SPECIAL FEATURES

A RECENT EXPERIENCE OF EUROPEAN COUNTRIES WITH MACRO-PRUDENTIAL POLICY[1]

The global financial crisis revealed a need for macro-prudential policy tools to mitigate the build-up of systemic risk in the financial system and to enhance the resilience of financial institutions against such risks once they have materialised.

In the EU, macro-prudential policy is an area that is in an early stage of development. This is also true as regards the use of instruments to address systemic risk for which there is so far only limited experience to draw on. Hence, there is general uncertainty about the effectiveness of such instruments in practice. Nevertheless, country-level experience can serve as a useful yardstick for formulating macro-prudential policy in the EU. This special feature considers the experience of European countries with macro-prudential policy implementation. Overall, the evidence surveyed here indicates that macro-prudential policies can be effective in targeting excessive credit growth and rapidly rising asset prices, although other policies can be a useful complement to reduce the build-up of imbalances. At the same time, the appropriate timing of macro-prudential policy measures remains a challenging task.

INTRODUCTION

Macro-prudential policy is not a new concept

Several European countries experienced a large build-up of financial imbalances in the period leading up to the global financial crisis. In the financial sector, many institutions increased leverage and maturity mismatches. In the household sector of some European countries, mortgage lending and property prices increased relative to income and the gross domestic product (GDP). Moreover, in central and eastern European countries (CEE countries), households took on excessive foreign exchange risk by borrowing in foreign currencies.

Many of these financial imbalances were revealed when the global financial crisis began in 2007, and their unwinding had considerable negative implications for the financial system and the real economy. The fall in the value of financial assets weakened banks' balance sheets and induced them to deleverage. In many countries, rising unemployment, coupled with falling house prices, led to a deterioration in households' financial situation. Furthermore, in some countries, households that had borrowed in foreign currency faced higher debt burdens as domestic currencies depreciated.

In the light of these experiences, policy authorities in the EU and elsewhere are devoting major efforts to setting up macro-prudential policy bodies at the national as well as supranational level (such as the European Systemic Risk Board (ESRB)), to focusing on the stability of the financial system as a whole and to working towards increasing banks' resilience to shocks and reducing the build-up of systemic risks.[2] Furthermore, several macro-prudential policy instruments are now embedded in the legislation transposing the Basel III global standards on bank capital into the EU legal framework (via a Regulation and a Directive, the "CRD IV" package). These are mainly capital-based instruments aimed at increasing banks' resilience to macro-financial shocks, such as the counter-cyclical capital buffer, the systemic risk buffer and capital buffers for systemically important institutions. They are complemented by tools such as exposure limits.[3] In the EU, the Single Supervisory Mechanism (SSM) will partly lift macro-prudential policy-making to the supranational

1 Prepared by Christoffer Kok, Reiner Martin, Diego Moccero, Maria Sandström.
2 Macro-prudential oversight bodies have also been set up in other major economies, such as the Financial Stability Oversight Council in the United States.
3 See Box 8 entitled "Macro-prudential aspects of the SSM Regulation", in *Financial Stability Review*, , ECB, November 2013.

level when the ECB assumes its new banking supervision responsibilities in November 2014.[4] The ECB will have some powers to implement macro-prudential measures as set out in the CRD IV package.[5]

These recent developments notwithstanding, the use of macro-prudential policy tools is not new. In the period from the Second World War until the financial deregulation of the 1980s, many countries worldwide closely regulated credit markets using instruments which resemble the macro-prudential policy tools discussed today.[6] From the 1990s onwards, macro-prudential policy measures have been most actively used in emerging markets, particularly in Asia. A number of European countries have also implemented macro-prudential policies, in particular to mitigate risks related to foreign currency lending (especially prevalent in CEE countries). More recently, a number of countries have adopted measures to increase financial system resilience and prevent or mitigate the further build-up of risks related to housing markets and household indebtedness in a low interest rate environment.

For the ECB to fulfil its macro-prudential mandate, it is important to draw lessons from countries' past experiences with macro-prudential policy implementation. This special feature therefore provides updated evidence on the experience with macro-prudential policy measures in European countries. More specifically, it focuses on policies aimed at reducing systemic risk that results from imbalances in housing markets and foreign currency lending, since these have so far been the most commonly implemented national macro-prudential policy measures in European countries.

EVIDENCE ON MACRO-PRUDENTIAL POLICY

Macro-prudential and micro-prudential tools have common characteristics

Macro-prudential policies can be broadly described as prudential measures aimed at reducing systemic risk and preserving financial stability. However, other policies such as fiscal policies, monetary policies and micro-prudential policies can also have an impact on financial stability.[7] In addition, many of the macro-prudential policy tools have characteristics in common with standard tools used in micro-prudential supervision, such as adjustments to capital requirements and liquidity requirements. This is particularly the case for the macro-prudential tools provided for in the CRD IV package. However, whereas micro-prudential supervision focuses on individual banks, macro-prudential policies consider broader macroeconomic and financial market developments. Nevertheless, this similarity between macro-prudential and micro-prudential policy instruments means that certain policy measures can be implemented with a micro- and/or a macro-prudential objective, implying that macro-prudential policy actions might have an impact on micro-prudential supervision, and vice versa (see also Special Feature C for a discussion of the interactions between micro- and macro-prudential supervision).

In addition to standard supervisory measures for the banking sector, adjustments to reserve requirements, a standard monetary policy instrument, can also be employed for macro-prudential

4 The SSM will create a new system of financial supervision comprising the ECB and the national competent authorities of participating countries. Among these EU countries are those whose currency is the euro and those whose currency is not the euro but who have decided to enter into close cooperation with the SSM.

5 See also Article 5 of Council Regulation (EU) No 1024/2013 of 15 October 2013 conferring specific tasks on the European Central Bank concerning policies relating to the prudential supervision of credit institutions (OJ L 287, 29.10.2013, pp. 63-89).

6 See, for example, Elliott, D. J., Feldberg, G. and Lehnert, A., "The history of cyclical macroprudential policy in the United States", *Finance and Economics Discussion Series*, No 2013-29, Board of Governors of the Federal Reserve System, 2013.

7 Monetary policy also has an impact on the financial cycle, resulting in interlinkages between macro-prudential and monetary policy. See "Macro-prudential policy objectives and tools", *Financial Stability Review,* ECB, June 2010, and "Exploring the nexus between macro-prudential policies and monetary policy measures", *Financial Stability Review*, ECB, May 2013.

policy purposes. Moreover, certain economic policy tools that target borrowers, such as caps on loan-to-value (LTV) or debt-to-income (DTI) ratios, are generally regarded as macro-prudential policy measures.[8]

Because of its interaction with micro-prudential, fiscal and monetary policies, assessing the effectiveness of macro-prudential policy is complex. A number of studies have estimated the impact of macro-prudential policy measures in a cross-section of countries. Lim et al. (2011) find that some of the most common macro-prudential measures were effective in a cross-section of 46 countries between 2000 and 2010. More specifically, tightened LTV and DTI ratios, reserve requirements, dynamic provisioning and ceilings on credit growth (also in foreign currency) all seem to reduce the pro-cyclicality of credit growth.[9] Kuttner and Shim (2013) investigate housing-related measures for 57 countries in the period from 1980 to 2011. They conclude that macro-prudential policies have been effective in dampening housing prices and credit without distinguishing between different measures.[10] Vandenbussche et al. (2012) study measures taken in central, eastern and south-eastern Europe from the late 1990s to 2010. They find that higher capital ratios and marginal reserve requirements on foreign funds have a dampening impact on house price inflation.[11]

Impact of macro-prudential policy should be analysed at the national level

However, showing that macro-prudential policy implementation has a significant effect in a sample of countries does not mean that the same is true for an individual country. More specifically, although many financial systems are highly interrelated, they can also differ significantly between countries. The policy impact should therefore also be analysed at the national level. A few studies have evaluated the impact of macro-prudential policy measures in individual countries. The Hong Kong Monetary Authority (2011) finds that adjustments to LTV caps have been effective in reducing systemic risk that stems from boom and bust cycles in the property market.[12] However, recent evidence suggests that caps on LTV ratios are more effective in dampening household leverage than mitigating credit growth or property price growth.[13] At the same time, Igan and Kang (2011) find that measures tightening LTV and DTI caps have been associated with lower house price growth and real estate brokerage activity in Korea.[14] Kim (2014) notes that the Korean LTV and DTI regulations have also been successful in curbing mortgage lending, but not without unintended consequences.[15] It should be noted that in both Hong Kong and Korea, the macro-prudential measures were combined with other structural, monetary or fiscal measures.

European country-level studies of macro-prudential measures remain scant, which is mostly due to the fact that fewer countries have practical experience with macro-prudential policy implementation.

8 For further details on macro-prudential policy instruments and their transmission mechanism, see *The ESRB handbook on operationalising macro-prudential instruments in the banking sector*, ESRB, 2014, and Committee on the Global Financial System, "Operationalising the selection and application of macro-prudential instruments", *CGFS Papers*, No 48, December 2012.

9 See Lim, C., Columba, F., Costa, A., Kongsamut, P., Otani, A., Saiyid, M., Wezel, T. and Wu, X., "Macroprudential Policy: What Instruments and How to Use Them? Lessons from Country Experiences", *IMF Working Paper Series*, No 11/238, IMF, Washington, D.C., October 2011.

10 Kuttner, K.N. and Shim I., "Can non-interest rate policies stabilise housing markets? Evidence from a panel of 57 economies", *BIS Working Paper Series*, No 433, BIS, November 2013.

11 Vandenbussche, J., Vogel, U. and Detragiache, E. "Macroprudential Policies and Housing Prices – A New Database and Empirical Evidence for Central, Eastern, and Southeastern Europe", *IMF Working Paper Series*, No 12/303, IMF, Washington, D.C., December 2012.

12 Hong Kong Monetary Authority, "Loan-to-value ratio as a macroprudential tool – Hong Kong SAR's experience and cross-country evidence", *BIS Research Papers*, BIS, No 57, 2011.

13 He, D., "The effects of macroprudential policies on housing market risks: evidence from Hong Kong", *Financial Stability Review*, No 18, Banque de France, April 2014.

14 Igan, D. and Kang, H., "Do Loan-to-Value and Debt-to-Income Limits Work? Evidence from Korea", *IMF Working Paper Series*, No 11/297, IMF, Washington, D.C., 2011.

15 Kim, C., "Macroprudential policies in Korea: Key measures and experiences", *Financial Stability Review*, No 18, Banque de France, April 2014.

Table A.1 provides an overview of the most common macro-prudential policy measures that have been implemented in European countries since the late 1990s. Many of these measures had the objective of reducing the systemic risk stemming from imbalances in housing markets and excessive foreign currency lending. The table builds on databases compiled by the International Monetary Fund (IMF) and the Bank for International Settlements (BIS), complemented by the most recent macro-prudential policies announced by European national authorities.[16] The table shows that – at least in the central and eastern European countries – the adjustment of reserve requirements has been the most common macro-prudential measure adopted to curb both excessive credit expansion and foreign currency lending. At its simplest level, this measure means that banks are required to keep more liquidity in reserve and use less for lending, which should have a dampening effect on credit growth. However, within the euro area, which is characterised by a single, centralised monetary policy, reserve requirements cannot be used as a tool to target excessive credit growth in individual countries.

Within the euro area, reserve requirements cannot be used to target excessive credit growth in individual countries

With regard to measures aimed more specifically at addressing housing market imbalances, a cap on LTV ratios appears to be the most common solution. An LTV cap increases the borrower's equity stake in the property, which creates incentives to service the loan and lowers the bank's losses in the event of borrower default (so-called "loss given default"). Both of these effects improve the resilience of the financial system and can potentially also lower mortgage credit growth. A related, but less frequently used, measure is a cap on the DTI ratio, which limits the size of the debt (or the cost of servicing the debt) relative to the borrower's income. Adjustments to (mortgage) risk weights and bank provisioning rules have also been introduced in a number of countries.

Table A.1 Implementation of macro-prudential policies targeting housing market imbalances and (excessive) lending in foreign currency [1)]

	Capital measures		Provisioning measures	Liquidity measures		Creditworthiness of borrowers		Restrictions on mortgage lending
	Counter-cyclical capital requirements	Risk-weights measures		Reserve requirements[3)]	Foreign currency liquidity requirement	Loan-to-value ratio	Debt-to-income/ Debt service-to-income ratio	
Belgium		X						
Bulgaria		X	X	X,•				
Croatia	X	•	X,•	X,•	•			X
Denmark						X		
Estonia		X		X,•				
Greece							X	
Hungary				X,•		X,•	•	•
Ireland		X						
Latvia				X,•		X		
Lithuania				X,•		X		
Netherlands						X		
Norway	X	X				X		
Poland		•		X,•		X,•	X,•	
Romania	•[2)]		X,•	X,•		X	X,•	
Slovakia				X,•		X		
Slovenia				X,•				
Spain		X	X					
Sweden		X				X		
Switzerland	X	X						

Sources: Vandenbussche et al., op. cit.; Shim et al., op. cit.; and national authorities.
Notes: 1) A dot (•) indicates a measure related to foreign currency. 2) Refers to a maximum ratio of foreign loans to own funds. 3) The dot for Croatia refers to mortgage, consumer and corporate loans. The dot for Poland refers to mortgage loans only.

16 See, for example, Shim, I., Bogdanova, B., Shek, J. and Subeluyte, A., "Database for policy actions on housing markets", *BIS Quarterly Review*, BIS, September 2013; and Vandenbussche et al., op. cit.

Several European countries have also adopted measures to deal with risks stemming from excessive foreign currency lending. Especially in many central and eastern European countries, lending in foreign currency was particularly high in the period preceding the start of the global financial crisis. These measures include qualitative measures, such as warnings and recommendations, as well as tools such as binding capital requirements for foreign currency loans, risk weight surcharges, stricter loan classification and provisioning rules, more stringent reserve and liquidity requirements and tight LTV and DTI ratios. Some countries have also implemented a direct (temporary) prohibition on foreign currency lending to certain categories of customers. The purpose of these measures was to make financial institutions internalise the risks of foreign currency lending; to make foreign currency borrowing more expensive; to increase the resilience of the financial system through higher loss absorbency capacity; and to enhance borrowers' creditworthiness, particularly of unhedged borrowers.

The ESRB recommended macro-prudential policy action against risks related to foreign currency lending

Not all EU countries with a high level of foreign currency lending have implemented macro-prudential policies to the same extent.[17] Croatia has been the most active country in terms of the number of measures implemented, followed by Hungary, Poland and Romania. The Czech Republic has not implemented any measures, despite a non-negligible share of foreign currency loans to non-financial corporations. In response to the recent financial crisis and falling domestic economic activity, national macro-prudential policies were eased in most central and eastern European countries between 2008 and 2009.

In September 2011 the ESRB issued a Recommendation to EU Member States with a view to increasing the effectiveness of macro-prudential policies directed at addressing the risks to financial stability associated with excessive foreign currency lending.[18] The ESRB recommended that national supervisors upgrade their toolkit of policy options and avoid regulatory arbitrage, which is believed to have undermined the effectiveness of such policies in the EU.[19] In this respect, the recommendations suggest reciprocity in macro-prudential policy implementation. National authorities of the home Member State of financial institutions providing cross-border services or operating through branches should impose measures on foreign currency lending to the residents of the host Member State in question which are at least as stringent as those introduced by the authorities of the host Member State. The EU-wide application of these recommendations is necessary to make regulatory arbitrage less efficient and more costly.

POLICIES TO ADDRESS HOUSING MARKET IMBALANCES

Some factors underlying housing market imbalances

Since the mid-1990s many European countries have experienced significant increases in house prices and mortgage borrowing, driven by several factors ranging from economic developments and financial innovations, such as interest-only loans, to changes in regulation (see Chart A.1). Whereas in some countries (such as Ireland and Spain) the trend of increasing house prices and household debt reversed with the onset of the financial crisis, other countries (such as Norway

17 Some non-euro area central and eastern European countries believe that measures to restrict foreign currency lending would undermine confidence in their currency boards.

18 *Recommendation of the European Systemic Risk Board of 21 September 2011 on lending in foreign currencies*, ESRB/2011/1 (OJ C 342, 22.11.2011, p.1). See also *Guidelines on capital measures for foreign currency lending to unhedged borrowers under the supervisory review and evaluation process (SREP)*, EBA/GL/2013/02, European Banking Anthority (EBA), December 2013.

19 Borrowers have been able to circumvent national policies not only through cross-border lending but also through lending by the shadow banking sector. Vandenbussche et al. (op. cit.) also report that foreign banks with subsidiaries booked loans with the parent institution or with a non-bank subsidiary, instead of with their local bank affiliates, so as to avoid prudential regulation on local banks.

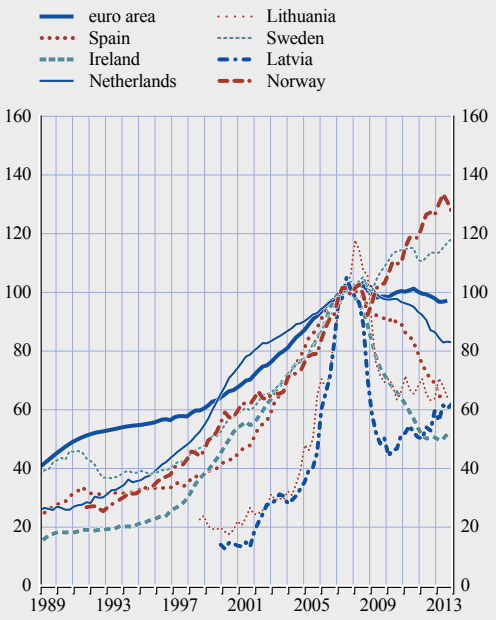
and Sweden) experienced a continued increase in house prices and household indebtedness that was fuelled by low interest rates.

The divergence in trends across countries suggests that housing and credit markets are driven not only by global economic developments, but also by national considerations. For example, in some countries, there has been a significant migration of people towards major cities. To the extent that housing construction has not kept pace with demand, this influx has contributed to a rise in urban house prices. In addition, strict national regulation of land use in countries such as the Netherlands and Sweden puts further limits on the construction of new housing.

Fiscal policies can also set incentives for mortgage borrowing. For example, the right to tax deductions for mortgage interest payments lowers the cost of borrowing. By contrast, stamp duties and other levies can increase the cost of real estate transactions.

Chart A.1 Residential property prices in selected European countries

(index = 2007 = 100)



Source: ECB.

Country experience with macro-prudential policy targeting housing market imbalances

National considerations drive housing market developments

A cap on LTV ratios is one of the most common macro-prudential measures applied by European countries. This analysis focuses on the implementation of caps on LTV ratios in selected countries. Evidence shows that the impact of these caps varies significantly depending on country-specific circumstances.

Household debt in the Baltic countries (Estonia, Latvia and Lithuania) remains below the euro area average, but the rates of growth in these countries were among the highest in the EU between 2004 and 2007.[20] At the same time, property and consumer prices increased substantially. This development was driven, inter alia, by a booming economy and by the expansion of foreign banks in the region. In March 2007 Latvia introduced a LTV cap of 90% on mortgage lending as part of a broader effort to combat inflation and promote a more sustainable credit market.[21] According to the national authorities, the LTV cap was effective in the sense that it implied a binding constraint for many potential house buyers.[22] However, it is hard to distinguish the pure effect of these measures on house prices and credit growth, as the decline in mortgage lending was accompanied by changes in parent banks' strategy and the severe economic downturn.

Lithuania experienced similar developments, although they were somewhat less severe than in Latvia. As the Lithuanian economy recovered from the financial crisis, the Responsible Lending

20 Lithuania is not a member of the euro area. Estonia and Latvia joined in 2011 and 2014 respectively.
21 At the same time, several other fiscal and prudential measures were taken, such as increased and differentiated stamp duty on real estate transactions depending on the number of properties already held by the purchaser; differentiated stamp duty on mortgage collateral registration; and the introduction of 25% capital gains tax on the difference realised between a property purchase and sale price where the seller has held the property for less than 60 months.
22 See *Financial Stability Report*, Latvijas Banka, 2007.

Regulation was adopted in November 2011 to prevent a renewed build-up of systemic risk. The Regulation provided for an 85% LTV cap, a 40% DTI cap and a maturity limit of 40 years to apply to all new mortgage lending. The introduction of these measures coincided with a slight decline in house prices, but did not have any major impact on credit growth in Lithuania.

For most of the period since 2000, household finances in the Netherlands, Norway and Sweden have been characterised by a rising debt burden, high LTV ratios on mortgage loans and a high use of interest-only loans.

In the Netherlands, fiscal incentives to promote home ownership have been particularly strong. The right to fully deduct mortgage payments from taxable income has induced households to maintain a high level of borrowing and, instead of amortising the loans, to place their savings in financial assets with a higher expected return. Household borrowing was facilitated by increasing LTV ratios and in 2009 the average notional LTV ratio on new lending stood at 120%.[23] The rise in house prices during most of the 2000s, coupled with high LTV ratios as well as low repayment rates, resulted in one of the highest levels of gross household debt in the EU.[24]

Several reforms of the Dutch housing and mortgage market

Since the onset of the financial crisis in 2007, the fall in property prices has left around 30% of the Dutch homeowners with a mortgage higher than the value of their property.[25] This sparked calls for national reforms of the housing and mortgage markets and, in August 2011, the Dutch authorities decided on an LTV cap of 106% effective from 2012. The LTV cap will gradually be reduced to 100% by 2018. At the same time, it was announced that the mortgage interest rate deductibility scheme would gradually become less advantageous, especially for high-earners. From 2013, new mortgage debt has to be paid back over 30 years in order to be tax deductible. From 2014, the maximum deductible tax rate will fall from 52% (the highest income tax bracket) to 38%, in steps of half a percentage point over 28 years. The simultaneous downturn of the economy, as well as the observation that the house price decline took place in anticipation of, rather than after, the policy measures, makes it difficult to disentangle the impact of any single macro-prudential measure on house prices and credit growth.

The Norwegian economy and property market were largely shielded from the global economic slowdown triggered by the recent financial crisis. Instead, in the low interest rate environment prevailing in Norway after the crisis, the growth in property prices and household indebtedness was among the strongest in Europe. In order to contribute to a more sustainable housing market development, the national supervisory authority introduced an LTV cap of 90% in March 2010.[26] However, the cap was introduced merely as a guideline with certain exceptions[27] and in October 2010 almost two-fifths of new mortgage loans still had an LTV ratio above 90%.[28] Unsurprisingly, the effect on mortgage credit growth and house prices was limited. In the light of this development, the LTV cap was lowered to 85% in December 2011. Subsequent mortgage market surveys show a gradual reduction in high LTV lending.[29] In 2013, house price growth and credit growth slowed down significantly. This may partly be a lagged effect from the LTV cap and partly attributable to the implementation of more stringent Basel III capital requirements. In December 2013 the Norwegian authorities activated the counter-cyclical capital buffer and in early 2014 a risk-weight

23 Although there are some caveats with respect to data quality, see, for example, Vandevyvere, W. and Zenthöfer, A., "The housing market in the Netherlands", *Economic Papers*, No 457, European Commission, 2012.
24 In the third quarter of 2013, outstanding debt of households amounted to 249.1% of households' gross disposable income.
25 *Overview of Financial Stability*, De Nederlandsche Bank, spring 2014.
26 The guidelines also included an amortisation requirement for LTV ratios exceeding 70% and a stress testing of the borrower's debt repayment ability (given a 5% increase in interest rates).
27 For example, if borrowers posted additional collateral.
28 *Boliglånsundersøkelsen*, Finanstilsynet, 2011.
29 *Boliglånsundersøkelsen*, Finanstilsynet, 2012 and 2013.

floor of 20% for mortgage loans was introduced to further strengthen banks' resilience against housing market shocks.

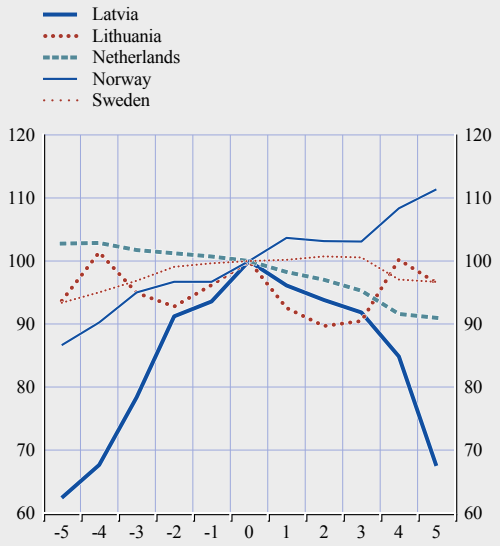
The LTV cap had a temporary effect on credit growth in Sweden

In Sweden, house prices declined somewhat after the failure of Lehman Brothers in September 2008, but rebounded strongly in the low interest rate environment prevailing thereafter. In order to protect consumers and avoid unsustainable developments on the credit market, the Swedish supervisory authority introduced an LTV cap of 85% in October 2010. Previously, lending up to 95% of a property's market value had not been unusual as banks competed for market share in a growing market. The LTV cap indeed broke the trend of rising LTV ratios.[30] House price inflation also levelled off temporarily in 2011. However, since properties were purchased at a higher price than last sold, credit growth and household indebtedness continued to rise. Thus, the 85% LTV cap only had a temporary effect on the credit growth rate. More recently, Swedish authorities have introduced a floor of 15% on banks' mortgage risk weights.

Charts A.2 and A.3 summarise the impact of LTV cap implementation on residential property prices and household credit growth. In Latvia, the LTV cap, in conjunction with other measures, contributed to a dampening of house prices and credit growth, but it was adopted too late to protect banks and borrowers from the housing market downturn that was triggered by the financial crisis. In Lithuania, the LTV ratio requirement seems to have dampened house prices, but not the rate of credit growth. In the Netherlands, the downward trend in house prices continued, whereas in Norway house prices continued to rise although credit growth slowed down somewhat. House prices and the rate of credit growth in Sweden did not change materially following the introduction of the cap.

Chart A.2 Residential property prices before and after introduction of LTV caps

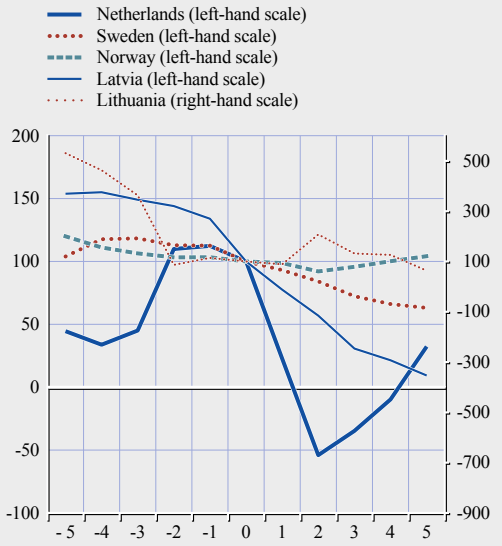
(index = 100 in quarter of LTV cap implementation)



Source: ECB.
Notes: The x-axis shows the deviation in quarters, from the quarter when the LTV cap was introduced. Data refer to single family house prices.

Chart A.3 Household credit growth before and after introduction of LTV caps

(index = 100 in quarter of LTV cap implementation)



Sources: ECB and Norges Bank.
Note: The x-axis shows the deviation in quarters, from the quarter when the LTV cap was introduced.

30 *The Swedish Mortgage Market 2013*, Finansinspektionen, March 2013.

A common denominator across countries seems to be that LTV caps were only implemented after a long period of strong house price inflation and credit growth. This may have reduced the potential counter-cyclical impact of the measures.

Although the LTV cap is a standard tool to address housing market imbalances, some countries have taken other measures. For example, in December 2013 the Belgian authorities required all banks that determine mortgage risk weights via internal models (the internal ratings-based (IRB) approach) to increase the weights by 5 percentage points.[31] Switzerland has introduced a counter-cyclical capital buffer for Swiss banks' risk-weighted residential mortgage exposures. The buffer rate was initially set at 1%, effective from 1 September 2013, but will increase to 2% from July 2014. The Swiss authorities have pointed out, however, that using the counter-cyclical capital buffer as a macro-prudential instrument poses several challenges. First, identifying unsustainable developments in credit markets is inherently difficult. Second, practical experience remains limited. Moreover, since the Swiss counter-cyclical capital buffer was activated while other measures aimed at dampening the build-up of systemic risk in the mortgage market were in place, it is difficult to distinguish the impact of individual policies.[32]

POLICIES TO ADDRESS EXCESSIVE LENDING IN FOREIGN CURRENCY AND EXCHANGE RATE RISK

Drivers of lending in foreign currency

Foreign currency lending both to households and to corporates

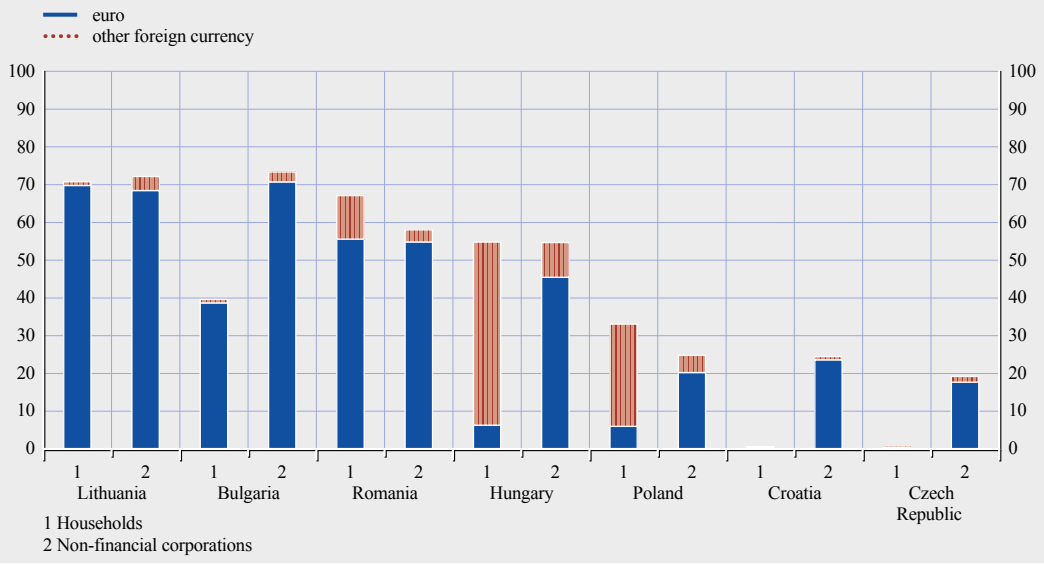
Bank lending in foreign currency represents a large share of total lending to households and non-financial corporations in some EU Member States, mainly in central and eastern Europe (see Chart A.4). In Estonia, Latvia, Slovenia and Slovakia, either household or corporate lending in foreign currency accounted for at least 30% of total lending in the respective category before these countries joined the euro area. Today, the share of foreign currency lending in total lending is particularly high in Bulgaria, Hungary, Lithuania and Romania, ranging from 39% to 70% for loans to households, and from 51% to 74% for loans to non-financial corporations.[33] In non-euro area EU Member States with a high share of foreign currency lending, most such loans are denominated in euro. However, households in Hungary and Poland and non-financial corporations in Hungary and Romania also borrow in other currencies (especially Swiss franc).

In some central and eastern European countries, foreign currency lending tended to grow at a faster rate than lending in domestic currency, particularly between 2007 and 2009. The difference in the rate of growth of both types of loans was particularly high in Lithuania and Hungary, peaking at 74% and 52% respectively in the first half of 2008. In the case of Bulgaria and Poland, the difference in the rate of growth was particularly elevated in the second half of 2008, at about 41% and 46% respectively. In Romania, where comparable data collected by the ECB are available over a relatively shorter time period, lending denominated in foreign currency grew more rapidly than borrowing in domestic currency until mid-2012, and particularly in 2008. In the Czech Republic, the difference between the rate of growth of loans denominated in foreign and that of lending in domestic currency has not exhibited any clear trend. Since 2008, the difference in the rates of growth has fallen sharply across central and eastern European countries, and remained at low and sometimes negative levels.

31 *Report 2013 – Economic and Financial Developments*, National Bank of Belgium, February 2014.
32 Danthine, J.-P., "Implementing macroprudential policies: the Swiss approach", *Financial Stability Review*, No 18, Banque de France, April 2014.
33 Among the euro area Member States, Austrian households have significant loans in foreign currency, representing about 20% of the outstanding stock in January 2014. In the remaining euro area countries, the share of foreign loans to households and non-financial corporations did not exceed 15% in January 2014.

Chart A.4 Foreign currency lending to households and non-financial corporations in central and eastern European countries

(January 2014; percentage of total outstanding loans)



Source: ECB.
Notes: Data refer to MFI lending to resident counterparties as a percentage of total outstanding loans. The shares are underestimated for Croatia owing to the classification of loans indexed to a foreign currency as loans in domestic currency. These loans represented about 68% of total loans at end-2013.

Expansion of foreign banks was a reason for foreign currency lending

Several factors have contributed to the high level of foreign currency lending in the EU during the 2000s. First, several central and eastern European countries experienced large capital inflows associated with an increasing presence of foreign bank subsidiaries and branches. Banks were attracted by the high profitability of banking in these economies and adopted aggressive strategies to gain market share.[34] Many of the foreign banks obtained funding via their parent institutions and also tapped wholesale markets abroad.[35] The lower cost of funding in foreign currencies compared with that in domestic currency played a major role in lowering foreign currency lending rates and making borrowing in foreign currency more attractive for customers.[36] Moreover, the risk of foreign currency borrowing was perceived to be low, even for unhedged customers, in particular in countries which had pegged their currencies to the euro. In countries with a floating exchange rate regime (such as Hungary, Poland and Romania), expectations of further currency appreciation supported demand for foreign currency loans.

Country experiences with macro-prudential policies related to foreign currency lending

Many of the central and eastern European countries have adopted a wide range of macro-prudential policies. This section focuses on the main measures adopted in selected countries to curb lending in foreign currency.

After joining the EU in 2004, Poland experienced a strong expansion of output and credit. Foreign currency mortgage loans to households (in Swiss francs) were popular and grew rapidly.

34 See "Regional Economic Outlook: Europe – Building Confidence", *World Economic and Financial Surveys*, IMF, Washington, D.C., October 2010. See also Szpunar, P.J. and Głogowski, A., "Lending in foreign currencies as a systemic risk", *Macro-prudential Commentaries*, Issue 4, ESRB, December 2012.
35 In some cases, foreign banks have also provided direct cross-border lending to residents.
36 For a comparison of lending rates in domestic currency and rates in euro and in Swiss francs, see the ESRB Recommendation on lending in foreign currencies, op. cit.

The authorities considered the expansion of such lending to be a risk because a deprecation of the Polish zloty, an increase in Swiss franc interest rates or a deterioration of macroeconomic conditions would severely undermine households' mortgage repayment capacity.[37] In response, in 2006 the authorities issued "Recommendation S", addressed to banks, which marked the start of a series of macro-prudential measures to reduce the risks stemming from foreign currency lending. This recommendation induced banks to enhance their risk management related to such lending (by, inter alia, including depreciation buffers in the assessment of borrower creditworthiness) and to inform customers of the related risks. The announcement about the pending recommendation had a deterrent effect, as the growth rate of foreign-denominated housing loans slowed in the first half of 2006 in favour of domestic currency loans even before the recommendation came into force in mid-2006 (see the event analysis below). A decreasing interest rate differential to the Swiss franc also contributed to the slowing down.[38] In 2007 the authorities also raised risk weights for foreign currency mortgage loans to households. The authorities introduced binding liquidity limits in 2007 (very similar to those agreed later in Basel III concerning both short and long-term liquidity), which took effect in mid-2008. This helped banks to withstand liquidity stress in 2008-09.[39] The intensification of the financial crisis in 2008 put an end to the fast credit expansion in Poland as banks tightened lending standards and consumer confidence worsened. The Polish zloty depreciated by 30-40% with respect to major currencies, increasing the burden for borrowers with debts denominated in foreign currency. However, the quality of foreign currency mortgages did not worsen significantly owing to more stringent requirements for the assessment of borrower creditworthiness provided for by Recommendation S and a decrease in Swiss interest rates, which translated directly into lower debt service costs given the fully floating nature of mortgage interest rates.

Since the financial crisis, the rate of growth of mortgages in foreign currency has fallen in Poland compared with those in domestic currency. Although there has been no major pick-up in foreign currency lending or credit growth, macro-prudential and supervisory policies have been tightened. In particular, between end-2010 and early 2011 the authorities introduced more stringent DTI ratios for foreign currency-denominated loans to unhedged borrowers (Recommendation T and amendments to Recommendation S) and in mid-2012 they further raised risk weights for foreign currency-denominated retail exposures. Since mid-2012, the issuance of foreign currency mortgage loans has been minimal and old loans are not renewed which means that the total stock of foreign currency loans is diminishing. From July 2014, borrowers are allowed to borrow only in the same currency as their income.

Banks in Romania circumvented macro-prudential policy measures

The Romanian financial system is dominated by foreign commercial banks. In the period from January 2005 to June 2008, household disposable income grew at an average annual rate of around 20%, while household debt increased at a rate of 77%. The lending outgrew local sources of funding with the gap covered by credit institutions' reliance on foreign funding, primarily from parent banks. The share of lending denominated in foreign currency stood at about 62% at end-2004. Against this backdrop, the Romanian authorities started taking measures to reduce the risks stemming from foreign currency lending. In 2004 Banca Națională a României increased the requirements

37 Furthermore, the flow of foreign currency lending had a considerable adverse impact on the monetary policy transmission mechanism, as a tightening of domestic monetary policy increased the inflow of foreign capital and foreign currency lending.
38 *Financial Stability Review*, Narodowy Bank Polski, 2007.
39 Since part of the growth of foreign currency lending was being financed from parent companies of banks operating in Poland, it also led to increasing liquidity risks for Polish banks owing to the growing share of foreign funding. The purpose of introducing liquidity limits was both micro- and macro-prudential, as they underlined the need for stable and sustainable funding of banks' credit portfolios.

regarding mandatory reserves to be held with the central bank for foreign currency liabilities.[40] The main step was taken in September 2005 when the authorities introduced a limit on credit institutions' exposures to a maximum of 300% of their equity when granting foreign currency loans to unhedged borrowers. However, banks circumvented this regulation by originating foreign currency loans and then selling the loan portfolios to non-residents, including parent companies. Moreover, the exposure limit was abandoned when Romania joined the EU in 2007.[41] In the summer of 2008 the authorities introduced more conservative lending standards for household loans. This new regulatory framework introduced a mandatory evaluation of borrowers' debt repayment capacity in a stress scenario over the entire life of the loan, incorporating adverse scenarios for interest rate and currency risks. Starting in 2011, the Romanian authorities imposed stricter standards for foreign currency loans granted to households (especially for Swiss franc and USD-denominated loans), in line with ESRB recommendations on foreign currency lending. The LTV caps are differentiated by the type of borrower and currency[42] and, for setting DTI maximum levels, the income risk was added to interest rate and currency risks. The Romanian authorities assess that the DTI and LTV caps were harder to circumvent than other macro-prudential measures, mainly because they address the credit risk ex ante. All in all, the Romanian authorities consider that the country's experience with DTI and LTV caps shows that these instruments are efficient (i) in curbing high credit growth and (ii) in ensuring that both debtors and creditors are able to withstand possible adverse shocks in real estate prices, domestic currency depreciation or interest rates hikes.

Croatia implemented higher risk weights on foreign currency loans

In addition to the driving factors common to most of the central and eastern European countries, certain idiosyncratic factors contributed to the high level of foreign currency lending in Croatia during the 2000s. In particular, domestic residents' preference for holding foreign currency deposits was the main reason for banks to provide loans in, or indexed to, foreign currency. Between 2003 and 2008, Croatia used a wide range of instruments to reduce capital flows, limit foreign currency lending and improve bank resilience. The main measures included adjustments to reserve requirements, a foreign currency liquidity requirement, limits on banks' currency mismatch and higher risk weights on foreign currency loans. The effects of this macro-prudential policy implementation have been analysed by Kraft and Galac (2011). Because of the simultaneous changes to multiple measures, they find it difficult to draw conclusions on the effectiveness of individual measures. Banks also avoided the regulations by channelling loans via parent banks, which reduced the impact of the measures on credit growth. Nevertheless, Kraft and Galac find that the regulations contributed to reinforcing banks' resilience to financial shocks.[43]

In Hungary, private sector credit growth outpaced nominal GDP growth during most of the 2000s, resulting in an increasing debt service burden that was reversed after the onset of the financial crisis in late 2008 and in 2009. Rapid credit growth before the crisis was driven by easing lending standards, particularly on loans to households, including longer maturities, higher LTV ratios and higher debt-service ratios for housing mortgages. As most of the new borrowing was in foreign currency

40 Banca Națională a României introduced minimum reserve requirement (MRR) measures at the beginning of 1990s. These measures have been used more actively since 1998 in order to reduce excess liquidity in the banking sector. In 2002 Banca Națională a României used the MRR to increase the cost of foreign currency lending and to improve the efficiency of the monetary policy transmission mechanism. In November 2002 the MRR rate on Romanian lei-denominated liabilities was decreased to 18%, from 22%, while the MRR rate for foreign currency-denominated liabilities was increased to 25%, from 22%. In August 2004 the MRR rate for foreign currency-denominated liabilities was increased to 30% again.

41 The exposure limit was abandoned as it was not in compliance with the *acquis communautaire*. Applicant countries have to accept the *acquis* before they can join the EU.

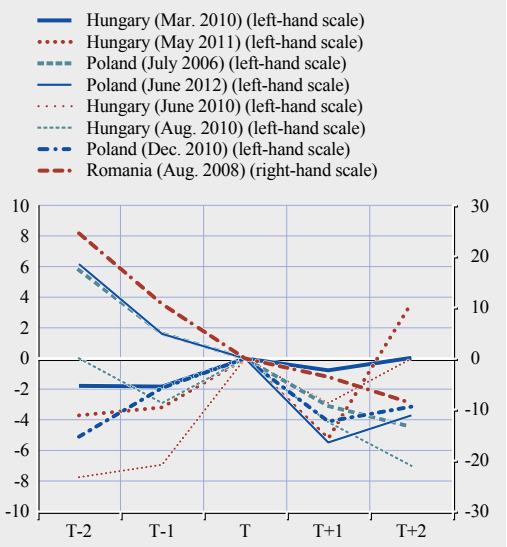
42 The LTV caps were set as follows: 75% for consumer loans, 85% for mortgage loans denominated in local currency, 80% for mortgage loans to hedged borrowers denominated in foreign currency, 75% for mortgage loans to unhedged borrowers denominated in euro and 60% for mortgage loans to unhedged borrowers denominated in other foreign currency.

43 Kraft, E. and Galac, T., "Macroprudential regulation of credit booms and busts – the case of Croatia", *Policy Research Working Paper*, No 5772, The World Bank, August 2011.

(including Japanese yen and Swiss franc), both the household and the corporate sectors' net foreign currency liabilities increased sharply. To address risks in the banking system associated with a potential depreciation of the Hungarian forint, which would have undermined the debt repayment capacity of unhedged borrowers, the authorities implemented a series of measures as from 2010. In March 2010 the authorities introduced lower maximum LTV ratios for mortgages and car loans in foreign currency, and in June 2010 they introduced more stringent DTI ratios for foreign currency-denominated loans. These measures, together with increased customer awareness of the exchange rate risks attributable to high exchange rate volatility, are likely to have contributed to lower demand for foreign currency loans in the first half of 2010. At the same time, the prohibition on foreign currency-denominated mortgage lending effective from August 2010 practically eliminated such lending by the end of that year. In July 2011 the authorities reintroduced foreign currency lending, albeit with very tight credit conditions.

Chart A.5 Rate of growth of loans in foreign and domestic currency in central and eastern European countries before and after the implementation of macro-prudential policies

(percentage changes per annum)



Source: ECB.
Notes: "T" is the time when a macro-prudential policy measure was implemented. Data are available for Croatia and for Romania from 2007. Bulgaria and Lithuania implemented monetary policy measures (reserve requirements) to curb lending in foreign currency which are not assessed here.

Countries have taken a range of measures to address macro-financial imbalances

Chart A.5 shows an event study analysis of the evolution of the difference in the annual rate of growth of foreign and domestic currency loans to households in Hungary, Poland and Romania, before and after the implementation of measures directed at curbing foreign currency lending. The measures evaluated are those outlined above. Controlling for the rate of growth of loans in domestic currency is important in order to capture general trends in lending that might be affecting the lending behaviour of banks and borrowers.

Evidence presented in Chart A.5 shows that such measures appear to have been effective in curbing lending in foreign currency, although the impact in most cases appears to weaken shortly after the policies are implemented. In some countries, the rate of growth of lending in foreign currency was already being outpaced by lending in domestic currency before the implementation of macro-prudential measures, perhaps in anticipation of such measures (for example, in Poland in July 2006 and June 2012; and in Romania in August 2008).

CONCLUDING REMARKS

This article has described recent experiences with national macro-prudential policies directed at addressing imbalances in housing markets and excessive foreign currency lending in European countries. Going forward, macro-prudential policy analysis in the EU should take into account the preliminary lessons learned from these experiences. The experiences outlined above show that a broad range of policies have been used by countries for macro-prudential purposes. This can partly be explained by the fact that underlying macro-financial imbalances, and thus the applied policy

response, differ between countries. It may also be due to the fact that local institutional set-ups influence policy responses.

Many countries have addressed their macro-financial imbalances by taking a range of measures. One common strategy is to implement macro-prudential policy in incremental steps – perhaps because it is difficult to carry out an ex ante impact assessment of each policy measure. Overall, the evidence surveyed indicates that macro-prudential policies can be effective in addressing macro-financial imbalances. However, the appropriate timing of implementation of macro-prudential measures is important and, with the benefit of hindsight, it seems that many countries should have acted earlier. In some instances, the macro-prudential policy tools may not have been sufficient to counter the effect of expansive fiscal policies and other regulations. This points to the importance of the overall economic policy mix. Moreover, some macro-prudential policy measures seem to have been easily circumvented by those to whom they were addressed.

In the EU, macro-prudential policy is an area that is in an early stage of development. As more countries gain experience from macro-prudential policy implementation, further knowledge will be obtained on the effectiveness of individual measures and on the circumstances under which this is the case. Meanwhile, macro-prudential policy-makers should take the experiences of other countries into account, as there are some helpful conclusions to be drawn.