquidity support decisions have decreased the yields in most of the countries, notably in large countries such as France, Spain and Italy. The effects have been reflected in yields especially the day following the policy announcement. As for Germany and Ireland, the long-term liquidity support decisions have surprisingly had a positive effect.

The decisions on government support packages have generated slightly mixed effects in the markets. Requests for financial support seem to have had no impact in countries requesting support, whereas decisions to grant support have decreased the yields in the countries concerned. Interestingly, decisions to grant support have increased long-term yields on the day following the grant announcement in Italy and Spain but decreased them in Germany. This may reflect contagion effects, as investors have reassessed sovereign bond risks in other countries after the announcements on financial support.

The decisions concerning the establishment of the ESM seem to have increased yields in some countries, whereas the decisions on the functioning of the EFSF have more generally decreased the yields. In

particular, the statistically significant and relatively large coefficients for Ireland and Greece suggest that the decisions have been successful at least in the short term. The coefficient for the EERP-related decision is – as expected – positive for most of the countries. However, Ireland and Portugal are exceptions. Short-term economic stabilisation probably feeds uncertainty about the long-term sustainability of public finances, which dominates the interest rate effect. The other policy decisions have had a statistically significant impact on sovereign bond yield changes at least in Germany, France and Italy. The 'other decisions' category includes especially measures to strengthen the Stability and Growth Pact and to enhance fiscal policy in the euro area. The negative coefficients for the largest countries may imply that markets have considered these measures to improve the overall stability in the euro area. Another possible interpretation is that market reactions to the other decisions have been negative, which has increased flight-to-quality demand for large countries' sovereign bonds.

Effects of policy decisions mainly positive

Policy decisions to resolve the European debt crisis have had some impact on sovereign bond yields. As expected, the decisions have generated differing effects depending on the country. A decision that eases pressures in one country may well increase risks in another country. However, the policy decisions seem to have generated mainly positive and expected effects.

The ECB's long-term liquidity support measures seem to have had the strongest stabilising effect on the markets, whereas policy decisions taken during the debt crisis which mainly affect long-term fiscal policy have not generated significant effects in distressed countries. Fiscal policy effects are dominated by uncertainty about the long-term sustainability of public finances, which increases sovereign bond yields. This may imply content- and policy-related uncertainty about longer-term decisions. To stabilise the markets, policy decisions made during the financial crisis need to be as concrete and transparent as possible.

It is also crucial to understand what part of yield increases results from weaker economic fundamentals and the

accompanying increased risks and what part results from weaker risk appetite in an uncertain economic situation. If yields are driven by increased credit risk due to weakened solvency, yields will remain high for a long time. To stabilise such a situation it is not enough to ease the markets and provide temporary liquidity; confidence and risk tolerance are only gained by fiscal consolidation and improved solvency. In this regard, it is difficult to over-emphasize the importance of successful macroeconomic adjustment programmes in crisis-stricken countries.

Keywords: policy effects, monetary policy, non-standard monetary policy measures, sovereign bond markets, debt crisis

References

- Aßmann – Boysen-Hogrefe (2011) Determinants of government bond spreads in the euro area: in good times as in bad. *Empirica* (3 June 2011), p. 1–16.
- Beber – Brandst – Kavajecz (2009) Flight-to-quality or flight-to-liquidity? Evidence from the euro area bond market. *Review of Financial Studies* 22, p. 925–957.
- Bernoth – Erdogan (2012) Sovereign bond yield spreads: A time-varying coefficient approach. *Journal of International Money and Finance* 31, p. 639–656.
- Bernoth – von Hagen – Schuknecht (2012) Sovereign risk premiums in the European government bond market. *Journal of International Money and Finance*. Forthcoming.
- Favero – Pagano – von Thadden (2010) How Does Liquidity Affect Government Bond Yields? *Journal of financial and quantitative analysis* 45, p. 107–134.
- Gómez-Puig (2009) Systemic and Idiosyncratic Risk in EU-15 Sovereign Yield Spreads after Seven Years of Monetary Union. *European Financial Management* 15, p. 971–1000.
- von Hagen – Schuknecht – Wolswijk (2011) Government bond risk premiums in the EU revisited: The impact of the financial crisis. *European Journal of Political Economy* 27, p. 36–43.
- Kilponen – Laakkonen – Vilminen (2012) Sovereign risk, uncertainty and policy. Bank of Finland Discussion Paper. Forthcoming.
- Manganelli – Wolswijk (2009) What drives spreads in the euro area government bond market? *Economic Policy* 24, p. 191–240.
- Oliveira – Curto – Nunes (2012) The determinants of sovereign credit spread changes in the Euro-Zone. *Journal of International Financial Markets, Institutions and Money* 22, p. 278–304.

<http://www.consilium.europa.eu/>
<http://www.ecb.europa.eu/mopo/implementation/omo/html/communication.en.html>

Organisation of the Bank of Finland

5 July 2011

PARLIAMENTARY SUPERVISORY COUNCIL

Ben Zyskowicz, Chairman, Pirkko Ruohonen-Lerner, Vice Chairman, Mari Kiviniemi, Jouni Backman, Timo Kalli, Marjo Matikainen-Kallström, Lea Mäkipää, Jan Vapaavuori, Pia Viitanen

Anton Mäkelä, Secretary to the Parliamentary Supervisory Council

BOARD

<p>Erkki Liikanen Governor</p> <p><i>Monetary policy preparation and implementation, domestic economic policy, membership of the Governing Council and General Council of the ECB.</i></p> <p><i>Member of the Board to whom the Heads of the General Secretariat, Banking Operations, and Internal Audit report.</i></p>	<p>Pentti Hakkarainen Deputy Governor</p> <p><i>Financial stability issues, currency supply services, financial administration and procurement, risk control, Chairman of the Board of the Financial Supervisory Authority.</i></p> <p><i>Member of the Board to whom the Heads of Financial Stability and Statistics, and Currency report.</i></p>	<p>Seppo Honkapohja Member of the Board</p> <p><i>Research, investments of financial assets, administration.</i></p> <p><i>Member of the Board to whom the Heads of Monetary Policy and Research, and Administration report.</i></p>
--	--	---

Arno Lindgren, Secretary to the Board

DEPARTMENTS

<p>Monetary Policy and Research <i>Tuomas Saarenheimo</i></p>	<ul style="list-style-type: none"> • Forecasting • International and Monetary Economy • Information Services 	<p>Institute for Economics in Transition (BOFIT)</p>	<p>Research</p>
<p>Financial Stability and Statistics <i>Kimmo Virolainen</i></p>	<ul style="list-style-type: none"> • Macroprudential Analysis • Oversight of Market Infrastructure 	<p>Statistics</p> <ul style="list-style-type: none"> • Balance of Payments • Financial Statistics 	<ul style="list-style-type: none"> • Information Management
<p>Banking Operations <i>Harri Lahdenperä</i></p>	<ul style="list-style-type: none"> • Market Operations 	<ul style="list-style-type: none"> • Investments 	<ul style="list-style-type: none"> • Payment and Settlement Division
<p>Currency <i>Mauri Lehtinen</i></p>	<ul style="list-style-type: none"> • Regional Offices Kuopio, Oulu, Tampere, Vantaa 	<ul style="list-style-type: none"> • Currency Operation Division 	<ul style="list-style-type: none"> • Currency Technology Division
<p>General Secretariat <i>Antti Suvanto</i></p>	<p>Communications European and International Affairs Legal Affairs</p>	<p>Strategy and Organisation</p>	<p>Senior Secretarial Staff</p>
<p>Administration <i>Pirkko Pohjoisaho-Aarti</i></p>	<ul style="list-style-type: none"> • Financial Administration and Procurement • In-House Services • Language and Publication Services 	<ul style="list-style-type: none"> • Personnel • Risk Control 	<p>Information Technology Security and Property Management</p>
<p>Internal Audit <i>Erkki Kurikka</i></p>			

The Financial Supervisory Authority, headed by Anneli Tuominen, operates in association with the Bank of Finland.

Publications

A complete list of publications is available on the Bank of Finland website (www.bof.fi > Publications).

The Bank of Finland has introduced a free electronic subscription service on its website, through which it is possible to order the Bank's publications in electronic form. Subscribers are sent an email alert whenever the publications subscribed to are newly released. Publications can be subscribed to at www.bof.fi > Publications > Order and subscribe to electronic publications and reports.

Back copies of older printed publications still in stock can be ordered from the Bank of Finland (www.bof.fi > Publications > Orders and subscriptions, printed publications).

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



2341