

The implications of the financial crisis for monetary policy

Through resolute key interest rate cuts and unconventional monetary policy measures, central banks, together with governments, have stabilised the international financial system and prevented the global economy from sliding into a lasting depression. However, as the direct effects of the crisis subside, central banks are now confronted with new tasks. The exit from the numerous non-standard monetary policy measures must be timed appropriately so as to avoid the harmful longer-term side-effects associated with the huge expansion of central banks' role in financial market intermediation during the crisis. Furthermore, the possible implications of the financial crisis for the fundamental focus of monetary policy are currently being debated. One particular issue is whether monetary policy – as a core central bank task – should be supplemented with an explicit mandate for financial stability, and whether the current embodiment of the objective of price stability in the form of low inflation rates is still appropriate.

Although no definitive answers to these questions can be expected at present, certain initial indications can be identified in this respect. Adopting an additional explicit financial stability objective harbours the risk of overloading monetary policy and triggering a loss of credibility. This does not mean that central banks have no part to play in macroprudential oversight. On the contrary, the existing regulation should be supplemented with a separate macroprudential policy focusing on systemic risk, in which the central banks play a key role. However, it is vital to have a clear assignment of responsibilities between monetary policy and other central bank functions, thus enabling monetary policymakers to continue to focus on the task of safeguarding price stability. Nonetheless, monetary policy must, in future, place greater emphasis on financial market developments in its evaluation of inflation risk and be structured symmetrically across the financial cycle. The medium-term focus of the Eurosystem's monetary policy strategy and its monetary pillar have already laid the ground for this. The objective of price stability should continue to be understood in terms of low inflation rates; a higher inflation target would entail major costs, and a changeover to price-level targeting would likewise have drawbacks.

Finally, central banks face institutional challenges. In particular, the sharp rise in sovereign debt in the wake of the crisis means that central banks have to preserve their independence and credibility in a difficult macroeconomic environment. This will be more easily achieved if monetary policy remains focused on price stability, while fiscal policymakers ensure fiscal discipline, thus providing monetary policymakers with the leeway they need to achieve their primary objective.

Introduction

Central banks' resolute response to the financial crisis

The financial and economic crisis has thrown up particular challenges for monetary policy-makers across the world. Combined with government measures, the central banks' resolute interest rate cuts and use of unconventional monetary policy tools stabilised the international financial system and prevented the global economy from sliding into a lasting depression. However, as the direct effects of the crisis subside, central banks face new tasks. This article examines some of these challenges, focusing mainly on the role of monetary policy as the core function of a central bank and leaving aside the issue of whether central banks should, as a result of the crisis, adopt additional functions above and beyond their monetary policy mandate, eg in safeguarding financial stability.¹

Global pre-crisis monetary policy consensus ...

The experiences of the crisis have brought the "monetary policy consensus" formed in the years prior to the crisis under scrutiny.² While the details of monetary policy differed significantly among central banks, the primary monetary policy objective under the pre-crisis consensus was, in simplified terms, price stability, defined as a stabilisation of the inflation rate to around 2% across a horizon of approximately two years. Steering short-term interest rates was considered a sufficient means of achieving this aim. Central bank forecasts played a prominent role in monetary policy decision-making, while the monetary dimension increasingly took a back seat in many forecast models. Furthermore, under the consensus, capital markets were mostly assumed to be efficient, meaning that finan-

cial market imperfections and their potential macroeconomic effects were not taken into account. Temporary inefficiencies, such as asset price bubbles, were considered possible, but the majority view was that monetary policy, with its interest rate instrument, could do little to counteract such developments. Microprudential supervision – which focuses on individual financial institutions – was regarded as an adequate means of preventing financial crises. It was thought that monetary policymakers should intervene only once a financial crisis had occurred, minimising the macroeconomic damage through resolute interest rate cuts.

The current debate regarding the pre-crisis consensus covers a number of different aspects. Some critics believe that monetary policy contributed to the high risk appetite in the financial system and thus to the build-up of the crisis.³ There have therefore been calls for monetary policy to shoulder more of the responsibility for safeguarding financial stability. Some observers advocate raising the targeted rate of inflation; others propose gearing monetary policy to the level of prices rather than the inflation rate. In addition, some see benefit in retaining the non-standard measures on a more permanent basis.

... criticised because of the crisis

¹ See Deutsche Bundesbank, Approaches to the measurement and macroprudential treatment of systemic risk, Monthly Report, March 2011, pp 37-52.

² See C Bean, M Paustian, A Penalver and T Taylor (2010), Monetary Policy after the Fall, Jackson Hole 2010 Symposium Proceedings, Federal Reserve Bank of Kansas City.

³ See C Borio and H Zhu (2008), Capital Regulation, Risk-Taking and Monetary Policy: A Missing Link in the Transmission Mechanism?, BIS Working Paper, No 268.

Before we can look at these proposals in more detail, we must first analyse the causes of the financial crisis.

Key measures taken by the Eurosystem during the crisis

August 2007: the turmoil begins

In August 2007, uncertainty regarding the extent of possible liquidity and solvency risk in the banking sector led market participants across the world to lose confidence in each other. This manifested itself, in particular, in a swift fall in interbank market activity, a sudden rise in money market rates and a perceptible increase in risk premiums. To safeguard the steering of short-term money market rates and counteract banks' growing liquidity uncertainties, the Eurosystem initially conducted additional longer-term open market operations. Furthermore, an ample supply of liquidity enabled the banking sector to "frontload" liquidity used to cover the minimum reserve requirements, which provided it with additional security.⁴

September 2008: collapse of US investment bank Lehman Brothers

After the US investment bank Lehman Brothers collapsed in September 2008, the situation on the international financial markets deteriorated dramatically. The sharp rise in risk premiums caused the interbank markets and some securities markets to become illiquid, triggering a fall in financial market prices across the world. Declining inflationary pressures following the clear reduction in real economic activity allowed the Governing Council of the ECB to drastically cut the Eurosystem's key interest rates between October 2008 and May 2009. Furthermore, the Gov-

erning Council adopted a number of additional non-standard monetary policy measures designed to support lending to the private sector ("enhanced credit support"). They included a fixed-rate tender procedure with full allotment in all refinancing operations and a lowering of the credit quality threshold for eligible assets.

Following a period of recovery, tensions began to emerge in 2010, particularly in the markets for the sovereign bonds of some euro-area countries. The ensuing loss in confidence ultimately led to a drop in asset prices and a further sharp decline in market liquidity, which prompted the Governing Council of the ECB to adopt the Securities Markets Programme in May 2010.⁵ The aim of this programme is to restore the proper functioning of securities markets and the monetary policy transmission mechanism.

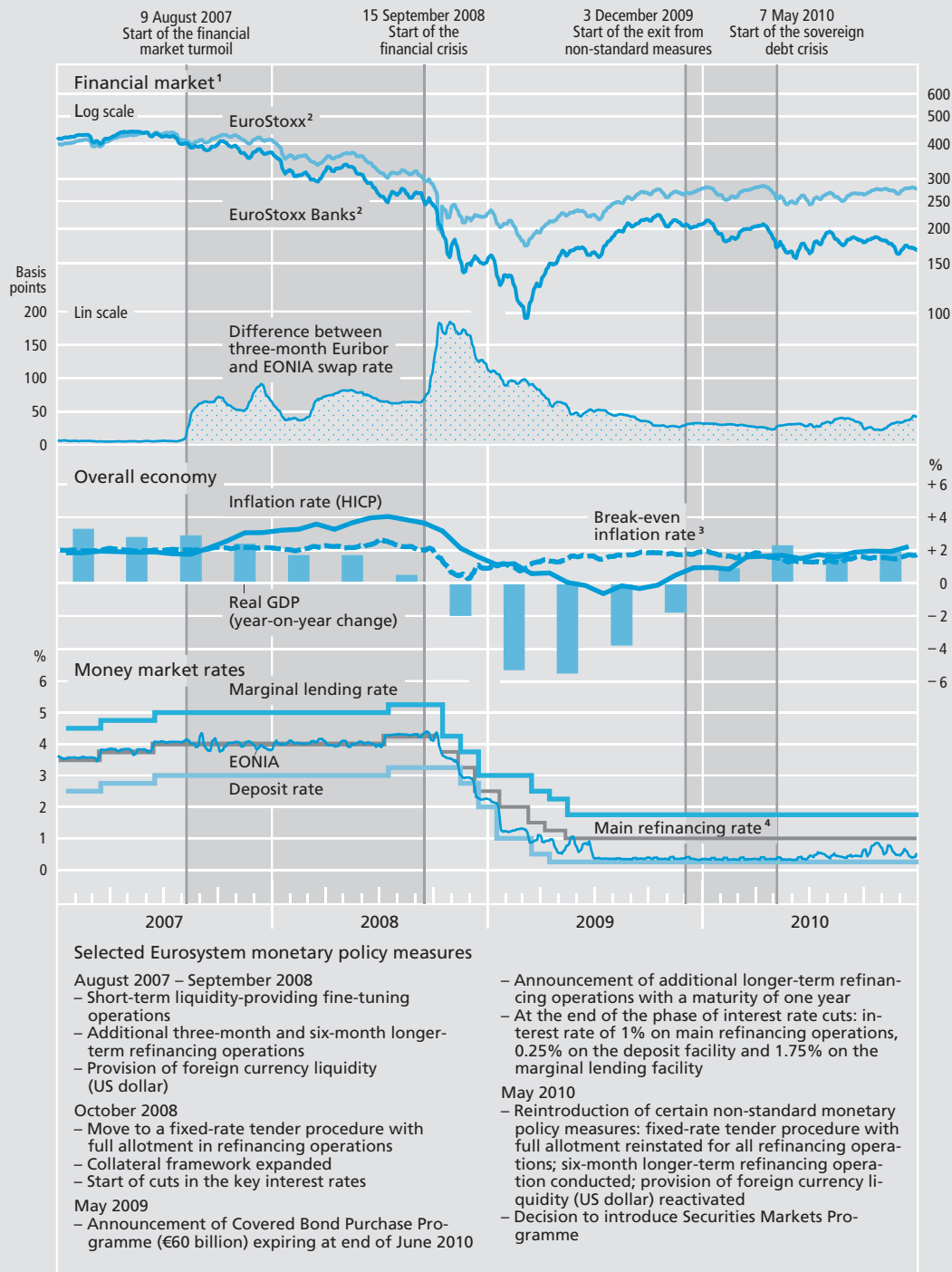
Through its numerous measures, the Eurosystem played a key role in limiting the negative impact of the crisis on the financial system and thus also on the real economy. Even so, viewing this crisis management in isolation does not provide us with sufficient insight to draw the necessary conclusions regarding the

Early 2010: start of tensions in sovereign bond markets

⁴ This "frontloading" entails banks holding higher balances at the central bank at the beginning of a maintenance period and lower ones towards the end so that they fulfil their reserve requirements at an early stage.

⁵ Together with the EU, the governments of the euro-area countries responded to the tensions by introducing an extensive stabilisation mechanism comprising the European Financial Stabilisation Mechanism (EFSM) and the European Financial Stability Facility (EFSF), via which loans can be granted to financially distressed euro-area countries on condition of a firm commitment to fulfil consolidation requirements. The targeted overall volume is a maximum of €750 billion, to which the EFSM is to contribute €60 billion, the EFSF €440 billion and the IMF €250 billion.

Selected indicators and monetary policy measures in the euro area during the financial crisis



Sources: Thomson Reuters and Bundesbank calculations. — ¹ Five-day moving averages. — ² Price index. — ³ Five-year horizon; based on seasonally adjusted real and nominal yield curves. See also Deutsche Bundesbank, Monthly Report, August 2007, pp 36-37. — ⁴ Minimum bid rate or fixed rate for main refinancing operations.

implications for monetary policy. Instead, we must also look at the preceding period, as that is when the unsound developments which subsequently escalated into a crisis were formed.

Financial institutions' risk appetite too high

Macro-economic conditions before the crisis

The years preceding the outbreak of the financial crisis were characterised by comparatively weak fluctuations in the real economy, low inflation and low interest rates worldwide. In this environment, a multitude of financial innovations, the deregulation of the financial markets and favourable financing conditions led to a high risk appetite in the financial system and, consequently, to marked growth in the leverage ratio within the banking sector.

Regulatory capital requirements circumvented

One major reason for these developments was that the risk dampening effect of capital was weakened – or even circumvented – by financial innovations in the run-up to the crisis.⁶ It became possible to trade credit risk and transfer it to third parties.⁷ The securitisation of credit risk via special-purpose vehicles played a part in eroding capital requirements by enabling banks to offload, in particular, mortgage loans from their balance sheets.⁸ Banks then took structured credit products issued by the special-purpose vehicles back onto their balance sheets. The improved rating for senior securitisation tranches achieved through this securitisation allowed banks to reduce their regulatory capital requirements, enabling them to expand their credit supply

and further increasing their leverage ratio. Contrary to its intended purpose, the securitisation of credit risk led, all in all, to such risk being concentrated intransparently at banks rather than being distributed across the financial sector.⁹

The realistic prospect of a sharp cut in policy rates in the event of a financial crisis generated an additional incentive to take on higher risks.¹⁰ This monetary policy philosophy of “mopping up” after a crisis led market participants to expect that they would receive all of the profits associated with heightened risk if they were successful but would not have to bear the costs in full in the event of a loss. In this respect, the crucial factor was not low interest rates *per se* but market participants' expectations that the central bank would behave in a specific way. The fact that monetary policymakers more or less explicitly promised

Explicit promise from monetary policymakers generated misguided incentives

⁶ This refers to the risk dampening effect of investors' liability, which stems from their residual claim on corporate earnings.

⁷ See V V Acharya, T Cooley, M Richardson and I Walter (2009), *Manufacturing Tail Risk: A Perspective on the Financial Crisis of 2007-2009*, *Foundations and Trends in Finance* 4, pp 247-325.

⁸ For example, loans were gathered into pools of assets and sold to special-purpose vehicles. The special-purpose vehicles then issued fixed-income securities to refinance the asset pools. The risk diversification involved in portfolio formation improved the credit rating of more senior tranches compared with the underlying credit claims. In addition, banks selling such loans provided their special-purpose vehicles with short-term credit lines to cover liquidity risk without having to hold additional capital for this purpose. This further enhanced the credit rating of the special-purpose vehicles and helped to circumvent the relevant capital requirements. See M K Brunnermeier (2009), *Deciphering the Liquidity and Credit Crunch 2007-2008*, *Journal of Economic Perspectives*, Vol 23, No 1, pp 77-100.

⁹ See V V Acharya et al (2009), *op cit*, p 250.

¹⁰ See D W Diamond and R G Rajan (2009), *Illiquidity and Interest Rate Policy*, University of Chicago, mimeo; E Farhi and J Tirole (2011), *Collective Moral Hazard, Maturity Mismatch, and Systemic Bailouts*, *American Economic Review*, forthcoming.

to provide support in the event of a financial crisis encouraged the development of collective moral hazard, which contributed to instability.¹¹

Vulnerability of the financial system due to systemic risk

Disregarding external effects led to systemic risk

The high leverage ratio caused individual financial institutions to face high credit and liquidity risk. The fact that interdependencies among institutions (external effects) were disregarded additionally increased the risk within the financial system and contributed to the build-up of systemic risk.¹² Maturity transformation took on extreme proportions. When short-term loans failed to be rolled over following the outbreak of the crisis, leading to a large-scale withdrawal of liquidity, financial institutions were forced to make fire sales.¹³

Fire sales and loss spirals

Although these fire sales were rational from the point of view of the individual institutions, they further accelerated the fall in prices on the market for mortgage-backed securities, which then spilled over to other assets and widened the circle of market participants who were affected by the turmoil.¹⁴ This led to a self-reinforcing process of ongoing fire sales, falling asset prices and loss spirals, which was driven by feedback effects.¹⁵ The uncertainty surrounding the risk positions of financial institutions caused the crisis of confidence to spill over to the inter-bank money market. The freezing of this market illustrated that some markets participants had underestimated the liquidity risk

and thus also the interdependence between funding liquidity and market liquidity.

Given this diagnosis, the question is whether and to what extent monetary policy should not only be the lender of last resort in a crisis but also take account of financial stability developments before a crisis occurs. The issues bound up in this question touch on fundamental areas of monetary policy: should financial stability become an additional, separate monetary policy objective alongside price stability? Is an inflation rate of around 2% still an appropriate implementation of the price stability objective? How should monetary policy take account of developments in the financial markets?

Financial stability as a separate task for monetary policy?

¹¹ See R Rajan (2010), *Fault Lines: How Hidden Fractures Still Threaten the World Economy*, Princeton University Press.

¹² See J Bianchi and E G Mendoza (2010), *Overborrowing, Financial Crises and "Macro-Prudential" Taxes*, NBER Working Paper 16091; O Jeanne and A Korinek (2010), *Managing Credit Booms and Busts: A Pigouvian Taxation Approach*, NBER Working Paper 16377. For information on measuring systemic risk, see Deutsche Bundesbank, *Approaches to the measurement and macroprudential treatment of systemic risk*, op cit.

¹³ See A Shleifer and R Vishny (2011), *Fire Sales in Finance and Macroeconomics*, *Journal of Economic Perspectives* 25, pp 29-48; S Hanson, A K Kashyap and J C Stein (2011), *A Macroprudential Approach to Financial Regulation*, *Journal of Economic Perspectives* 25, pp 3-28.

¹⁴ In addition, fire sales were intensified by the fact that individual financial institutions, such as investment banks, were aiming for a constant leverage ratio.

¹⁵ In addition, certain types of bank run occurred, with institutional investors, above all, withdrawing their deposits. This also included a failure to roll over short-term loans (eg money market instruments) and withdrawals from hedge funds and investment funds. By sending out a negative signal and triggering feedback effects via the money and capital markets, this had a destabilising effect on the entire financial system. See D W Diamond and P H Dybvig (1983), *Bank Runs, Deposit Insurance, and Liquidity*, *Journal of Political Economy* 91, pp 401-419; D W Diamond and R G Rajan (2005), *Liquidity Shortage and Banking Crises*, *Journal of Finance* 60, pp 615-647.

A separate toolkit is needed for financial stability

In the pre-crisis period, debate concerning the connection between asset price developments, financial stability and monetary policy was largely restricted to the question of whether it is advantageous to use interest rates to burst financial market bubbles at an early stage (“leaning against the wind”). The majority view was that this kind of financial stability mandate for monetary policy would not be beneficial, since the policy rate would be too blunt a tool for this purpose and asset price bubbles would be very difficult to identify at a sufficiently early stage.¹⁶

However, the financial crisis has caused the focus of the debate to shift and expand. Discussions are now less restricted to interest rate policy on its own and instead take a broad perspective on the macro and systemic dimensions of the financial markets. It has become apparent that certain incentive structures within the financial system and the existing supervision – which was primarily focused on individual institutions – strongly encouraged the build-up of credit-financed imbalances. The path embarked upon at an international and European level of placing a greater emphasis on macroprudential aspects in analysis and regulation should therefore continue to be followed consistently. In particular, excessive leverage and overly risky business models can be better combated by tightening capital requirements and improving the methods for recording risk positions.¹⁷

Macro-prudential instruments geared to procyclicality ...

The numerous interdependencies within the financial system likewise call for a macroprudential approach. Financial intermediaries in the entire system must be treated differently according to their importance, and regulations should also apply to financial institutions outside of the conventional banking sector if they fulfil similar functions.¹⁸ Large and/or strongly interconnected financial institutions whose collapse could endanger the entire financial system must be more strictly regulated and should meet higher capital and liquidity requirements. Surveillance of financial innovations must take account of their complexity and, where applicable, their concentration at financial intermediaries so that unsound developments can be combated at an early stage.

The objective of such a macroprudential policy is to curtail systemic risk, thus strengthening the resilience of the financial system as a whole. It aims to ensure that externalities within the financial system – the procyclicality and interconnectedness of financial institutions – can be addressed.¹⁹ Consequently, existing supervisory tools must be expanded or adjusted so as to prevent systemic risk from arising in future and radically reduce the

... and inter-connectedness in the financial system

¹⁶ See F S Mishkin (2011), Monetary Policy Strategy: Lessons from the Crisis, NBER Working Paper 16755.

¹⁷ See Deutsche Bundesbank, Approaches to the measurement and macroprudential treatment of systemic risk, op cit; Basel Committee on Banking Supervision, BASEL III: A global regulatory framework for more resilient banks and banking systems, December 2010.

¹⁸ See Deutsche Bundesbank, Financial Stability Review 2007; Deutsche Bundesbank, Financial Stability Review 2009.

¹⁹ A range of instruments aimed at curtailing both procyclicality and network risk are currently under discussion. See BIS (2010), 80th Annual Report; G Galati and R Moessner (2011), Macroprudential Policy: A Literature Review, BIS Working Paper, No 337.

likelihood of credit and asset price bubbles forming.

Price stability remains primary objective of monetary policy

Monetary policy should not be overburdened

There is now a broad consensus that the objective of financial stability requires its own toolkit. This objective can also be pursued by central banks; indeed, given their expertise, it makes sense for them to play a major role in analysing financial stability. However, the interest rate tool of monetary policy is too undifferentiated to do justice to the complexity of the objective of financial stability. Monetary policy – and its toolkit – must therefore remain focused on price stability and must not be overburdened with additional objectives. The credibility of monetary policy depends on both the clarity of its objectives and transparency regarding its limitations. Adopting financial stability as an additional, separate monetary policy objective harbours the risk of raising unrealistic expectations regarding the effectiveness of the monetary policy instruments.

Each policy objective should be assigned its own instruments

The advantage of having separate instruments for price and financial stability becomes clear when there is a need for monetary and macroprudential policy to be adjusted in different directions. If, for instance, there are no indications of a rise in inflation risk but there are signs of excessive risks emerging in the financial system, it is possible to respond appropriately by making macroprudential tools more restrictive and leaving the monetary policy stance unchanged. This example il-

lustrates the need to draw a clear distinction between the objective of price stability and that of financial stability and ensure a clear assignment of tools and measures.²⁰

As developments on the money and financial markets are of key importance to both monetary and macroprudential policy, there are significant interdependencies between the policy areas that must be taken into account. For example, banks' lending is not only important for monetary policy transmission but is also relevant to macroprudential policy. This opens up the possibility of monetary and macroprudential policy decisions and measures complementing each other, but also harbours the danger of them cancelling each other out.²¹ For instance, macroprudential tools aimed at curtailing the procyclicality of the financial sector could counteract monetary policy decisions (eg possible lending limits or upper limits for credit growth).

There is no single answer to the question of how necessary or advantageous a coordination of policy areas is. Very little practical experience has yet been gained in this area,²² although some studies provide certain important initial indications in this regard. Current investigations corroborate the view that the rate of inflation can be stabilised

Possible interdependencies between monetary and macroprudential policy

Monetary policy should take use of macroprudential tools into account ...

²⁰ See A Cukierman (2011), Reflections on the crisis and on its lessons for regulatory reform and for central bank policies, *Journal of Financial Stability* 7, pp 26-37.

²¹ However, individual economic agents will not necessarily be affected in the same way. For example, the impact of macroprudential measures on the consumption and saving decisions of households is likely to depend on whether they are net creditors or net debtors.

²² See Committee on the Global Financial System (2010), *Macroprudential instruments and frameworks: a stocktaking of issues and experiences*, CGFS Paper 38.

comparatively well if macroprudential policy has its own toolkit and works alongside monetary policy.²³ However, harmful effects with respect to the volatility of the inflation rate can arise if monetary policy ignores the impact of macroprudential tools on the financial markets.²⁴ If the central bank takes decisions regarding both macroprudential and monetary policy instruments, additional fluctuations in the rate of inflation compared with the monetary policy *status quo* (where only monetary policy has a stabilising effect) can be virtually ruled out, and such fluctuations could even be reduced overall.²⁵

... but remain confined to the objective of price stability

While these results should be regarded as provisional and thus interpreted with caution, they indicate that a clear assignment of objectives and instruments is generally conducive to achieving the objectives of both price and financial stability.²⁶ Assuming that there will be an adequate exchange of information between monetary and macroprudential policy in the future, the existing studies give no cause to fear that the objective of price stability will have to be compromised. Stable prices will remain assured as long as monetary policy instruments are employed with a sole focus on price developments. Nonetheless, we must guard against unrealistic expectations. The process of developing a generally accepted modelling and operational framework for macroprudential analysis is still in its infancy.

Price stability should continue to be understood in terms of low inflation rates

Although the pre-crisis consensus that monetary policy should primarily be focused on the objective of price stability remains valid, the question arises as to whether the experiences of the crisis should have implications for the specific form that this price stability objective takes. In the context of the massive interest rate cuts, some observers proposed setting a higher inflation target so that monetary policy would not hit the natural lower bound of nominal interest rates as quickly, meaning that the leeway for monetary policy stabilisation would

Proposal for higher inflation target ...

²³ See, for example, D Beau, L Clerc and B Mojon (2011), Macro-Prudential Policy and the Conduct of Monetary Policy, Banque de France, mimeo; I Christensen, C Meh and K Moran (2010), Bank Leverage Regulation and Macroeconomic Dynamics, Bank of Canada, mimeo.

²⁴ See section 4 of P Angelini, S Neri and F Panetta (2010). By contrast, the volatility of the inflation rate can be effectively contained if monetary policy decisions take explicit account of the impact of macroprudential tools on financial stability. This seems intuitively obvious if the macroprudential framework is simplistically interpreted as additional parameters of the model economy, which are taken into account by optimal monetary policy. See Nakornthab and Rungcharoenkitkul (2010), p 12. See P Angelini, S Neri and F Panetta (2010), Grafting Macroprudential Policies in a Macroeconomic Framework: Choice of Optimal Instruments and Interaction with Monetary Policy, Banca d'Italia, mimeo; D Nakornthab and P Rungcharoenkitkul (2010), Marrying Monetary Policy with Macroprudential Regulation: Exploration of Issues, The South East Asian Central Banks (SEACEN) Research and Training Centre, Occasional Paper 49.

²⁵ See P Angelini, S Neri and F. Panetta (2010), op cit; C Bean, M Paustian, A Penalver and T Taylor (2010), op cit.

²⁶ The results must be interpreted with caution for two reasons. First, the underlying dynamic stochastic general equilibrium (DSGE) models only approximately reproduce the complex interactions between the real and the financial sector. Second, this research is only in its infancy; at present, only a few models allow a simultaneous analysis of monetary and macroprudential policy. Furthermore, they have not yet succeeded in adequately capturing network risk. See also D Beau, L Clerc and B Mojon (2011), op cit.

not be as readily restricted.²⁷ A credibly higher inflation target than the rate of roughly 2% under the pre-crisis consensus, which would, under normal circumstances, be accompanied by a correspondingly higher nominal interest rate, would allow more aggressive interest rate cuts – and thus more pronounced reductions of the real interest rate – in the event of a crisis. This would increase monetary policy flexibility in the event of a severe economic slump accompanied by a risk of deflation.²⁸

... to be rejected owing to high welfare losses

However, the substantial and ongoing welfare losses associated with a rise in the inflation target provide an argument against this proposal. The most notable factors in this context would be the misallocation of resources resulting from the inflation-related distortion of relative prices, the negative effects of inflation on real cash holdings, the rise in the variability of inflation – and its implications for risk premiums – associated with a higher level of inflation and distortions caused by the interplay of inflation and non-neutralities in the tax system. Above all, however, it is the loss in the credibility of monetary policy caused by such a discretionary measure that makes this proposal highly problematic.²⁹ The likely destabilisation of inflation expectations would make it significantly more difficult for the central bank to achieve its (possibly higher) inflation target and safeguard macroeconomic stability.³⁰

Changeover to price-level targeting should also be rejected

As an additional alternative for mitigating the possible restriction of monetary policy flexibility at the lower bound of interest rates, it was proposed that, instead of formulating price stability as a quantitative target for the infla-

tion rate, the price level – or, more precisely, the price level path – should be targeted.³¹ In theory, the strategy of price-level targeting does indeed have a number of advantageous characteristics compared with a strategy of inflation targeting. Advocates of price-level targeting stress the fact that it opens up the option of influencing private sector inflation expectations and of combating deflation risk in this way in the event of a crisis. However, it is doubtful whether, in the event of an acute risk of deflation, a change in the target specification would be suitable for achieving the desired positive effect on private sector inflation expectations.³² A more serious problem is that, compared with optimal monetary policy, a strategy of price-level targeting is associated with several additional drawbacks which cast doubt over whether such a change of strategy would be beneficial.³³

27 See J C Williams (2009), Heeding Deadalus: Optimal Inflation and the Zero Lower Bound, *Brookings Papers on Economic Activity* 2, pp 1-37.

28 See O J Blanchard, G Dell'Ariccia and P Mauro (2010), Rethinking Macroeconomic Policy, *Journal of Money, Credit and Banking* 42, pp 199-215.

29 See A A Weber (2010), Der IWF spielt mit dem Feuer (The IMF is playing with fire), *Financial Times Deutschland*, 25 February 2010 (available in German only).

30 Furthermore, there is a danger that a higher inflation target would not only fail to achieve the desired improvement in macroeconomic stability but would also contribute to the build-up of the next crisis. In their decisions, households and enterprises would take account of the central bank's increased leeway for interest rate cuts in the event of a crisis and would take on greater risks.

31 Eggertsson and Woodford already proposed price-level targeting in connection with the deflation experienced in Japan; see G B Eggertsson and M Woodford (2003), The zero bound on interest rates and optimal monetary policy, *Brookings Papers on Economic Activity* 1, pp 139-211.

32 See C Walsh (2010), The future of inflation targeting, University of California, Santa Cruz, mimeo.

33 See Deutsche Bundesbank, Price-level targeting as a monetary policy strategy, *Monthly Report*, January 2010, pp 31-45; C Gerberding, R Gerke and F Hammermann (2010), Price-level targeting when there is price-level drift, *Deutsche Bundesbank Research Centre, Discussion paper, Series 1, No 23/2010*.

All in all, this means that neither raising the inflation target nor switching to price-level targeting would be appropriate from the point of view of economic stability. Instead, the problem must be tackled at root; the existing misguided incentives and regulatory loopholes must be eliminated in order to make severe crises as unlikely as possible. It is, in any case, questionable whether the leeway of monetary policy at the lower bound of the nominal short-term money market rates was really that limited. Certainly, central banks' experiences regarding the effectiveness of unconventional measures during the crisis give no cause to view the lower bound of the interest rate as a binding restriction on the effectiveness of monetary policy.

Monetary policy should be structured symmetrically

Standard monetary policy models often do not take financial sector into account

Financial and price stability should not be intermingled in the context of monetary policy objectives. However, it is undeniable that a monetary policy geared to price stability within the usual timeline of under two years provides no guarantee of preventing unsound developments in the financial markets that spill over to the real economy and thus jeopardise price stability. Against this backdrop, the question arises as to how the experiences of the crisis should be incorporated into monetary policy decision-making processes.

In the pre-crisis period, monetary policy decisions were often based on models in which the financial sector played only a minor role, or no role at all. Consequently, an obvious

and important lesson to be learned from the crisis is that the theoretical and empirical basis for monetary policy decisions must, in future, attach greater importance to both the banking sector and financial frictions.

In principle, the Eurosystem's monetary policy strategy already provides the basis for this change, as the figures from real economic analyses are cross-checked against those from monetary analyses. In the more recent past, moreover, the Eurosystem has stepped up its efforts to continually enhance its monetary analysis, including with regard to new early warning indicators for unsound developments in the financial markets.³⁴ The aim is to identify irregularities in the patterns of a number of variables at an early stage. As an unusual pattern in loan developments and monetary aggregates can provide valuable indications of excessive credit creation, "leaning against the wind" at an early stage to ensure that monetary policy is symmetrically structured across the financial cycle can make a key contribution to financial stability.³⁵ This requires an extension of the usual monetary policy decision-making horizon, as unsound financial developments tend to build up over a fairly long period of time.

Taking greater account of the financial sector and financial frictions in future, including in dynamic general equilibrium models, will not only make it possible to improve the way in

Monetary and financial developments play important role in Eurosystem's monetary policy strategy

Structural analysis and cross-checking

³⁴ See L Papademos and J Stark (eds), *Enhancing monetary analysis*, ECB, Frankfurt am Main, 2010, chapter 6.

³⁵ See A A Weber (2010), *Comment on Jordi Galí – The Monetary Pillar and the Great Financial Crisis*, colloquium held in honour of Lucas Papademos, 21 May 2010, Frankfurt am Main.

which the monetary policy transmission process is captured empirically; these models will also allow a structural interpretation of monetary and loan developments.³⁶ Combined with the cross-checking of data from other sources, such as the Bank Lending Survey, the financial accounts or the banking statistics, this will provide a comprehensive view of developments at the current end. During the financial crisis, this enabled the Eurosystem to respond in a targeted manner to the tensions in the money markets on the basis of the data processed in its monetary pillar.

Non-standard monetary policy measures not a long-term solution

Non-standard monetary policy measures effective during the crisis ...

During the financial crisis, the Eurosystem – like the central banks of other major economic regions – took unconventional monetary policy measures on an unprecedented scale. Given the importance of bank loans for corporate financing in the euro area, these measures, described in their entirety as “enhanced credit support” by the Eurosystem, were focused on the banking system. Other central banks selected other tools because of the specific characteristics of their countries’ financial systems. The aim was to use operational central bank measures to compensate for the consequences of the abrupt decline in market liquidity. One key measure taken by the Eurosystem was the move to full allotment in the refinancing operations, which allowed banks to maintain excess liquidity. The temporary presence of excess liquidity in the banking sector did not, however, give rise to any direct risks to price

stability, as neither the monetary aggregate nor loans grew inordinately.

During the crisis, the non-standard measures played a substantial part in stabilising the financial markets and preventing the real economy from sliding into a lasting depression. At the same time, however, the crisis-related liquidity measures should not be unduly prolonged. As a “long-term medication”, they would have harmful side-effects. Generous liquidity operations allow even those banks that are no longer able to raise any funds on the private funding markets to continue operating. This runs the risk of necessary restructuring in parts of the banking system being delayed or not taking place at all. Consequently, unsustainable structures are retained in the financial sector, thus hampering the medium to long-term outlook for the real economy.

... but associated with misguided incentives

The restructuring or winding up of banks that do not have a sustainable business model is, first and foremost, the responsibility of the owners and, where banks are severely distressed, of the corresponding national prudential supervisory authorities and governments. Resorting to the use of monetary policy tools to stabilise the financial sector is, if at all, only appropriate on a temporary basis in the event of dysfunctions that affect the entire banking system and fundamentally impair the effectiveness of monetary policy. In parallel with improvements on the inter-bank and financial markets, there must therefore be a prompt exit from the extensive

Monetary policy should not act as liquidity and risk manager for banking system

³⁶ See L Papademos and J Stark (eds), Enhancing monetary analysis, ECB, Frankfurt am Main, 2010, chapter 5.

intermediation of central banks brought about by the crisis.

From an economic perspective, another reason why a sustained provision of excess liquidity would be problematic is that the role of banks in maturity transformation would largely be transferred to the central bank. The only cause for banks to face a scarcity of central bank liquidity would be the limited availability of eligible assets, and this liquidity would not need to be managed to the same extent as before. This could thus severely reduce banks' incentives to better match the maturities of their assets and liabilities and, ultimately, could strongly and lastingly inflate central bank balance sheets.

Long-term use of full allotment would hamper effective and efficient interest rate management

Ultimately, a continuing provision of excess liquidity in an environment of normalising interbank markets would also have harmful effects on the signalling role of short-term interest rates in monetary policy management. For example, by switching to full allotment in the refinancing operations, the Euro-system effectively abandoned its previously quite precise control of short-term money market rates. Since October 2008, these rates have therefore fluctuated between the deposit rate and the main refinancing rate, depending on the prevailing liquidity conditions. This was tolerated during the crisis in order to create incentives for banks to continue participating in the money market. Nonetheless, if full allotment in the refinancing operations were to be maintained in the long term, this would hamper effective and efficient interest rate management, which is predicated on having a transparent relationship between

the key interest rate, money market rates and interest rates that are relevant to the real economy.³⁷

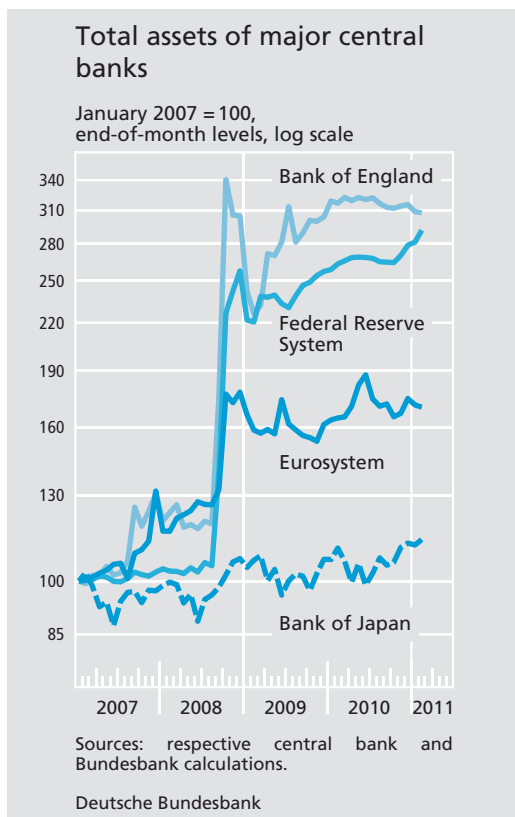
As the crisis-related turmoil on the financial markets subsides, central banks must ensure that the implementation of monetary policy does not distort price formation on the financial markets. In future, banks must make additional arrangements so that they develop a greater resilience to markets drying up. To achieve this, amongst other things, a more balanced maturity structure is needed for assets and liabilities on banks' balance sheets compared with the pre-crisis situation of some institutions – as is already envisaged in the new liquidity standards under the regulatory initiative "Basel III". This will require a fundamental rethinking of those business models that have, until now, been based heavily and lopsidedly on maturity and risk transformation, with insufficient profitability and capital adequacy.

One of the key lessons of the financial crisis is that the use of financial stabilisation measures in an environment where private agents are heavily indebted rapidly leads to fiscal difficulties. The knock-on effects of unsustainable public finances on the financial markets exacerbates these markets' problems. The risk of a downward spiral emerges. This underscores the need for regulations which improve the resilience of the financial system.

Return to orderly money market management and healthy banking system needed

Risks from fiscal difficulties a regulatory issue

³⁷ Here, the term "effectiveness" means the effective management of the level of short-term money market rates given limited volatility. The term "efficiency" refers to the requirement to ensure that money market management is consistent with market practice and involves appropriate operational costs.



Furthermore, it opens up a perspective on the ongoing regulation debate, which needs to address the issue of the specific risks that can be caused by unsound fiscal policy. For example, the government bonds held by banks as proprietary positions play a special role in two respects: government bonds are treated as comparatively low-risk assets under the existing capital requirements, and they also serve to fulfil future regulatory liquidity standards as they are considered to be particularly liquid assets. Both of these factors provide additional incentives for banks to hold government bonds. If these incentives lead to a reduction in government bond yields, this could encourage an expansion of government debt, which, in turn, would be likely to have a negative overall effect on financial stability. The crisis has shown that this would

not be without consequences for monetary policy.

During the crisis, in addition to expanding their revolving refinancing operations, central banks tried to exert a stronger influence on the tense market conditions through direct purchases in certain segments of the securities market. The Eurosystem made less use of such purchase programmes than other central banks. In spring 2009, the Governing Council of the ECB adopted the Covered Bonds Purchase Programme. In addition, the Governing Council decided, in view of the sovereign debt crisis which began to escalate in spring 2010, to initiate the Securities Markets Programme, the volume and duration of which were not limited in advance, with the aim of restoring the proper functioning of securities markets and the monetary policy transmission mechanism. Other central banks made far greater use of direct purchases, extending their balance sheets even further as a result.³⁸ Here, too, the improved situation on the financial markets means that central banks should reduce their extended balance sheets. A continuation of central bank interventions in price formation on the financial markets should be viewed critically, especially given that central banks tend not to have a permanent information advantage over market participants. If a central bank's interventions give market participants the impression that it is aiming for an unsustainable, inordin-

Securities purchases as non-standard monetary policy measure

³⁸ The Eurosystem's holdings of securities for monetary policy purposes was around €138 billion at last report (on 4 March 2011). By contrast, the Bank of England's Asset Purchase Programme encompasses £200 billion. The Federal Reserve System's purchases of mortgage backed securities (MBS) alone has meanwhile exceeded US\$1 trillion.

ately high price level, its actions trigger arbitrage mechanisms. There is a danger that it will only be possible to maintain the targeted level as long as the securities purchases actually continue – or market participants expect them to continue.

In addition, if central banks purchase government bonds for monetary policy purposes, particularly when government deficits and debt levels are high, they run the risk of blurring the boundaries between monetary and fiscal policy. This might harm the credibility of monetary policy. For this reason, too, it is a matter of urgency to increase the resilience of the financial system to fiscal risk.

Conclusion

In the period prior to the global financial crisis, the macroeconomic environment was stable and financing conditions were comparatively favourable. Combined with the existing institutional framework of the financial markets and continual innovations in financial products, this led to the emergence of fundamental misguided incentives. An analysis of the crisis provides conclusions regarding the implications for monetary policy and the regulation of the financial system, which should, in future, be more focused on curtailing these kinds of unsound developments.

To ensure financial and price stability, there must be a clear assignment of responsibilities and the most suitable tools to the two distinct policy areas. While monetary policy, with the

key interest rate as its primary tool, should continue to focus on ensuring price stability, a macroprudential regulatory framework that is geared to systemic risk requires its own appropriate toolkit in order to safeguard financial stability. Although interdependencies between the policy areas are possible and should thus be taken into account, there is no reason to fear that, given a clear assignment of tasks aimed at ensuring a stable financial system, the objective of price stability would suffer as a result.

The objective of price stability should continue to be understood in terms of low rates of inflation. Neither raising the inflation target nor switching to price-level targeting can be considered appropriate from a stability policy perspective. The experiences of the financial crisis have not altered this in any respect. As the Eurosystem's monetary policy leeway at the lower bound of interest rates was not significantly limited, the welfare losses, misguided incentives and credibility problems associated with proposals to raise the inflation target or introduce price-level targeting provide an unequivocal argument against their implementation.

The Eurosystem's monetary policy has the objective of maintaining price stability over the medium term. To achieve this aim, it must be organised more symmetrically across the financial cycle than in the past. In doing this, the Eurosystem will ensure price stability and, at the same time, help to maintain financial stability. In this context, it is necessary to continuously enhance the analytical framework and expand the monetary policy decision-

*Aim for low
inflation rates*

*Symmetrically
structured
monetary policy*

*Clear
assignment of
objectives and
tools*

making horizon. Through the analysis of monetary and credit aggregates, the monetary pillar already plays an important role in identifying unsound developments in the financial markets and adopting a medium-term focus.

Restrict use of non-standard measures to crises

With regard to the implementation of monetary policy, it is of vital importance that the non-standard monetary policy measures are withdrawn as soon as possible. The unconventional measures and, in particular, the full

allotment in the refinancing operations are associated with a number of misguided incentives for financial institutions and a substantial impairment of the Eurosystem's ability to effectively manage short-term money market rates.

Although future crises in the financial markets and the real economy cannot be ruled out, the implementation of these findings will play an important role in reducing the likelihood of such events as far as possible.