

## Stefan Gerlach

Professor

Institute for Monetary and Financial Stability

Goethe University of Frankfurt



# Monetary Policy after the Crisis<sup>1</sup>

## 1 Introduction

The last few years have presented a hostile and demanding environment for central banks. The difficulties started in August 2007 when severe tensions erupted in money markets in many, if not most, advanced economies. The financial turmoil was sharply amplified following the collapse of Lehman Brothers in September 2008, which triggered the deepest recession in the developed economies since the Great Depression. With economies across the world closely integrated through international trade in goods and services, the recession soon spread to emerging economies which had escaped the direct impact of the financial turbulence.

While the world economy was clearly recovering by late 2009, in the spring of 2010 the crisis entered a new stage that is, at least for the moment, focussed on the euro area. Since an economic slowdown reduces tax revenue and increases spending on the social safety net, a deep and lasting recession can lead to many years of substantial fiscal deficits and a potentially very large accumulation of public debt.

For Greece, whose fiscal position was serious but sustainable before the crisis, the projected increase in debt quickly triggered concerns in financial markets about sovereign risk. With interest rates rising to compensate bond holders for the risk of default or debt restructuring, the cost of debt service rose, increasing the likelihood of default.<sup>2</sup> While Greece is now receiving support from its euro area partners, it is too early to tell what the long-run implications of the Greek public debt

crisis will be. In any case, the realisation that sovereign risk is an issue in the euro area, and that contagion is possible, came as a surprise to many.

For central banks, these turbulent times contrast sharply against the extraordinarily placid period they enjoyed in the years before the crisis.<sup>3</sup> With inflation low and real economic growth strong and stable, and risk spreads in financial market increasingly compressed, managing monetary policy had become an unexpectedly easy task.

In this paper I ask whether and how monetary policy will change as a consequence of the crisis. Since it is not yet fully over, it is clear that any definitive review will have to wait. Nevertheless, it is useful already now to sketch the answers to this question.

The paper is structured as follows. In the next section I briefly review how monetary policy frameworks had developed in the years before the crisis. This is useful since many of these developments are now being reconsidered. In section 3, I reflect on some questions that are being raised regarding the design of monetary policy. I discuss whether central banks should raise their inflation objectives; whether they should *lean against the wind*; how best to incorporate the financial sector in the setting of monetary policy; and the desirability of introducing a macro prudential framework to constrain the financial sector. In section 4, I turn to an issue that many thought would never reappear: the implications of the large projected increases in public debt for monetary policy. Section 5 concludes. While I focus on issues pertaining to

<sup>1</sup> Contact information: Institute for Monetary and Financial Stability, Goethe University, Grüneburgplatz 1 (Box H 12), 60629 Frankfurt am Main; email: stefan.gerlach@wiwi.uni-frankfurt.de; website: www.stefangerlach.com. I am grateful to Petra Gerlach for many useful discussions.

<sup>2</sup> See Obstfeld (1994) for a formal analysis of such multiple equilibria.

<sup>3</sup> See Cagliarini et al. (2010) for a review of monetary policy in the last fifty years.

the euro area, many considerations are also highly relevant for central banks in other economies.

## 2 Monetary Policy before the Crisis

In order to see what challenges central banks are facing, it is useful to contrast them with those they faced before the crisis erupted in 2007. The previous decade was characterized by consistently positive real economic growth and low and stable inflation; charts 1 and 2 show real GDP growth and consumer price inflation for Austria, the euro area and the USA.<sup>4</sup> These benign economic conditions led to declining inflation expectations, a gradual contraction of risk premiums in a range of financial markets, and an increase in property prices across much of the world.<sup>5</sup>

This highly satisfactory macro economic performance came after a long series of changes in monetary policy frameworks across the world. The two most important of these were a generalised increase in central bank independence and the adoption of price stability as the overriding goal for monetary policy.

The Maastricht treaty, which provides the legal basis for European Monetary Union, played an important role in this process by requiring a sharp increase in central bank independence among the countries that aspired to membership of the euro area, that is, in much of Europe. Just as importantly, it also led to broad acceptance, in Europe and elsewhere, of the notion that oper-

ational independence is a crucial precondition for good monetary policy.

The movement towards the establishment of the euro area also led to a growing realisation that sound public finances are necessary to achieve price stability. Overall, this resulted in debt reduction in some economies with large public debts: in Belgium general government gross financial liabilities fell from 141% of GDP in 1993 to 88% in 2007 and in Italy they decreased from 132% in 1998 to 112% in 2007. In the euro area as a whole, they declined from 80% in 1998 to 71% in 2007.<sup>6</sup>

The adoption of price stability as the main objective of monetary policy took different forms. In New Zealand, Canada, the UK and many other economies, explicit inflation targeting was introduced, typically involving an inflation target of around 2%. Some other economies, notably the euro area and Switzerland, introduced closely related monetary policy strategies which included, crucially, a numerical definition of price stability as inflation between 0–2% as the main policy objective, but which entailed more flexibility than inflation targeting strategies.<sup>7</sup>

But many other changes to monetary policy frameworks were also undertaken. For instance, transparency was increased and central banks became more willing to provide market participants with information about the likely future course of monetary policy, for instance by providing staff forecasts of the likely future path of policy-controlled interest rates. This reduced un-

<sup>4</sup> I use data from OECD (2009). The observations for 2009–10 are forecasts.

<sup>5</sup> Another factor contributing to this decline in long interest rates was the fall in real interest rates (see Gerlach et al. 2009). Bernanke (2005) suggests that this decline was largely due to global imbalances.

<sup>6</sup> See OECD (2009).

<sup>7</sup> These frameworks are more flexible since they do not express the inflation objective as a point but as a range and do not require the central bank to indicate how fast it will return inflation to target if it has been missed.

certainty arising from monetary policy. Decision-making procedures were also improved, in many cases through the adoption of monetary policy committees. And developments in economics, statistical techniques and information technology made it possible to formulate and estimate forecasting models that provided a better basis for monetary policy decisions than solely relying on judgment.

These changes were all intended to improve monetary policy and it therefore seemed natural to assume that, taken together, they were the causes of the improved macroeconomic performance in the decade before the crisis. Thus, it came to be widely believed that central banks had mastered the art of stabilizing the macro economy. As noted by Kohn (2010), this may have lulled the public into complacency about financial risks. A similar argument applies to policymakers.

The financial crisis provided a sudden change in the monetary policy environment. Since these issues were discussed in the 37<sup>th</sup> OeNB Economics Conference in 2009, I will not review them here.<sup>8</sup> Instead I will focus on the re-evaluation of monetary policy that the turmoil has started. This has led to a reassessment of best practice in monetary policy and has thus brought back many issues that monetary policy makers thought were settled.

### 3. Reassessing Monetary Policy

The crisis has raised important questions regarding the design of current monetary policy frameworks, in particular concerning the pre-crisis consensus that central banks should focus on stabilising inflation. I address this question by first assessing the central ele-

ment of pre-crisis monetary policy, namely the inflation objective, and then discuss changes to the framework that have been suggested.

#### 3.1 The Inflation Objective

Monetary policy frameworks adopted before the crisis typically incorporate an inflation objective of around 2% per annum. Under ordinary macroeconomic conditions with inflation at the desired level and the business cycle at neutral, policy-controlled interest rates will be equal to the inflation objective



plus the neutral real interest rate, say 3%.<sup>9</sup> This implies that central banks can cut interest rates by at most 300 basis points if an adverse shock hits. Blanchard et al. (2010) note that this might be insufficient to stabilise the economy if a highly contractionary shock occurs. They go on to ask whether central banks should raise their inflation objectives to, say, 4% since that would increase the room to relax interest rates.

Whether that is sensible depends partially on whether the zero lower bound has been a constraint in the current crisis. The ECB cut the policy rate from 4.25% to 1% during the crisis but

<sup>8</sup> See, in particular, the discussion in Papademos (2009).

<sup>9</sup> The average policy rate in the euro area between January 1999 and July 2007 was 3%.

did not prevent the overnight rate from falling to about 0.3%. One interpretation is that the ECB wanted to avoid cutting its official interest rates too far but did not object to having short-term market determined rates fall as far as



possible.<sup>10</sup> Furthermore, the Federal Reserve cut interest rates to zero and some calculations suggest that it would have wanted to reduce interest rates much below zero if that had been possible. A number of other central banks also cut interest rates to essentially zero. Overall, I think central banks were in fact unable to lower interest rates as far as they desired.

On its own, that does not imply that the zero lower bound is an important constraint on monetary policy since central banks can – and did – adopt unconventional policy measures.<sup>11</sup> While it is too early to make a final judgment, these appear to have been effective. If so, there may be less need to aim for a higher average inflation rate than suggested by Blanchard et al. (2010).

<sup>10</sup> See Rudebusch (2009).

<sup>11</sup> See the discussion in Orphanides (2010).

The desirability of aiming for a somewhat higher inflation rate also depends on how the central bank has defined its inflation objective. The ECB has defined it as inflation of 0 to 2% and has stated that it aims for inflation “below but close to 2%.” Raising the objective to 4% would therefore have serious consequences for the ECB’s credibility, in particular since the zero lower bound does not seem to have been a severe constraint on policy rates in the euro area. The Federal Reserve, by contrast, has never adopted a numerical objective for inflation and would presumably suffer less damage to its reputation if it were to aim for a somewhat higher inflation rate than in the recent past. Overall, raising the inflation target does not seem to be an obviously good idea, except possibly for central banks that have recently reached the zero lower bound and that have not adopted an explicit inflation objective.

### 3.2 Incorporating the Financial Sector into Monetary Policy

One conclusion many draw from the crisis is that the analysis underlying monetary policy decisions must incorporate financial sector developments better. Currently, central banks use a mixture of judgment and model-based forecasts of future economic conditions to set a level of, or a path for, policy rates that leads to desirable outcomes for inflation and real economic activity.

This assessment will be crucially influenced by the central bank’s forecasting model and policy discussions will naturally focus on the variables that appear most prominently in it. Obviously, such models only integrate features of the economy that can be formalised.

Capturing the financial sector is very difficult in these models, and as a consequence, it is included in a rudimentary way, if at all. Financial market developments therefore only influence interest rate setting through their impact on policy makers' judgments of future economic conditions. This may lead to too little weight attached to financial conditions when setting monetary policy.

To overcome this problem, models that explicitly incorporate the financial sector must be developed. While much work is currently being undertaken in this area, whether that will be successful is not yet clear. Since judgment is thus likely to remain important, central banks need to attract staff with relevant understanding of the functioning of specific financial markets. It is also desirable to enhance the cooperation with bank supervisors, if legally possible, since they may have greater understanding about developments in the banking sector than central bank staff. This is one reason why it is desirable for central banks to be responsible for bank supervision.

### 3.3 Leaning against the Wind

There is much agreement that the financial crisis was caused by a range of different factors and that monetary policy most likely played a secondary role.<sup>12</sup> These factors include the economic stability in the decade before the crisis that caused financial firms to underprice risk, weaknesses in firms' risk management practices, financial innovation and a growing use of extremely complex and opaque financial instruments, excessive reliance on ratings, failures in regulation and supervision, and distorted incentives that led to ex-

cessive risk taking in financial markets.<sup>13</sup>

But even if monetary policy did not cause the crisis, some argue that central banks should use monetary policy to reduce the likelihood of future financial crises by raising interest rates if credit and asset prices rise strongly. This may be helpful, it is argued, because asset price booms are almost surely followed by asset price busts that may depress inflation and economic activity below the desired level and do so beyond the standard two-three year horizon that central banks typically focus on when setting policy. *Leaning against the wind* may therefore better stabilise the economy in the medium term.

But whether this makes sense depends on how informative rapid credit growth and asset prices are about the build-up of bubbles and future economic activity. While there is anecdotal evidence that these variables do help forecast future economic conditions, Assenmacher-Wesche and Gerlach (2010) study the information content of common measures of financial imbalances for a set of 18 countries over 25 years and find that their information content is limited. Reacting to them is therefore likely to worsen inflation control and amplify swings in real economic activity in ordinary times, without reducing the likelihood that a bubble will form and burst.

Overall, this suggests that it is difficult to predict bubbles and crashes by looking at economy-wide measures of credit and asset prices and by responding to them with monetary policy in a discretionary manner. What is needed are tools that can be used to slow financial activity in specific markets and, in

<sup>12</sup> See Svensson (2009, 2010). For dissenting opinions, see Taylor (2008) and De Larosière (2010).

<sup>13</sup> Bean (2008) contains a review of the many factors that caused the crisis.

the euro area, countries where it appears worrisomely buoyant.

### 3.4 The Need for a Macroprudential Framework

Macroprudential tools are best described as non-interest rate tools that can help prevent excessive credit expansion and prevent risks from accumulating in the financial sector. While designing a macroprudential regime is not trivial, several desirable characteristics are already clear.

Most importantly, it must involve a range of tools – including procyclical capital requirements, leverage ratios and loan-to-value ratios – since there is no single instrument that can be relied upon to ensure financial stability. A pragmatic approach must be taken.

Furthermore, since financial firms avoided regulation during the tightly controlled financial regime of the

a financial crisis in one country can spread quickly globally so merely moving activity off-shore is not a solution.

Transparency is important. To limit the procyclicality of the financial system, the macroprudential policy instruments will be varied over time. Since policy changes may trigger unexpected and potentially harmful swings in asset prices, policy must be predictable. That requires transparency about the reasons for policy changes and the authorities' assessment of financial conditions.

While macroprudential policy can be focused on the specific market segment that raises financial stability concerns, it affects the economy in broadly similar ways as traditional policy rate changes, and the two tools must therefore be coordinated. It is essential that macroprudential policy is determined jointly by the central bank and all government agencies with responsibility for financial stability. Since the crisis showed that cooperation between central banks and other authorities responsible for financial stability has not always functioned well, it is crucial that the authority for setting macroprudential policy is vested in one body. At the international level, these bodies must maintain close contacts.

As this short review of issues suggests, the crisis has raised questions both about the best design of new, macroprudential policy tools and about more traditional features of monetary policy frameworks that we long thought had been settled.

## 4 Monetary Policy and Large Public Debts

The recent experiences of Greece raise the issue of how large fiscal deficits and high public debt impact on monetary policy. While these issues were debated before the establishment of the euro,



1970s by shifting their activities to the unregulated sector, the new regime must apply to all institutions that are highly leveraged or engaged in maturity transformation. It must therefore be international in scope. One risk with financial regulation is that activity simply shifts to financial centers with more liberal regulatory regimes. Of course, if risky financial activities move abroad, they are somebody else's problem. But

the adoption of the Stability and Growth Pact was intended to relegate them to the dustbin of history. That did not happen.

To see why excessive deficits and debts may affect the setting of monetary policy, it is useful to consider the standard debt equation:<sup>14</sup>

$$db/dt = (r-g)b - d$$

where  $b$  denotes the debt-to-GDP ratio,  $r$  the real interest rate,  $g$  the growth rate of real GDP,  $d$  the primary budget surplus as a percent of GDP and  $db/dt$  the growth rate of the debt-to-GDP ratio. The sharp recession triggered by the financial crisis led in many countries to a large primary deficit that, since economic activity rebounds only gradually, may last for several years (see chart 3). The associated fall in inflation raised real interest rates and the low growth in the years to come will increase debt relative to GDP, as suggested by chart 4. What will the implications of this be for monetary policy?

The obvious concern is that high public debt will lead to inflation. While there is ample historical evidence that governments in fiscal difficulties in the end turn to inflationary finance, that evidence stems from periods in which central banks did not enjoy independence. Under current institutional arrangements, with high levels of independence and monetary policy objectives set in law, high inflation seems unlikely. Moreover, only if inflation is unexpected will it reduce the burden of the public debt. Given the high level of transparency that now characterises monetary policy, generating an unexpected burst of inflation is not easy. And if an attempt was made, the central bank's reputation would be lost for a generation to come.

But although high inflation seems an unlikely outcome, other complications of the crisis seem plausible. First and most importantly, when debts are large the link between monetary and fiscal policy become closer as tight monetary policy raises public debt by increasing real interest rates and by slowing real GDP growth and therefore the primary surplus. When the stock of debt is so large that default becomes an issue, the central bank will always be under pressure to monetise the debt. The recent decision by the ECB to suspend the application of the minimum credit rating requirements for debt issued by the Greek government is a case in point. It should also be remembered that while central bank independence in the euro area is hard-wired in the Maastricht Treaty and not at risk, central banks in other countries with large public debts may not be so lucky.

Second, the fiscal consequences of monetary policy will become increasingly asymmetric in the euro area since public debt stocks vary sharply between Member States. Tight monetary policy will thus exacerbate the problems managing fiscal policy in highly indebted countries, forcing reductions in government spending which will slow economic growth. While all the evidence suggests that the ECB sets interest rates for the overall euro area, to the extent that the views of the members of the Governing Council of the ECB are shaped by local economic conditions, it may become more difficult to achieve consensus in the setting of monetary policy.

Third, the financial crisis will lead to a marked rise in unemployment, which raises the risk of political pressure on the central bank for easier mon-

<sup>14</sup> See, for instance, Dornbusch (1996).



etary policy. Again, this effect is likely to be unimportant in the euro area as a whole, but it may be of greater concern in economies where no numerical inflation objective, or definition of price stability, has been adopted.

## 5 Conclusions

While central banks appeared before the crisis to have entered a period in which they could do nothing wrong, it is now clear that this judgment was premature. The crisis has raised a number of fundamental issues regarding the design of monetary policy frameworks that though had been settled. In partic-

ular, even the view that central banks should focus solely or predominantly on stabilising inflation at a low level is now subject to debate and calls have been made for greater attention to be paid to financial market developments.

Going forward, the crisis will raise the question of how to conduct monetary policy in situations in which fiscal deficits and public debts are large, an issue that has not been debated in the profession for twenty years. All-in-all, central banks face plenty of monetary policy questions – old and new – to contemplate in the years ahead.

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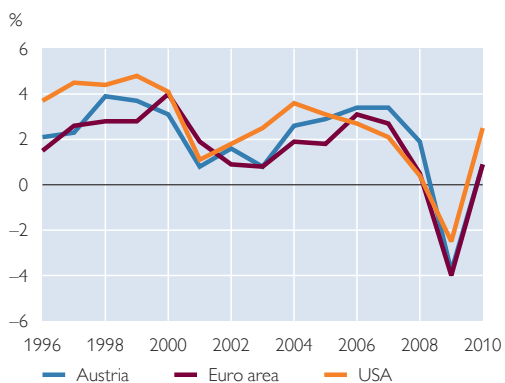
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## Appendix

Chart 1

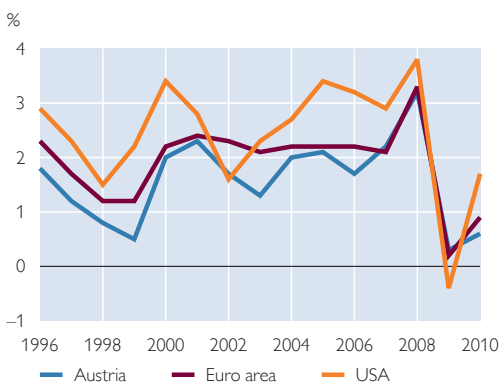
### Real GDP Growth



Source: OECD (2009). Forecasts are used for the years 2009–10.

Chart 2

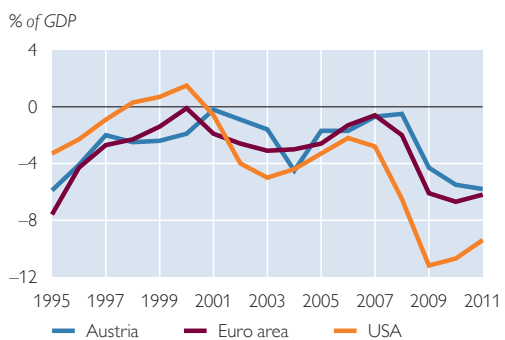
### CPI Inflation



Source: OECD (2009). Forecasts are used for the years 2009–10.

Chart 3

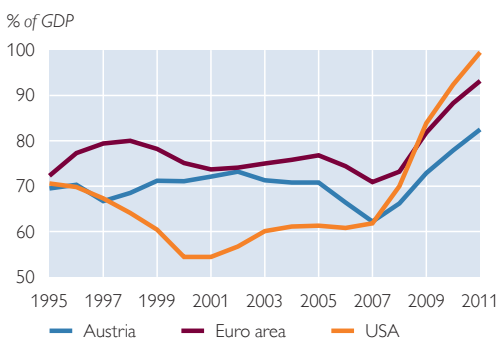
### General Government Financial Balances



Source: OECD (2009). Forecasts are used for the years 2009–11.

Chart 4

### General Government Gross Financial Liabilities



Source: OECD (2009). Forecasts are used for the years 2009–11.