ANALYSIS

Early warning indicators of banking crises

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In the wake of the international financial crisis, authorities have been given new tools to prevent such crises. These tools – or macroprudential instruments – are intended to enhance banks' resilience to risk and prevent the excessive lending that often underlies asset price bubbles. In making decisions on deployment of the macroprudential tools, authorities will be supported by a set of early warning indicators confirmed by research data to best predict the outbreak of banking crises.

Crises to be predicted in good time

One of the most important macroprudential instruments is the countercyclical capital buffer (CCB) that the designated national authority can impose on banks in the event of excessive credit growth. In Finland, the designated authority is the Financial Supervisory Authority. In order for authorities to be able to respond to a potential crisis in good time, the probability of a crisis will be assessed at least a few years in advance. Naturally, given such a long time horizon, crisis prediction cannot be completely water-tight.

One early warning indicator not enough

Advance assessment will make use of indicators confirmed by studies to be the most reliable in predicting banking crises. Such indicators have been extensively researched. A typical banking crisis is preceded by strong growth in lending, overvaluation of shares and house prices and a current account deficit.[1]

Research has shown that the deviation of the private sector credit-to-GDP ratio from its long-term trend (credit-to-GDP gap) is the most reliable single indicator of an approaching banking crisis. The Basel Committee on Banking Supervision (BCBS) has recommended an internationally consistent approach for calculation of the credit-to-GDP gap and that the indicator should serve as a common starting point in taking CCB decisions. The European Union has adopted this approach in its common capital requirements legislation, and Finland followed suit with the revised Credit Institutions Act of 2014.

However, the credit-to-GDP gap is not such an unambiguously interpretative indicator that it could directly determine the level of the CCB. Hence, the authorities are to be allowed some discretion when deciding on crisis-prevention measures.

The European Systemic Risk Board (ESRB) has issued its own recommendation on the risks whose development and severity the designated authority should assess when deciding on measures to strengthen the banking sector’s resilience to risk. According to this recommendation, the authorities should also take account of indicators that measure credit developments and the private sector debt burden, developments in commercial and residential property prices, external imbalances, potential mispricing of risks and risks associated with credit institutions’ activities. Corresponding categories have been laid down in Finland in the Ministry of Finance Decree on the countercyclical capital buffer.

Early warning indicators that have been shown to work well in Europe

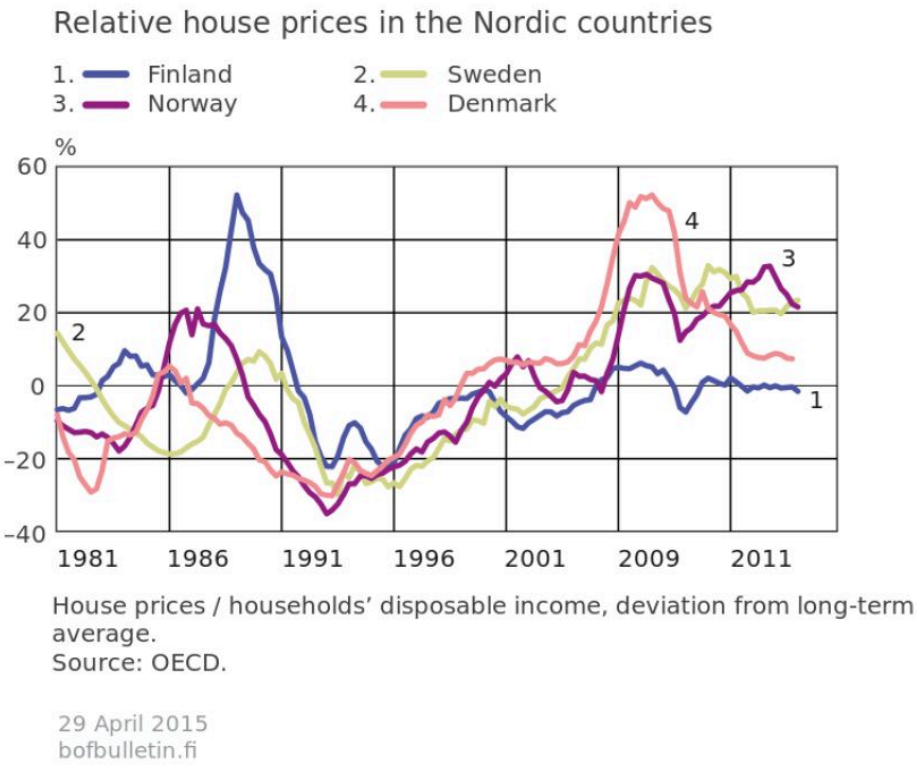
Several studies have been carried out at the Bank of Finland on indicators that predict banking crises. The most recent empirical analysis of panel dataKalatie, [2], [3] sought to identify the most suitable indicators for the EU and also for the six indicator categories laid down in the Ministry of Finance Decree.

The analysis found that, in addition to the trend deviation of the private sector credit-to-GDP ratio (the primary risk indicator), a high trend deviation of the household credit-to-GDP ratio predicts crises equally well. Besides the total credit stock, we can also analyse bank lending.

According to the analysis, the debt service ratio measures households' debt burden (interest rate expenses and amortisation costs) relative to households' disposable income. Growth in both the debt service ratio and the debt-to-income ratio predict banking crises well, but on a slightly shorter horizon than the primary risk indicator.

A notably strong growth in house prices and a rapid increase in relative prices are also useful indicators and typically signal systemic crises relatively well in advance (Chart 1). In Finland, Sweden and Norway alike, the banking crises of the early 1990s were preceded by a substantial growth in relative house prices. The international crisis of 2008 burst the house price bubble in Denmark and led to a banking crisis in the country. Other useful indicators found in the analysis included a current account deficit; an exceptionally low risk premium and very low market volatility, which are associated with the mispricing of risks; and a small leverage ratio, which measures the strength of bank balance sheets.

Chart 1.



Costs of intervention need to be assessed

In responding to the warning signs of a crisis, authorities must weigh the potential costs of a banking crisis against the costs of measures to strengthen banks' resilience to risk. The costs of a banking crisis (measured e.g. by loss of GDP) are typically large. Particularly in Finland, these costs could exceed the average, due to the structural specificities of the Finnish banking system, as suggested in the article 'Concentrated banking system amplifies banking crises'.[4]

On the other hand, banking crises seldom repeat themselves. What weighs at one end of the scale is that tightening banking capital or liquidity requirements may affect banks' ability to supply finance to corporate and household customers. From the regulator's perspective it can be problematic that the costs of regulation become visible in the short term, while it is more difficult to justify the longer-term gains.

Notes

1. Kauko, Karlo (September 2014) How to foresee banking crises? A survey of the empirical

literature. Economic Systems. Volume 38, Issue 3. September 2014: 289–308. ↑
2. Simo – Laakkonen, Helinä – Tölö, Eero (2015) Indicators used in setting the countercyclical capital buffer. Discussion Papers 8/2015. Bank of Finland. See http://www.suomenpankki.fi/en/julkaisut/tutkimukset/keskustelualoitteet/Pages/dp2015_08.aspx. ↑
3. The indicators identified in the analysis [2] mainly correspond to the macroprudential analysis indicators that the Financial Supervisory Authority uses to support its macroprudential decisions. For the macroprudential analysis indicators, see http://www.suomenpankki.fi/en/tilastot/kuviopankki/Pages/default.aspx. ↑
4. Timonen, Jouni – Topi, Jukka (2015) Makrovakauspolitiikka Euroopan unionissa ('Macroprudential policy in the European Union'). BoF Online 3/2015. Bank of Finland. See: http://www.suomenpankki.fi/fi/julkaisut/selvitykset_ja_raportit/bof_online/Pages/BOF_ONL_03_2015.aspx. ↑

Key words

countercyclical capital buffer requirement, indicators, indicators, macroprudential policy, prediction of crises