

5 RISKS TO FINANCIAL STABILITY AND MACROPRUDENTIAL POLICY

The aim of this section is to assess the main risks to financial stability and to assign risk mitigation tools to them. To this end, the text evaluates the size of the risks stemming from the external environment, the current position of the Czech economy in the financial cycle, the resilience of the Czech financial sector to the risks identified, and the tasks and recommendations arising from the analyses for macroprudential policy, microprudential supervision and other economic policies. The first part contains an assessment of financial stability indicators. The second part presents a new concept, a macroprudential dashboard. The third part shows the main sources of risks to financial stability and describes measures the CNB might take to reduce them. The fourth, fifth and sixth parts provide information about regulatory developments and the ways in which macroprudential tools can be applied. The final part describes the regulatory environment in the EU and points at the moral hazard risks of the banking union.

5.1 ASSESSMENT OF RISKS TO FINANCIAL STABILITY

In advanced countries, risks that originated in the pre-crisis boom and during the crisis are dominant...

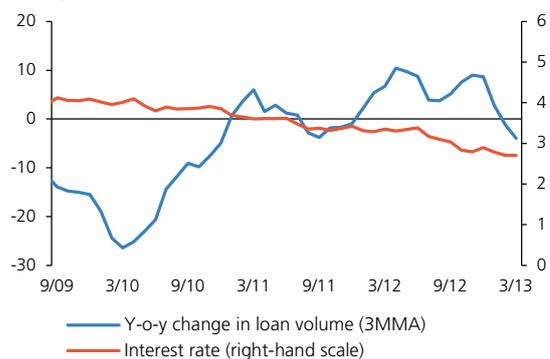
The advanced countries are in a phase of the financial cycle dominated by risks that originated in the pre-crisis boom and during the crisis. The euro area authorities succeeded in preventing disorderly deleveraging, but at the expense of clearing the distressed banks' balance-sheets of poor-quality assets too slowly and postponing the recapitalisation that is vital to restore sound lending. Overall, therefore, the deleveraging may take some time and the ability of some banking sectors to finance viable projects will continue to be limited, fostering stagnation of the real economy.

... but risks associated with the present financial environment are starting to emerge as well

Despite not very optimistic expectations and a reduced willingness to accept risk, some advanced countries are still maintaining financial imbalances and trends which may to some extent take the form of bubbles. Property prices in some countries remain high and even increased further in 2012. The combination of high property prices and high private sector debt in an environment of weak economic growth increases the probability of a downturn in prices. Another source of risk is that the search for quality and yield is – amid heightened uncertainty and very low short-term interest rates for key currencies – being reflected in unusually low yields on some countries' government bonds and on many corporate bonds (see section 3.1). Stronger growth in long-term interest rates could thus generate, in addition to market losses, a sharp rise in financial market volatility. Stronger growth in long-term yields could simultaneously lead to large losses, mainly among leveraged investors. They might react with increased sales of bonds, further intensifying the adverse procyclical market reaction.

CHART V.1

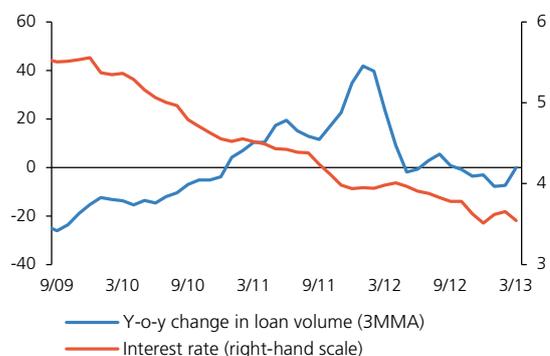
New koruna loans to non-financial corporations
(including overdrafts; %)



Source: CNB
Note: 3MMA denotes three-month moving average.

CHART V.2

New koruna loans for house purchase
(%)



Source: CNB
Note: 3MMA denotes three-month moving average.

The financial cycle in the Czech Republic is being affected by weak economic activity and pessimistic expectations

Lending growth and activity in the domestic financial sector currently reflects the unfavourable trend in the real economy, the elevated uncertainty regarding the timing and extent of the recovery, and risk aversion. The modest post-crisis credit recovery ended with the onset of the recession in 2012 and demand for loans and risky assets is now subdued despite the historically low interest rates. Economic agents are aware of the risks of a continued recession, a further decline in prices of property and other assets and a generally increased probability of default. The growth rate of new loans in both the main credit categories (loans to non-financial corporations and loans to households for house purchase) has been fluctuating around zero over the last two quarters (see Charts V.1 and V.2). Following a strong pick-up in 2011 due to a rise in loan refinancing, growth in loans for house purchase slowed again in 2012. This means that activity in this segment is relatively high, but is not rising any further.

The interest rate component of the credit conditions has eased and margins on new loans have decreased further

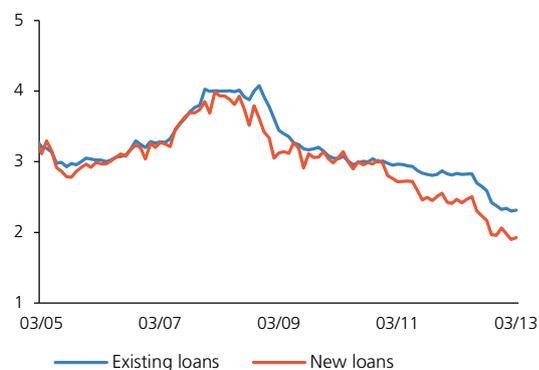
The interest rate component of the credit conditions has eased further. This can be regarded as positive, as it reduces the risks associated with the decline in economic activity and is thus countercyclical. Interest rates on new loans are at historical lows for both of the most important bank loan categories, allowing corporations and households to move gradually to lower debt servicing costs (see Charts V.1 and V.2). The credit conditions have tightened only in the case of consumer credit, as a result of its elevated level of risk (see section 2.3). A prevailing easing of the interest rate conditions is also indicated by interest margins, as measured by the difference between the relevant lending and deposit rates. The steady fall in margins on new loans over the last few years is increasingly being reflected in margins on the stock of loans (see Charts V.3 and V.4). As a result, banks are facing growing downward pressure on interest income on their credit portfolios. Given the continuing domestic recession, the considerable risks stemming from the external environment and the renewed growth in credit risk (see Chart V.5), the danger that margin levels are not always consistent with appropriate risk assessment for new loans has increased.

The volume of loans is commensurate with the size of the Czech economy

The ratio of loans to GDP in the Czech Republic is currently roughly at its trend level (see Chart V.6). In addition, an estimate of the equilibrium level based on economic fundamentals indicates that the real sector's debt is still below the average for similarly advanced countries. Given the subdued growth in lending, the Czech financial sector thus faces no risks from excessive amounts or growth rates of credit. According to the EU capital adequacy directive (known as CRD IV; see section 5.7), a deviation of the loan-to-GDP ratio from its trend is the initial credit boom indicator used to determine the size of the countercyclical capital buffer. Section 5.4 contains more accurate indicators (taking into account

CHART V.3

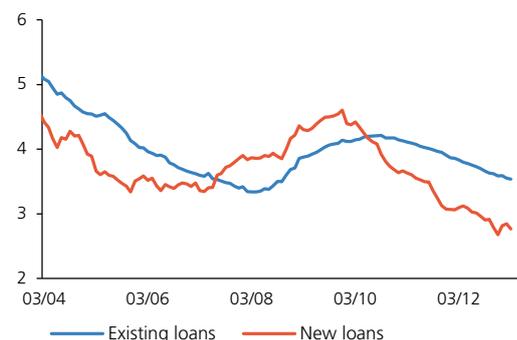
Margins on bank loans to non-financial corporations (percentage points p.a.)



Source: CNB

CHART V.4

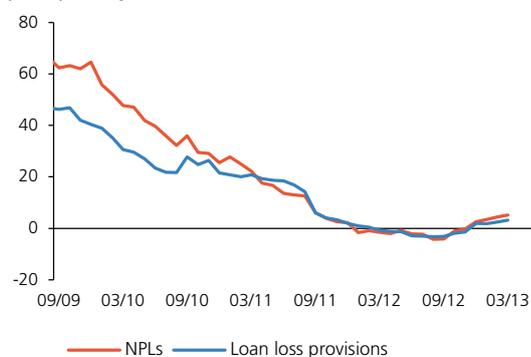
Margins on bank loans to households for house purchase (percentage points p.a.)



Source: CNB

CHART V.5

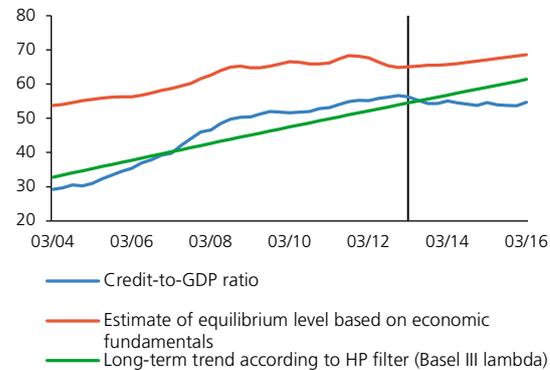
Growth in NPLs and loan loss provisions to total claims (year-on-year change in %)



Source: CNB

Note: Loan loss provisions refers to ratio of provisions to total claims, i.e. "default" claims and "non-default" claims.

CHART V.6

Assessment of real sector debt in the Czech Republic
(%; bank loans only)

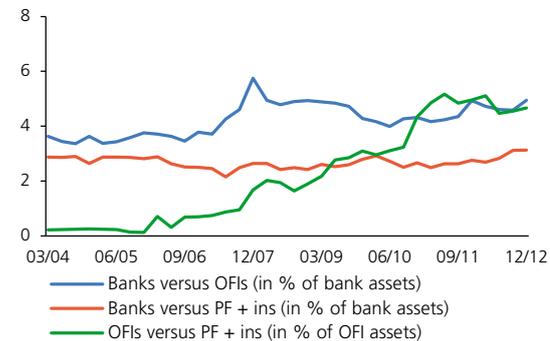
Source: IMF IFS, CNB, CNB calculation

Note: Estimate of equilibrium level based on method described in Geršl, A., Seidler, J.: *Credit Growth and Capital Buffers: Empirical Evidence from Central and Eastern European Countries*, CNB Research and Policy Note 3/2011.

CHART V.7

Links between segments of the financial sector

(sum of all mutual exposures, including asset and credit exposures, in % of assets and liabilities between sector pairs)



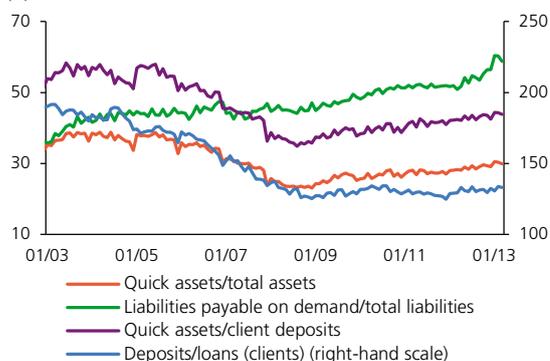
Source: CNB (financial accounts)

Note: OFIs comprise other financial corporations engaged in lending, security dealers (on own account) and mutual funds other than money market funds; PF + ins comprises pension funds and insurance companies.

CHART V.8

Liquidity ratios in the banking sector

(%)



Source: CNB

developments in the Czech economy) as well as an assessment of the need for setting a countercyclical capital buffer.

The sources of the structural component of systemic risk are gradually strengthening

The segments of the financial sector are interconnected both directly and indirectly. Direct links arise through exposures in the form of mutual deposits and loans, and also through ownership interests. In 2011 and 2012, following a decline, the growth rate of most of the direct links rose again in absolute terms, while their strength in relation to assets fluctuated over time (see Chart V.7). The financial segments are interconnected indirectly via exposures to the same sectors. Whereas concentration risk continues to be increased by rising exposures to the government sector (see section 3.1), the concentration of bank loan portfolios vis-à-vis corporations is falling steadily. Exposures to parent groups are decreasing as well (see section 4). Growth in the links between non-bank financial corporations (pension funds, insurance companies, mutual funds, etc.) has been observed in the financial corporations sector in recent years (see Chart V.7). The other links monitored in the financial sector are exhibiting an only slightly rising trend. Overall, the structural component of systemic risk is increasing slightly, generating an increase in the risk of emergence and transmission of financial distress via intersectoral financial links.

The structural component of systemic risk is being suppressed by robust banking sector liquidity

The Czech banking sector has long had above-average liquidity by international comparison and its liquidity position improved further in 2012. The sector has a significant excess of deposits over loans, and the ratio of quick assets to both total assets and client deposits is increasing. However, the environment of a low and relatively flat yield curve, persisting uncertainty and risk aversion is fostering growth in the ratio of liabilities payable on demand to total liabilities. This is causing maturity transformation to increase, which may represent a potential risk factor if sudden, sharp shocks occur (see Chart V.8).

5.2 THE MACROPRUDENTIAL DASHBOARD

This FSR presents a macroprudential dashboard for the first time. The dashboard is intended as a tool for describing the main features of the current situation and trends in the economy and the financial sector from the systemic risk and macroprudential policy perspective. It provides a simplified overview of some forward-looking indicators.

The dashboard is divided into three parts, as threats to financial stability usually result from a combination of three factors, namely: (1) the materialisation of various types of risks, i.e. the occurrence of shocks affecting the financial system (such materialisation is described or signalled in advance by risk factors); (2) the financial system's tendency to amplify the initial shock (interconnectedness of financial institutions, etc.); (3) financial institutions' ability to absorb the impacts of factors (1) and (2). For the sake of clarity, the dashboard provides just a few selected key indicators for each of these three factors.¹

The graphical part of the dashboard (Table V.1) consists of one mini-chart for each indicator. The mini-chart describes the evolution of the indicator over the last two years, i.e. in 2011 (the upper, outlined bar) and 2012 (lower, filled-in bar) in this year's FSR. The position of the indicator to the left or the right of the vertical axis is based on a comparison with a benchmark: values below the benchmark are shown to the left and values above it to the right. The benchmark for the credit-to-GDP ratio is the trend level. Those for the other indicators are usually the average since 2002 (or later due to a shorter available time series). In future, the benchmarks for some of these indicators will be derived from an empirical analysis more accurately capturing the equilibrium or historically normal evolution of the indicators.

The dashboard should provide implications for the desirable direction of changes in the overall configuration of macroprudential policy. These implications – as perceived by the CNB – are illustrated using different colours in the mini-charts. Red indicates a need to consider tightening policy. Green has the opposite interpretation, or at least suggests that there is no need to consider tightening. Grey indicates that the macroprudential implications are ambiguous. The macroprudential implications are depicted in this way in all three parts of the dashboard.

When reading the dashboard, one should bear in mind that it is intended mainly to aid communication. The CNB's decisions on the configuration of macroprudential tools cannot be based mechanically on the dashboard alone, but must draw on many other, more detailed data and considerations. The multi-criteria nature of the financial stability objective makes it necessary to assess the direction of causality for each indicator, i.e. to assess whether a particular value reflects the emergence of future risks or the materialisation of past risks, whether it indicates a short-term

¹ Some indicators may be included in two or more parts of the dashboard.

or long-term risk, and numerous other factors.² Caution is required in interpreting the dashboard also because the time series on which it is based are quite short.

The current prevalence of green indicators suggests that a significant across-the-board tightening of the macroprudential parameters is not necessary in the present situation and that recession-related short-term risks are dominant. Several of the red indicators relate to the property sector and lending to it, although the level of risk indicated is quite low. A more detailed assessment of the risks described by the individual indicators is given in the following subsections.

TABLE V.1

Key financial stability indicators in 2011 and 2012

(distance from benchmark expressed as number of standard deviations)

1. RISK FACTORS	
1a. Short-term	
Real GDP growth (year on year, %)	Green
Real gross disposable income growth (year on year, %)	Green
Interest expenses/gross disposable income (%)	Red
Non-performing loans/total loans (%)	Red
Growth in demand deposits in banks (year on year, %)	Green
10Y government bond yield (average for period, %)	Grey
Growth in residential property prices (transaction prices, %)	Green
Dividends paid on CET1 of banks (%)	Red
1b. Medium-term	
Loans/GDP (%)	Green
Credit growth (% , end of period, year on year)	Green
Public sector debt/GDP (%)	Grey
Household debt/nominal gross disposable income (%)	Red
Apartment price/average annual wage	Green
Apartment price/annual rent (according to IRI)	Red
Interest margin (new loans vs. deposits, %)	Green
2. MULTIPLICATION OF IMPACTS ON FINANCIAL SYSTEM	
Interconnectedness in banking sector (%)	Green
Concentration of claims (five largest/CET1, %)	Green
3. ABSORPTION MECHANISMS IN FINANCIAL SYSTEM	
3a. Absorption of all types of shocks	
Excess of CET1 of banks above regulatory minimum (pp)	Grey
Leverage ratio (bank assets/equity)	Green
3b. Absorption of credit risk	
Aggregate LTV for housing mortgages (%)	Red
NPL coverage ratio (provisions/NPLs, %)	Red
3c. Absorption of liquidity risk	
Quick assets/total assets of banks (%)	Green
Client loans and credit facilities/client deposits of residents (%)	Red

Source: CNB

Note: Note: Green (red) indicates a need to consider looser (tighter) macroprudential policy; grey signifies no clear indication in either direction. The benchmark for the loans/GDP ratio is the estimated trend level; those for the other indicators are the average since 2002 or later (depending on data availability).

2 More details on this topic are available in Frait, J., Komárková, Z. (2012): *Macroprudential Policy and Its Instruments in a Small EU Economy*, Czech National Bank Research and Policy Note No. 3/2012. The ability of various indicators to predict financial crises is empirically estimated, for example, in Babecký, J., Havránek, T., Matějů, J., Rusnák, M., Šmídková, K., Vašíček, B. (2011): *Early Warning Indicators of Economic Crises: Evidence from a Panel of 40 Developed Countries*, CNB WP 8/2011.

5.3 SYSTEMIC RISKS AND MACROPRUDENTIAL POLICY RECOMMENDATIONS

Credit risk remains the focus of the CNB's attention

A potential deterioration of the credit portfolio resulting from adverse developments in the real economy remains the main risk to the Czech banking sector. It can be deduced from the growth in NPLs and the related provisioning (see Chart V.5) that the inflow of new NPLs has accelerated slightly in recent quarters and the total volume of NPLs will probably start rising (see sections 2.2, 2.3 and 4.1). If the recession continues or even deepens, the balance sheets of Czech banks may become more sensitive to changes in the income situation of corporations and households. This could be reflected in a rapid non-linear increase in the default rate. It should not be overlooked, however, that the currently low interest rates on loans may partly be concealing distress among many debtors as regards their ability to service debts with their existing income flows.

Banks must maintain a high loss-absorbing capacity

To maintain high public and investor confidence in the stability of the Czech banking sector in an environment of adverse developments in the real economy and financial distress in the euro area, banks must maintain a high capacity to absorb potential credit and market losses. This means that they must have sufficient provisions to cover expected losses as well as adequate capital buffers to cover unexpected losses. Maintaining robust capital buffers is of particular importance for banks that are systemically important as a result of their position and character (see section 5.6). There are concerns in many European countries that banks are not setting aside enough provisions and reserves for default claims. This is due not only to underestimation of potential losses, but also to the current method of accounting for the above items.³ Potential insufficiency of provisions in domestic institutions is indicated in some of the analyses in section 4.1. The present capital adequacy level of most Czech banks shows that they are able to withstand unexpected losses in the event of a relatively adverse economic situation close to the *Protracted Depression* stress scenario (see section 4.2). However, continued attention of the regulator is necessary in this area too. One reason for this is that the capital requirements for covering these losses are based on estimated risk weights applied to individual assets. These weights depend on estimates of the probability of default (PD) and loss given default (LGD). There are signs, albeit very slight ones, that some banks are using advanced internal models in a way that underestimates the risk of losses and biases the estimated risk weights downwards. If the risk weights were too low, capital adequacy would seem higher than it is in reality and banks might not have enough capital to cover losses in the event of strongly adverse shocks.

³ The shortcomings in the existing accounting framework become more apparent in periods of low interest rates, when forbearance is a relatively "cheap" strategy.

In the near future the CNB will focus on taking an appropriate approach to assessing credit risk

In its supervisory activities the CNB will focus on ensuring that credit institutions are valuing their claims appropriately, are creating sufficient provisions for default claims and are setting conservative risk weights for the calculation of capital requirements. It is particularly important that banks do not underestimate the probability of default and the final losses given default. The observed gradual increase in the share of mortgage loans with floating interest rates or very short rate fixation periods is natural in an environment of low interest rates. However, the CNB will also analyse the sensitivity of the credit risk of mortgage portfolios to a rise in interest rates, as such a rise could make it difficult for some debtors to pay their debts.

The risk of property price overvaluation has decreased...

Thanks to falling property prices in recent years and a related improvement in property price sustainability indicators (see section 3.2), property prices are now very probably close to their fundamental values and the perceived risk of a further decline in these prices has decreased. As the fall in property prices has been accompanied by slowing growth in loans for house purchase and a falling number of property transactions, the danger of a property price bubble is not currently relevant anywhere in the Czech Republic.

... but some elements of the market situation are leading to the preparation of macroprudential tools in this area

The different trends in prices and the number of transactions across regions (smaller declines – or even increases – in Prague than in the rest of the country), together with the higher profitability of property purchased as a financial investment (due to rising rental returns and falling returns on speculative assets and interest rates on loans for house purchase) may, however, imply certain medium-term risks. A potential property price bubble may also emerge in local markets “from below”, with property prices rising at a relatively modest pace while their fundamentals worsen. The CNB, as a macroprudential authority, is thus preparing a set of appropriate tools enabling it to react to any risks associated with movements in property prices and loans to this sector. These tools could include, for example, sector-specific risk weights for the calculation of capital requirements for banks or limits on LTV ratios, which are analysed in more detail in section 5.5.

The risks associated with sovereign exposures require regular monitoring

Like their counterparts in other European countries, Czech banks have a large proportion of their assets held in domestic government bonds (see section 4.1). This creates significant exposure to general government and thereby gives rise to sovereign risk, which the CNB is starting to monitor more closely. The existing EU regulatory framework gives

authorities little room to apply preventive approaches to sovereign risk.⁴ The Czech Republic's current fiscal situation is sustainable and sovereign risk does not pose a threat to financial stability at the moment. Nonetheless, one can speak of increased concentration risk in some banks in this regard. Banks have a general obligation to manage this type of risk. Unlike other exposures, for which the exposure limit is set at 25% of capital, exposure to sovereign risk is not capped in the EU. In addition, sovereign exposures are a source of liquidity risk, as maturity transformation increases with rising volumes of government bonds and there is a danger of it becoming excessively high. In other words, banks that have mostly short-term liabilities should invest in long-term assets only to a sustainable extent. To mitigate the sector's concentration and liquidity risks, the regulator can, where necessary, require banks to cover such risks with additional capital under Pillar 2.

In addition to sovereign risk, the government bond portfolio is exposed to market risk. Flight-to-quality or flight-to-liquidity effects can emerge on government bond markets at times of financial market stress. As a result, prices of government bonds can record excessive upward deviations. This gives rise to a specific bubble. At some point, investors may reappraise the situation or change their opinions about a particular economy and about the quality of its government bonds. Demanded yields may increase significantly and government bond holders may thus incur market losses. According to the assessment in section 3.1, markets may not be assessing sovereign exposure risk in numerous countries – including the Czech Republic – entirely effectively, and so the yields demanded on government bonds may be unsustainably low over the long term. As a result, the capital requirement for the general interest rate risk of the trading portfolio under Pillar 1 may be too low.⁵ If the regulator decides that this is the case, it can impose an increase in the capital requirement under Pillar 2 on the basis of stress tests.

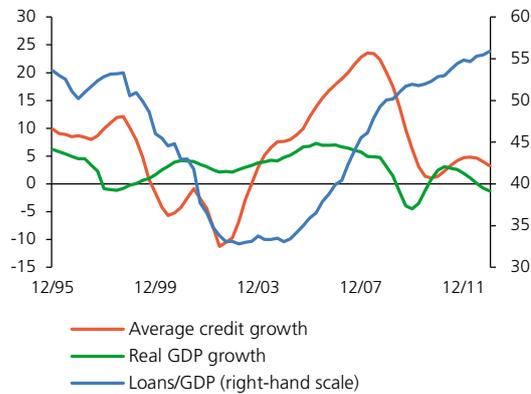
⁴ See the thematic article *Fiscal Sustainability and Financial Stability* in this Report.

⁵ This type of procyclicality applies only to the trading portfolio (or the portfolio of assets revalued to fair value against Profit & Loss), as bonds held to maturity (HTM) are not revalued and the impact of revaluation of the available-for-sale (AFS) portfolio is "filtered off" for regulatory capital purposes.

CHART V.9

Credit cycle in the Czech Republic

(1995–2012; %)



Source: CNB

5.4 THE COUNTERCYCLICAL CAPITAL BUFFER AND ITS SETTING IN THE CZECH REPUBLIC

In reaction to the Basel III regulatory framework, CRD IV and CRR (hereinafter referred to jointly as CRD IV) introduced a new macroprudential element into EU regulatory practice: a countercyclical capital buffer. This tool is intended to respond to the risks associated with the cyclical behaviour of the banking sector, in particular strong fluctuations in lending, which magnify swings in the economic cycle. Banks should create such a buffer on the instructions of the regulatory authority at times of excessive credit growth, which are usually characterised by rising financial imbalances and the accumulation of systemic risk as a result of strong credit expansion. The capital buffer should then be “released”, i.e. used by banks as an actual buffer, at times of economic downturn accompanied by heightened financial tensions and rising loan losses, when it becomes necessary to prevent a credit crunch and transmission of further shocks from the financial sector to the real economy. Overall, the countercyclical capital buffer has the potential to increase the resilience of the banking sector and reduce banks’ tendency to alternate between periods of too easy and too tight credit conditions. This section outlines some methodological options for setting the countercyclical capital buffer in the Czech Republic, taking into account that the traditionally used credit cycle indicators have limited information value in the Czech economy owing to the limited length of the relevant time series and the existence of trends specific to converging economies.

In its original methodology for setting the countercyclical capital buffer, the Basel Committee on Banking Supervision proposes that excessive credit growth in a country should be assessed on the basis of the deviation of the time series of the total credit-to-GDP ratio from its long-term trend (the credit-to-GDP gap). This trend should be estimated using the Hodrick-Prescott (HP) filter. Practical problems with the application of this recommendation were discussed in detail by Geršl and Seidler in a thematic article in FSR 2010/2011. These problems stem from the properties of the HP filter and the credit-to-GDP ratio and from the aforementioned length of the time series.⁶ Owing to the clean-up of bank credit portfolios following the 1998–2002 crisis, which was reflected in a non-cyclical fall in the credit-to-GDP ratio, the information value of the recommended indicator is low for this period in the Czech Republic, so the possibility of using the full available time series is limited (see Chart V.9). This section therefore uses the data from 2002 onwards, although the data starting in 1995 are also given for illustration and comparison.

Although the credit-to-GDP ratio may generally be an appropriate primary indicator for identifying signs of excessive borrowing in an economy, it is also important to concentrate on the rate of credit growth

⁶ These problems are usually faced mainly by countries that have been through a process of economic transformation.

itself when assessing the credit cycle in a country. Rapid growth in loans can easily lead to substantial accumulation of risks, as loans are provided to a greater extent to less credible debtors and riskier projects in this phase of the cycle. The setting of the countercyclical capital buffer must therefore take into account not only the credit-to-GDP ratio, but also the credit growth rate and other indicators that are relevant from the perspective of risk accumulation over the financial cycle. This approach should also be applied to the setting of countercyclical capital buffers under the new CRD IV rules.

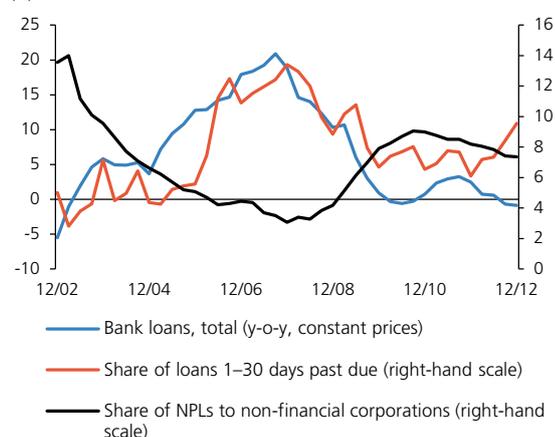
It is quite difficult to find suitable indicators that can be used to identify rising credit risk in banks' balance sheets, as the traditional risk indicators (e.g. the NPL ratio) often improve at times of optimistic expectations and strong lending activity and do not rise (deteriorate) until risks actually materialise. Deviations of some indicators from their long-term averages or trends (e.g. property prices, credit margins) and qualitative indicators obtained from bank lending surveys are considered appropriate indicators of this type.⁷ Past analyses based on data in the Czech Republic suggest that to construct appropriate indicators it is also possible to use individual data from the Central Credit Register (CCR), which provides up-to-date information about bank loans granted to non-financial corporations. While the CCR data do not cover loans to households, which represent a large share of the credit market, the corporate sector usually reacts to economic developments faster than the household sector.

One potential indicator is the share of loans past due for 1–30 days in the total number of loans to non-financial corporations. This indicator contains information about the number of days past due for individual loans provided and is thus not burdened by banks' subjective assessments of the extent to which loans are risky.⁸ It also indicates growth in risks more than one year ahead of the traditional NPL ratio (see Chart V.10). At the same time, this indicator is closely correlated with real credit growth, in line with the findings of numerous studies that excessive credit growth is a reliable early warning indicator of future problems in the banking sector.⁹ This supports the prevailing view that identifying the credit cycle or excessive credit growth is closely linked with finding appropriate risk accumulation indicators.

In the search for indicators of this kind, attention was therefore also paid to credit growth, which was analysed using the Markov-Switching (MS) model in order to identify the probabilities of various phases of the credit

CHART V.10

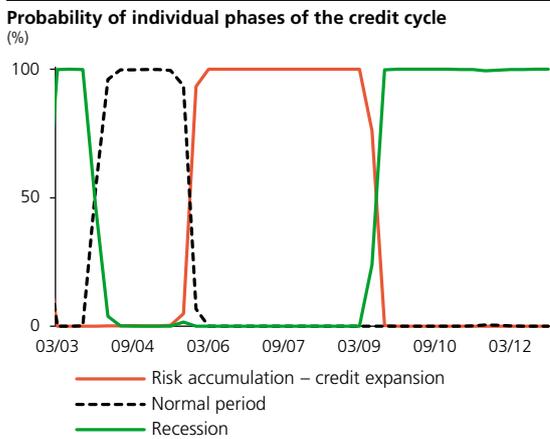
Growth rates of loans and risk indicators
(%)



Source: CNB
Note: Share of number of past-due loans to non-financial corporations in total number of loans to non-financial corporations.

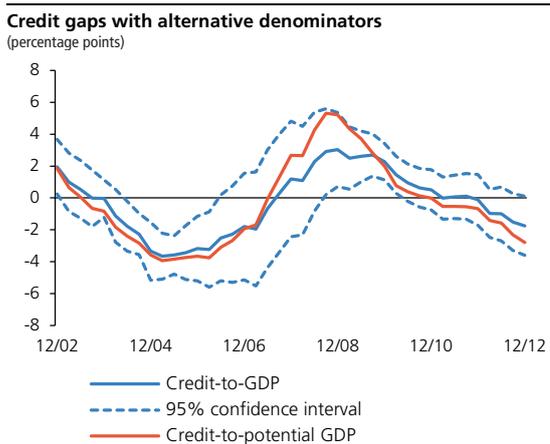
- 7 A list of leading indicators is given, for example, in Frait, J., Komárková, Z. (2012): *Macprudential Policy and Its Instruments in a Small EU Economy*, Czech National Bank Research and Policy Note No. 3/2012, Table 2, p. 20.
- 8 The traditional NPL classification is based not only on information about the number of days past due, but also on the bank's subjective assessment of a debtor's quality. This leads to a situation where more than 43% of all loans classified by banks as NPLs are repaid on time (see section 4, Table IV.1).
- 9 See, for example, Björkstén and Drehmann (2009): *Assessing the Risk of Banking Crises – Revisited*, BIS Quarterly Review, March 2009, pp. 29–46, or Babecký et al. (2012): *Early Warning Indicators of Economic Crises: Evidence from a Panel of 40 Developed Countries*, CNB WP 8/2011.

CHART V.11



Source: CNB calculation

CHART V.12



Source: CNB calculation

cycle, i.e. excessive growth (credit boom), normal growth and recession.¹⁰ The results suggest a high probability of excessive credit growth in the Czech Republic starting at the beginning of 2006 (see Chart IV.11). This is consistent with the growth in risks in banks' balance sheets in terms of the above indicator of non-performing loans 1–30 days past due. However, the problem with approaches based solely on information about the credit growth rate is that they do not take into account sustainable growth in productivity, which can reduce the riskiness of high credit growth. For this reason, potential GDP growth was also included in the MS model as an explanatory variable, but the results remained qualitatively similar (see Table V.2, indicators 6 and 7).

The limitations associated with calculating excessive borrowing solely on the basis of the credit-to-GDP ratio also stem from the fact that a rapid decline in GDP during a recession increases the credit-to-GDP ratio and may indicate an excessive borrowing phase purely as a result of a more persistent credit cycle. The problem is partly mitigated if potential GDP, which is more stable, is used to calculate the credit indicator, but the results are little changed in terms of identifying periods of excessive credit growth compared to the traditional calculation (see Chart V.12). Nevertheless, when determining the gap between the current credit-to-GDP ratio and its trend, it is useful to take into account the uncertainty associated with the HP filter estimate. Using the 95% confidence intervals for the estimated gap, it is apparent that the upper confidence limit does not rule out the emergence of excessive growth as early as the end of 2006.

Although the HP filter method for calculating the trend has numerous limitations, it has the virtue of being relatively intuitive to interpret. The methodology can be extended by including other variables in the HP filter to capture the build-up of risks over the credit cycle (for example the above-mentioned indicator of loans 1–30 days past due). In this case, in addition to the traditional restrictions produced by the HP trend, the credit cycle is determined in such a way as to track the above-mentioned accumulation of credit risk as closely as possible.¹¹ In contrast to the traditional HP filter method, these results identify a phase of excessive credit activity starting in mid-2006. Besides NPLs, it is possible to use other variables related to the creation and accumulation of risks due to excessive lending, e.g. property price growth indicators.

The aggregate Table V.2 shows the periods in which credit growth was identified as excessive based on the methods discussed in the text. The results show that the traditionally recommended method for estimating excessive credit growth and calibrating countercyclical buffers may deliver wrong conclusions for the Czech Republic regarding the phase/timing of

¹⁰ See Kelly et al. (2011): *Exploring the Steady-State Relationship between Credit and GDP*; a similar methodology was used in Anguren-Martín (2011): *Credit Cycles: Evidence based on a Non Linear Model for Developed Countries*.

¹¹ This method is known as the Hirose-Kamada filter. It was originally used to estimate potential output and the output gap. In that case, the output gap was determined so as to explain inflation in the best possible way.

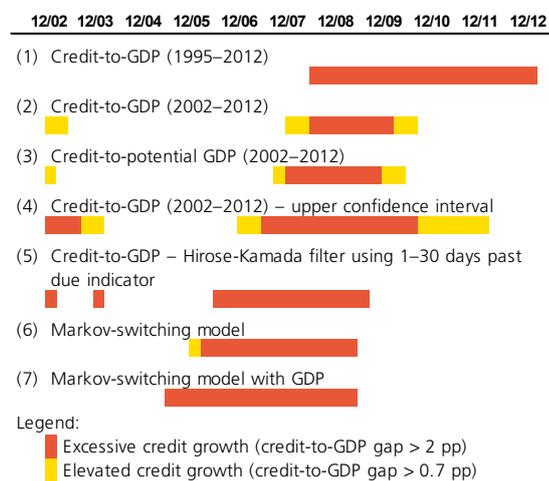
the credit cycle. When applied to the data starting in 1995, this method even indicates excessive credit growth for the entire crisis and post-crisis period. By contrast, some minor adjustments to the methodology and the other analytical tools used deliver results that are more intuitive, i.e. that excessive credit growth was recorded in the Czech Republic in 2006–2008, with year-on-year real growth rates of around 20%.

Setting a non-zero countercyclical capital buffer and determining its level in a systemic risk accumulation phase is only one of the stages of the analytical and decision-making process. The CNB will have to consider which procedure to apply when the credit market situation is no longer creating conditions for a further rise in systemic risk. In this situation, it will be necessary to assess whether it is possible to reduce the existing setting of the buffer, and, if so, to what extent. A specific challenge will be to determine the moment when it is necessary to allow the buffer to be released fully. A different set of indicators will have to be used for this task than for the introduction of the buffer, in this case indicators of the materialisation of systemic risk, including quickly available indicators of developments in financial markets. The release of the buffer will also differ procedurally from the introduction of the buffer. When a non-zero buffer is introduced, banks will be given time to adjust and gradually increase their capital, whereas the regulatory authority's decision to reduce the buffer will apply immediately and banks will be able to release capital to the given extent immediately.¹²

Overall, the settings of countercyclical capital regulation will be based on determining the phase of the credit cycle. In a situation of time series of limited length, it will be necessary to assess numerous indicators, indicators that monitor not only credit growth, but also the overall situation in the credit market connected with the accumulation of risks in the financial sector. At the same time, it will be necessary to take into account a situation where credit growth is very mixed across sectors (e.g. limited to growth in mortgage loans only). So, the setting of the buffer cannot be a mere mechanical exercise, but must be based on a detailed expert assessment of developments in both the real economy and the financial sector. The CNB should thus follow the practice previously introduced in this area by, for example, the Swiss central bank, which applies guided discretion to the setting and release of buffers.

From the assessment of developments in the domestic economy presented above it is clear that the current phase of the credit cycle in the Czech Republic does not necessitate the creation of a countercyclical buffer in the banking sector. The outlook for the overall credit growth rate in the *Baseline Scenario* additionally suggests that it will probably not be necessary to create countercyclical capital buffers over the next few years either. The CNB could respond to emerging partial imbalances in the credit market by applying other macroprudential tools, for example by increasing the sectoral risk weights or setting a tighter LTV ratio.

TABLE V.2

Identification of excessive borrowing and accumulation of risks according to various indicators


Source: CNB

Note: For the MS model, excessive credit growth was defined as a probability of a credit expansion phase of greater than 95% and elevated credit growth as a probability of greater than 85%.

¹² The release of countercyclical buffers is described in detail in Frait, J., Komárková, Z. (2012): *Macroprudential Policy and Its Instruments in a Small EU Economy*, Czech National Bank Research and Policy Note No. 3/2012 (Table 3 and Figure 7, pp. 21–22).

5.5 REGULATION OF RISKS ASSOCIATED WITH EXPOSURES TO THE PROPERTY MARKET

Other macroprudential tools can be used to reduce the cyclical behaviour of the financial sector. First, authorities can react to risks associated with loans for house purchase or for financing property (both residential and commercial) using traditional capital regulation tools. Pillar 2 already allows national supervisors to impose higher sector risk weights to credit segments displaying increased accumulation of risks. Banks would thus have to create a larger capital buffer for such loans. As from 2015, the CRD IV package (see section 5.7) will allow national supervisors to apply – under Pillar 1 – higher sector risk weights to the residential and commercial property segments based on systemic risks identified, as well as to tighten certain criteria or increase the LGD. This also implies a requirement to create a larger capital buffer for such risks.

The second main tool is to set a cap on the loan-to-value (LTV) ratio for individual house purchase loans. This is one of the principal macroprudential tools recommended by the ESRB (see section 5.7). LTV limits and increased sector risk weights can be considered complementary tools, as they act via different channels. Capital regulation represents a constraint on the bank, as it requires it to keep a larger amount of capital for loans with higher risk weight, whereas an LTV limit represents a constraint on the debtor's borrowing capacity. In connection with the ESRB recommendation and the introduction of the new CRD IV rules, the CNB will deal with LTV limits and sector risk weights in more detail in future years.¹³

The setting of LTV limits is aimed at reducing excessive accumulation of risks in the banking sector stemming from insufficiently prudent provision and acceptance of loans for house purchase. In some phases of the credit cycle, both banks and households may underestimate the future risks, and banks may be too benevolent about households' potential inability to repay. This benevolence may be caused by the seemingly high value of collateral in the form of property at times of high inflation. Such a situation often arises in periods of interconnected credit and property booms and leads to excessive household borrowing and the accumulation of loans with an elevated probability of default in banks' assets. In the event of a sharp deterioration in the macroeconomic conditions, these accumulated risks materialise as defaults and subsequent forced sales of property among households, and as rising loan losses among banks.¹⁴

LTV limits can be either fixed or moving, depending on the current phase of the cycle, with the aim of causing a countercyclical effect. A lower LTV

¹³ The potential introduction of LTV limits or higher sector weights for banks operating in the Czech Republic would be preceded by detailed analyses evaluating the credit cycle in the Czech Republic, potential volatility of property prices, the current LTV distribution and also the experience of other countries.

¹⁴ At the aggregate level, foreclosures can put additional downward pressure on property prices above and beyond the deterioration in fundamentals.

(i.e. a stricter limit) can be used during very strong credit booms and a higher LTV (a less strict limit) at other times. LTV limits can also be applied differentially according to the type of loan and the type of property pledged (e.g. lower LTV limits for foreign currency loans and loans for speculative property purchases).¹⁵

LTV limits are not applied to individual loans in the Czech Republic at present, nor is there any immediate need to do so.¹⁶ Neither the property market (see section 3.2) nor the mortgage loan market is currently showing any major signs of overheating. At less than 60%, the aggregate LTV for mortgage loans for the entire banking sector is relatively low (see Chart V.13). The microeconomic data also indicate that there is no significant property price credit channel, which LTV limits are intended to weaken.¹⁷

Despite this, many advanced countries, although being in a similar situation to the Czech Republic at present, apply LTV limits to individual loans. One of the main reasons is the limited information content of aggregate LTV data. This can also be illustrated on the case of the Czech Republic. The end-2012 data suggest that there are large differences between banks in terms of their aggregate LTV ratios, but banks with the largest market shares are reporting LTV ratios close to the sector average. The market share of all banks reporting LTV ratios below 65% is 90%. However, the remaining banks have relatively high LTVs (see Chart V.14).

The disadvantage of the above comparison of aggregate LTV ratios is that a bank may have in its portfolio a large amount of “safe” mortgages with a very low LTV and, on the other hand, a large number of more risky mortgages with a high LTV. If banks start providing a large number of new mortgages with a high LTV, the information on the aggregate LTV ratio would not directly reveal such risks, since the average LTV would for a time rise only slowly and indicate a low level of risk.

The above problem of aggregation is confirmed to some extent by data illustrating the proportion of house purchase loans to households with an LTV above 100% for individual banks (see Chart V.15). Obviously, even banks with the highest market shares have a relatively large volume of loans to households that are not at least 100% collateralised by real estate. However, this is not clear from the above aggregate values. This suggests that loans with a high LTV may account for a significant proportion of some banks’ portfolios.

15 LTV caps are applied to individual mortgage loans in numerous advanced countries. At the end of 2012, almost 20 EU countries had some form of LTV tool. Outside the EU, such limits are used in Canada, Norway and Israel. Although the limits differ depending on the specifics of individual economies, they usually lie in the range of 80–100%.

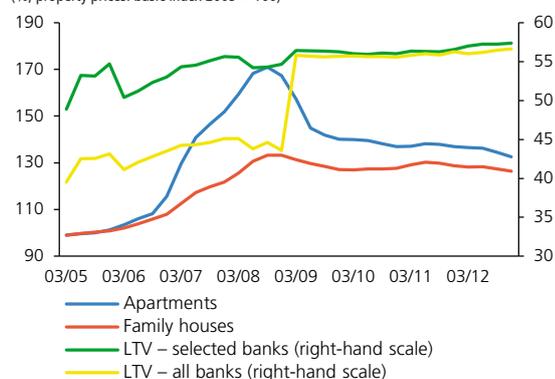
16 LTV requirements already exist in the current regulatory framework, but only at the aggregate level, for the purposes of mortgage bond issues and for the application of preferential risk weights in capital requirements.

17 See the thematic article *Impacts of Housing Prices on the Financial Position of Households* at the end of this Report.

CHART V.13

Comparison of LTV ratios and property prices

(%; property prices: basic index 2005 = 100)



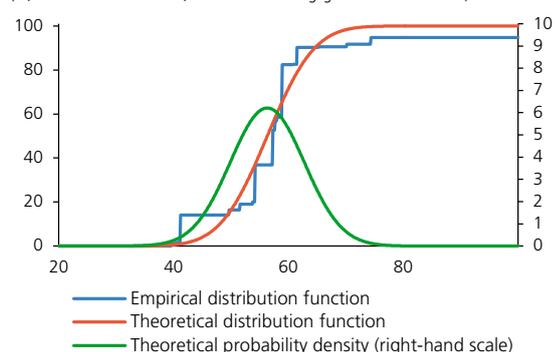
Source: CNB, CZSO

Note: Property prices are transaction prices. The data for 2012 are preliminary estimates or are calculated from alternative data sources. The selected banks are all banks (other than building societies) with a market share of more than 1%.

CHART V.14

Cumulative distribution function of LTV

(%; as of 31 December 2012; x-axis: LTV on mortgage loans to households)



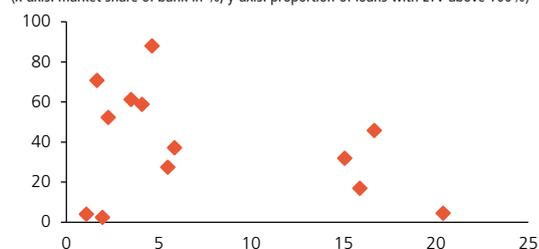
Source: CNB

Note: Empirical cumulative distribution function calculated from LTV data for individual banks. The theoretical normal distribution function is chosen so as to have the smallest deviation from the empirical distribution function.

CHART V.15

Proportion of property purchase loans provided by the bank to households with an LTV above 100% as of 31 December 2012

(x-axis: market share of bank in %, y-axis: proportion of loans with LTV above 100%)



Source: CNB

Note: Banks with a market share in loans provided to households of less than 1% are excluded. 100% LTV ratio according to the real or market value of the collateral available at the time of reporting and the relevant nominal value of the loan.

A comparison of LTV ratios and property prices (see Chart V.13) shows that the aggregate LTV ratio calculated from the stock of mortgage loans for house purchase is rather unresponsive to property prices, which were quite volatile in past years, particularly in the case of apartment prices. The only exception was a surge in the LTV ratio of about 12 pp at the start of 2009, although this was mainly due to a methodological change in the reporting of mortgage loans.¹⁸ The LTV in most banks rose only gradually and at a much slower pace than property prices. The LTV ratio showed practically no response to declines in property prices in 2010–2012 (5.3% for apartments and 0.6% for family houses). This would suggest that property valuation is not necessarily unified across the banking sector and does not necessarily reflect the current property market situation to a sufficient extent.

¹⁸ Property prices also fell quickly in the same period (by 16.3% and 4.6% year on year for apartments and family houses respectively).

5.6 REGULATION OF SYSTEMICALLY IMPORTANT INSTITUTIONS

The CRD IV directive (see section 5.7) allows the national regulator to set regulatory requirements for domestic financial institutions on the basis of their size and importance, and therefore also on the basis of the impact their collapse would have on the stability of the financial sector and the economy as a whole. The purpose of this regulation is to estimate the systemic importance of each institution and set rules that will reduce its risk of collapse and motivate it to reduce its systemic importance.

According to CRD IV, additional capital requirements, i.e. capital buffers or capital surcharges, are a key tool of this type of regulation. The abbreviations G-SII (global systemically important institution) and O-SII (other systemically important institution) are used in this context. Only O-SII buffers are relevant to the Czech financial sector.

Besides the O-SII buffer, which should correspond in size to the systemic importance of the institution, CRD IV introduces another buffer – a systemic risk buffer – which can be applied to a whole group of institutions or a suitably defined subset of the financial sector. It is meant to suppress long-term non-cyclical systemic and macroprudential risks that cannot be adequately suppressed by standard regulatory tools.

In most countries and international forums, the plans to implement capital buffers are at a most advanced stage in the area of bank regulation. Given the dominant role of banks in the Czech financial system and the high concentration of the Czech banking sector, the CNB is ready to apply O-SII capital buffers to banks in the near future.¹⁹ The methodology described in the thematic article *An Additional Capital Requirement Based on the Domestic Systemic Importance of a Bank*, potentially supplemented with other relevant indicators and procedures, can serve as an analytical basis for determining which banks this requirement should apply to and to what extent.

The CNB will inform banks and the public in advance about the banks to which capital buffers will be applied and about the amounts of those buffers. It should be stressed, however, that even if such buffers will be based on the systemic importance of individual banks, the setting of a non-zero additional capital requirement for a particular bank should not be regarded as a signal that this bank will be rescued by the state if it runs into difficulties. Decisions on bank bailouts will always be based on an assessment of the prevailing situation.

¹⁹ The O-SII buffer for banks in the EU reflects the original BCBS proposal that selected banks should maintain a D-SIB (domestic systemically important bank) buffer.

5.7 THE EUROPEAN REGULATORY ENVIRONMENT AND THE RISKS OF THE BANKING UNION

The ESRB has issued a recommendation on the objectives of macroprudential policy and appropriate tools for achieving them

EU bodies made progress last year with mapping out a set of tools for use in the conduct of macroprudential policy. Most of this work was done in the European Systemic Risk Board (ESRB). The result is ESRB Recommendation No. 1/2013, which is based on five key macroprudential policy objectives: (a) dampening excessive credit growth; (b) suppressing excessive maturity mismatches and market illiquidity; (c) containing excessive concentration of direct or indirect exposures; (d) mitigating the systemic effects of inappropriate incentives in order to curb moral hazard; and (e) strengthening the financial infrastructure.

The ESRB advised EU countries to verify whether their institutions responsible for macroprudential policy have an appropriate set of tools. The ESRB recommendation states that a macroprudential authority should directly control at least one tool for fulfilling each of the above five objectives. The tools that can be used if the country has the relevant legal and other prerequisites in place include, for example, capital surcharges (changing in time or differing across types of financial institutions, or both), requirements for sufficient liquidity, limits on the concentration of relationships with individual counterparties or inter-linked groups, LTV limits and maximum leverage ratios.

The range of macroprudential tools is wide. Individual countries will in practice focus on a narrower set of tools suiting the structure and nature of the domestic financial system and the existing legislative and regulatory environment. Further to this debate at the European level and the resulting ESRB recommendation, the CNB, which is tasked with maintaining financial stability in the Czech Republic, is also working on macroprudential policy objectives and appropriate tools. Its approach is based on the fact that the Czech financial sector is dominated by banks, whose main activity is to provide loans to non-financial corporations and loans for house purchase and to finance the domestic public sector. The CNB will also take into account the fact that the Czech financial sector consists largely of institutions wholly or majority-owned by foreign financial institutions subject to regulation and supervision by foreign authorities. The preceding parts of this section examine the options for using certain tools, such as the countercyclical capital buffer, capital surcharges based on the institution's domestic systemic importance, LTV limits on loans for house purchase and tools focused on sovereign risk.

A new regulatory framework – CRD IV/CRR – has been adopted for banks in the EU

In the first half of 2013, following long and complex negotiations, two major pieces of legislation were adopted stipulating rules for the regulation of banks and some other financial institutions. These transpose into EU legislation a set of Basel Committee on Banking Supervision (BCBS) recommendations known as Basel III. They are known simply as

the Capital Requirements Regulation (CRR) and the Capital Requirements Directive (CRD). In reality, however, both deal not only with the traditional regulation of the ratio of capital to risk-weighted assets (RWA), but also with some other issues. Whereas the CRR is completely new, the CRD is the fourth version and is sometimes called CRD IV. The two documents are sometimes referred to as the CRD IV package or just CRD IV. This package is of crucial importance from the macroprudential policy perspective because it allows the authorities in individual EU countries to apply several new macroprudential tools.

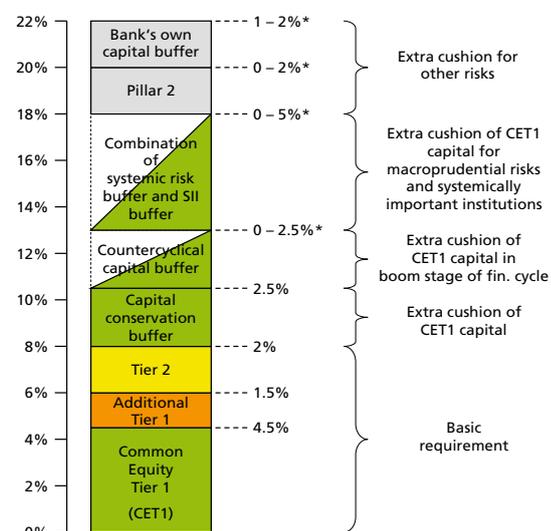
The distribution of individual provisions into the CRR and the CRD is significant from the legal point of view: whereas a regulation automatically becomes a direct part of the law of all EU countries after it is approved by the European Council, the content of a directive must be transposed by the countries into their laws through the domestic legislative process. For this transposition, European law lays down the principle of “minimum harmonisation”, according to which regulations may be tightened further but may not be eased when the content of a directive is transposed into domestic law.

In the area of capital regulation, the CRR incorporates the BCBS proposal to require banks to hold a minimum capital buffer of 4.5% of RWA in the form of Common Equity Tier 1 (CET1). The CRD contains additional requirements (see Chart V.16). First, each bank has to hold a capital conservation buffer of 2.5% of RWA in the form of CET 1. Banks may cover losses using this buffer in bad times without being threatened with licence revocation, but they must observe certain restrictions, for example on dividend payments, until they have restored the buffer. Second, the regulator may require a subset of the banking sector or individual banks to hold CET 1 capital in several other – this time macroprudentially tuned – types of buffers (a systemic risk buffer, a buffer derived from the global or domestic systemic importance of the bank, a countercyclical buffer). The consequences of drawing on these buffers without them being released by the macroprudential authority are the same as for the conservation buffer.

The CRR also regulates the leverage ratio (the assets-to-GDP ratio) and a further two aspects that are significant from the perspective of the prudential operation of the institutions concerned – it sets limits on large exposures and lays down liquidity requirements. The liquidity rules, however, are defined in relatively general terms at the moment, and the CRR leaves room for them to be specified in more detail. The CRR and the CRD will take effect on 1 January 2014. However, where they introduce new types of regulation or tighten existing regulations, they set various transition periods during which the regulations will gradually take their final form. So, in the period ahead it will be necessary to conduct an in-depth analysis of all the possibilities and limitations of this new legislative framework for bank regulation in both domestic and cross-border coordination of macroprudential policies. However, some elements of the banking union project may substantially hinder the conduct of macroprudential policy. This issue is analysed in the final box of this report.

CHART V.16

Capital requirements stipulated by CRD IV (in % of risk weighted assets)



Source: European Commission (adapted)

Note: * Expected upper limits, although actual values can be higher.

BOX 2 – THE BANKING UNION, MORAL HAZARD AND RISKS TO FINANCIAL STABILITY

Box 1 in section 4 describes the risks to the banking union project associated with the proposed transfer mechanisms and the application of the group interest principle. Besides these risks, however, there are other risks stemming primarily from greater moral hazard. Although the banking union project is being presented as a tool for preventing major financial crises in the EU in the future, its main purpose – at least in the initial phase – was to reduce the threat of a dramatic escalation of the current crisis and the disintegration of the euro area. This is meant to be achieved by disrupting the links between national governments and national banking sectors by transferring government debts and potential bank losses to the euro area or EU level. In addition to the political risks described below, this approach has considerable potential to increase moral hazard, as it opens up the possibility of poor-quality government or private assets being transferred from entities in specific countries to public balance-sheets and taxpayer liabilities in other countries. If it is expected that bailouts of troubled countries will be financed from public funds, the potential magnitude of the bailouts and debts requiring common financing will increase. The aggregate level of public debts and potential banking sector losses that will require the involvement of public budgets is already relatively high in the euro area and is approaching a level which may give rise to doubts about its sustainability. In addition, many governments are unable to reduce their public budget deficits at the previously expected rate. This is being reflected in considerable issuance activity and rising exposure of financial institutions to the public sector. This rising exposure is also being supported by the preferential regulatory approach to government bond holdings and by rising public confidence that the euro area will jointly prevent sovereign credit defaults, even at the expense of monetary financing of public budgets.

The separation of the state from the national financial system may also increase moral hazard through weaker responsibility of national governments for long-term fiscal sustainability. If government bonds are held primarily by national banks or pension funds, politicians may feel responsible for the public's money in these institutions. Any threat to such funds would also make them less likely to be re-elected. If government bonds are held by "anonymous" investors on the opposite side of Europe as a result of greater EU financing of government debt, ill-considered fiscal expansion may be easier and sometimes even rational. If, however, a shock occurs in this environment in the

form of an unexpected rise in sovereign risk in respect of a specific issuer, the impacts of this shock will be EU-wide, not local.

The risks described above may have a direct effect on the common deposit insurance fund, if it is established. Neither the existing national funds nor the future common fund is likely to be large enough to resolve major financial crises and will have to rely on coverage by public budgets in the form of either guarantees or cash. If it becomes necessary to use money from the single fund to a greater extent, this will again give rise to expectations that strong countries will have to increase their public debts to help weaker countries, and sovereign risk may thus start to rise again in the euro area as a whole. In such case, the banking union will act as an accelerator of, rather than a barrier to, the spread of systemic risk. A major complication in this regard is that there is currently no fiscal union in the euro area, and this is not likely to change in the next few years. And even if some form of fiscal union is established, it will be exposed to the risk that political processes will develop at national level which will undermine the consensus in the EU and thwart the commitment to finance the debts of troubled countries over the long term. To sum up, the assumption that the banking union will disrupt the link between national governments and national banking sectors is not entirely credible.

The building blocks of the banking union presented so far are often based on principles that are not consistent with the present political and economic arrangements in the EU. The expectations that the feedback between sovereign risk and credit risk will be eliminated in this way may therefore prove to be another blind alley that will prolong rather than stop the crisis. The proposals to establish a banking union are thus focused on past problems stemming from inherent problems in the very nature of the present monetary union. These problems include, for example, structural differences between the core and periphery of the euro area, business cycle misalignment between countries, and differences in the reactions of economies to external shocks. These proposals thus again treat only the symptoms, not the cause, of the "disease". The idea that the banking union is the "one and only" solution may imply a strengthening not only of moral hazard, but also of contagion channels across countries.

Additional risks to financial stability stemming from the current ideas about the functioning of the banking union are associated with the separation of national governments and national

supervisory authorities from responsibility for the overall situation of the national financial sector. This may further intensify the possibility of financial imbalances, the correction of which often requires a fast and decisive response through a combination of supervisory, macroprudential and fiscal measures to prevent the emergence of dangerous asset market bubbles. If a national government does not feel fully responsible for the domestic banking sector, it has less incentive to contribute to unpopular measures aimed at correcting emerging imbalances. Even more importantly, the banking sectors in the EU differ widely in terms of size, indebtedness, cross-border operations, concentration and dominant types of bank and customer behaviour. Financial cycles differ considerably as well. Ireland and Spain experienced strong credit booms before the crisis, whereas Germany and Austria did not. Given this heterogeneity, there are concerns that single supervision and single rules will hinder effective macroprudential policy, and in particular the ability to prevent local credit booms followed by distress in national banking sectors. The final result may be the unification not only of euro area interest rates, but also of lending conditions. This would preclude the implementation of effective countercyclical policy at the national level.