



IMF Working Paper

Lessons for Monetary Policy:

What Should the Consensus Be?

Otmar Issing

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Research Department

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Prepared by Otmar Issing*

Authorized for distribution by Olivier J. Blanchard

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Abstract

This paper outlines important lessons for monetary policy. In particular, the role of inflation targeting, which was much acclaimed prior to the financial crisis and since then has not lost much of its endorsement, is critically reviewed. Ignoring the relation between monetary policy and asset prices, as is the case in this monetary policy approach, can lead to financial instability. In contrast, giving, inter alia, monetary factors a role in central banks' policy decisions, as is done in the ECB's encompassing approach, helps prevent these potentially harmful side effects and thus allows for fostering financial stability. Finally, this paper makes a case against increasing the central banks' inflation target.

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Author's E-Mail Address: issing@ifk_cfs.de

* President, Center for Financial Studies and Chairman of the Advisory Board of the House of Finance, Goethe University Frankfurt. This working paper formed the basis of the author's presentation at "Macroeconomic and Growth Policies in the Wake of the Crisis," a conference hosted by the IMF on March 7–8, 2011. I am grateful for valuable comments to Marcel Bluhm, Vitor Gaspar, Allan Meltzer, Athanasios Orphanides, Huw Pill, and Massimo Rostagno. I would also like to thank Marc DeFrancis and Josh Felman for editorial advice.

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I. CONSENSUS CONTINUES?

Every crisis also opens an opportunity. The challenge of this crisis for policymakers and researchers is to identify which factors were decisive for all these problems and what could be done to increase our knowledge and improve policy to prevent a repetition of past mistakes and, hopefully, the emergence of a new crisis. To be clear, the idea cannot be to avoid any ups and downs of the economy. Cyclical movements are an unavoidable and even necessary element of any dynamic economy. What must not happen is a financial crisis of the dimension just seen.

A flood of studies on “lessons” gives the impression that research has taken up this challenge. On monetary policy, a legion of papers has already been published (e.g., Bean, 2010; Clarida, 2010; Fahr and others, 2010; Mishkin, 2010; and Svensson, 2009), and many more will come. A number of papers discuss issues in the broader context of general macro and/or prudential aspects (Blanchard, Dell’Ariccia, and Mauro, 2010; and IMF, 2010).

Most approaches start from what is seen as the precrisis consensus. Whereas the details may differ, the result boils down to inflation targeting as state-of-the-art monetary policy. And, after reflections on what lessons to take from the crisis—for a thorough analysis see Mishkin (2010)—the conclusion is that this strategy is still optimal. “The case for the basic monetary policy strategy, which for want of a better name, I have called flexible inflation targeting, is still as strong as ever, and in some ways, more so” (Mishkin, 2010, p. 48). Another prominent advocate comes to this result:

In the end, my main conclusion so far from the crisis is that flexible inflation targeting, applied the right way and using all the information about financial factors that is relevant for the forecast of inflation and resource utilization at any horizon, remains the best-practice monetary policy before, during, and after the financial crisis. (Svensson, 2009, p. 7).

With all respect for highly influential research, this statement immunizes the strategy against any critique.² And stating that a strategy which fulfils these demanding conditions—“using all information,” etc.—is best practice comes close to a tautology. But beyond that, this defense of inflation targeting implies the pretension that previous versions fulfilled the principle of “using all information.” Looking back to the performance of the strategy, it is hard to accept this as a convincing statement. Most papers on “lessons” like those mentioned start from the assumption that flaws in the strategy can be corrected by adding factors

² In this context it is interesting to follow the headlines under which this approach was presented: From “inflation targeting” to “inflation targeting with judgement” to “flexible inflation targeting” (see e.g., Svensson, 2005). To be fair, authors representing this philosophy acknowledge now that financial factors have to be taken into account. How far is this driving flexibility?

missing so far but do not put into question the concept as such. Is this not fighting the last war and risking losing the next one, too? Would it not be more promising to start from identifying the principles of a framework that is robust through any conditions and challenges that lie in the future? This was at least our ambition at the ECB when we designed our strategy under the motto, “The need for robustness in a world of uncertainty” (ECB, 2000).³

Before continuing, a clarification is needed, as the wide use of the term “inflation targeting” can lead to confusion. One can distinguish among (at least) three versions of inflation targeting:

- 1) A concept applied when the central bank has the objective of price stability or rather low inflation. In this respect, it is hard to find a central bank that is not an “inflation targeter.”
- 2) A strategy that comprises the following elements:
 - a) A quantitative definition of the overriding objective of price stability or low inflation,
 - b) A forward-looking monetary policy, and
 - c) Transparency of the decision making process and corresponding communication with the public.

This definition leaves open *how* the central bank conducts its policy to achieve the final objective, that is, to what extent it just relies on a traditional inflation forecast or, for example, what role is given to money and credit when deciding monetary policy. This concept is now more or less widely adopted (e.g., Walsh, 2009), and in this sense also the European Central Bank might be called an “inflation targeter” (Issing and others, 2001; and Issing, 2004).

- 3) Inflation targeting as a theoretical concept of optimal monetary policy. The crucial element here has been and still is the link between an inflation forecast and monetary policy decisions. In the words of Svensson (2005), which already reflect refinements of the original concept: “The modern monetary policy process I have in mind can be concisely described as ‘forecast targeting,’ meaning ‘setting the instrument rate such that the forecasts of the target variables look good,’ where ‘look good’ refers to the objectives of monetary policy, such as a given target for inflation and a zero target for the output gap.”

³ It is worthwhile to quote from this early publication (p. 45): “The ECB’s strategy embodies a ‘full information’ approach in a broad sense, that is, it is a framework that not only encompasses all relevant information, but also takes into account various, possibly different interpretations of this information. Against this background, the strategy adopted by the ECB represents a framework that reduces the risks of policy errors caused by overreliance on a single indicator or model. Since it adopts a diversified approach to the interpretation of economic conditions, the ECB’s strategy may be regarded as facilitating the adoption of a robust monetary policy in an uncertain environment.”

This concept was widely seen as “state of the art” in research, but overall central banks did not—at least not strictly—apply this approach.

II. MONETARY POLICY AND ASSET PRICES

For many years, most central banks agreed that monetary policy should take asset price developments into account only to the extent that they might have an effect on spending via wealth effects and thereby on the outlook for inflation.⁴ This prevailing orthodoxy embraced what I have called the “Jackson Hole Consensus” (since it was prominently presented several times at that conference (Greenspan, 2002; Blinder and Reis, 2005; Mishkin, 2007)), specifically:

1. Central banks should not target asset prices.
2. Central banks should not try to prick a bubble.
3. Central banks should follow a “mop-up strategy” after the burst of a bubble, which means injecting enough liquidity to avoid a macroeconomic meltdown.

There can hardly be any disagreement on these principles. A central bank has no instruments for targeting individual asset prices successfully, and creating a macroeconomic mess by pricking a bubble would ruin the reputation of a central bank. Certainly, monetary policy mistakes after 1929 (as documented by Friedman and Schwartz, 1963) are ample evidence for advising central banks to take all necessary steps to avoid, as far as possible, propagating the consequences of a collapse of asset prices through the financial sector to the real economy (Issing, 2009).

However, restricting the role of the central bank to be totally passive in the period of the build-up of a bubble and practically pre-announcing the bank’s function as a “savior” once a bubble bursts represents an asymmetric approach, one that might create moral hazard and over time contribute to, if not trigger, a sequence of ever larger bubbles and following collapses (ECB 2005).

In this context it is interesting to read the following interpretation (Blinder and Reis, 2005, pp. 67–68):

The “mop up after” strategy received a severe real world stress test in 2000–02, when the biggest bubble in history imploded, vaporizing some \$8 trillion in wealth in the process. It is noteworthy, but insufficiently noted, that the ensuing recession was tiny and that not a single sizable bank failed. In fact, and even more amazing, not a single sizable brokerage or investment bank failed either. Thus the fears that the “mop up after” strategy might be overwhelmed by the speed and magnitude of the bursting of a

⁴ By the way, this implies a great challenge as to the time horizon of the inflation forecast.

giant bubble proved to be unfounded. Regarding Greenspan's legacy, then, we pose a simple rhetorical question. If the mopping-up strategy worked this well after the mega-bubble burst in 2000, shouldn't we assume that it will also work well after other, presumably smaller, bubbles burst in the future? Our suggested answer is apparent.

As we know today, what followed was another bubble and the subsequent collapse of a much larger dimension.⁵ It should be obvious that the "consensus" has a problem. Mishkin (2010) sees a consequence in arguing in favor of aggressive actions by central banks in case of financial disruptions. However, this is only extending the asymmetry in the so-called risk management approach that was advocated by Greenspan (2005). One might ask if this concept should be applied at all in monetary policy (for a critique see Butier, 2008). However, risk management as a strategy to deal with low-probability events and severe outcomes should by construction be neutral towards upside and downward risks. This would imply that the cost-benefit analysis should not just consider the consequences of a potential bursting of a bubble but also be applied to estimating the risks implied in an emerging bubble and the costs and benefits of trying to prevent this (see White, 2009). Seen from this perspective, the foremost challenge would be to prevent the development of a huge bubble rather than to concentrate on what should be done once a bubble bursts. Should this not be the most important message coming from all the major macroeconomic disasters in history that were triggered by a bursting of a preceding bubble? The question of what to do once a bubble bursts remains. But it should come only second, in case the evolution of a major bubble in spite of all efforts could not have been prevented.

Inflation targeting (version three in the above clarification) is paradigmatic here: an inflation-targeting central bank only needs to concentrate on one indicator, the inflation forecast, and on one objective, inflation, which summarizes all the policy-relevant information. But an inflation decline due to a fall in demand is a very different macroeconomic phenomenon from a decline in inflation that originates on the supply side. (The same logic applies to the case of an increase in inflation.) For an inflation-targeting central bank, a decline in inflation does not need further qualifications.

Such a situation makes monetary policy extremely sensitive and averse to disinflation and, ultimately, turns policy into an independent source of instability, particularly in an environment characterized by a prevalence of positive supply-side shocks (as in the second half of the 1990s). In such an environment there is a risk that policy forbearance vis-à-vis disinflationary forces fuels financial exuberance and financial exuberance in turn creates financial imbalances. This raises two questions:

1. Can the emergence of a major bubble be identified?
2. What instruments are available to avoid the realization of a major bubble?

⁵ White (2009) traces back the cumulative effects of "pre-emptive easing" to the stock market crash of 1987.

1) The uniform answer for a long time was that central banks cannot identify a bubble in real time. This was often connected with reference to the efficient-market hypothesis, according to which market prices incorporate all relevant information. How could central banks pretend to know better?

The recent crisis has led to a renewal of the discussion about the validity of the efficient market hypothesis. Central banks can deal with this uncertainty by looking at information beyond prices, notably financial quantities and flows (see ECB, 2010a). The challenge for central banks is not to assess whether specific assets were properly valued. What matters for central banks is the development of stock prices or housing prices in general. And here a number of tools were always available and methods have been refined to identify misalignments of asset prices (see ECB, 2010a).

2) An often repeated argument why central banks should not lean against the emergence of a bubble (Kohn (2007) in a succinct presentation calls it “extra action”) is that the only instrument available is the interest rate, which following the Tinbergen Rule cannot be used for two (or more) purposes. To mitigate upward developments of asset prices, strong increases in the central bank interest rate would be needed, which would imply major—and in essence too high—macroeconomic costs in the form of losses in output and employment. However, this argument is far less convincing than it seems. Taylor (2007) presents a “counterfactual” exercise to show how the Fed could have moderated house price developments by a timely increase in interest rates. (For a different approach, see Orphanides and Wieland, 2008.)

New research and empirical evidence have delivered further arguments in favor of the potential effectiveness of using the central bank interest rate to stabilize financial markets (Papademos, 2009).

- Even small changes in the spread between long- and short-term interest rates might have a substantial effect on the profitability of financial actors with high leverage and maturity mismatch problems. For such actions to have effectiveness, it is important that they be taken at an early stage before “irrational exuberance” can take hold. Since the central bank can influence the yield curve, it would contribute to curtailing maturity mismatch and leverage (Adrian and Shin, 2009).
- Communication about evolving imbalances combined with relatively small changes in the key policy rate could serve as a signalling device and support the credibility of the risk assessment of the central bank (Hoerova, Monnet, and Temzelides, 2009).
- Finally, even a moderate increase at an early stage of an asset price boom—in combination with the first two factors— could work against herding behaviour.

These are strong arguments in favor of “leaning”—that is, against the wind of asset price booms—and against (only) “cleaning,” that is, following the asymmetric approach described (White, 2009).

However, this is not to say that the whole responsibility should be left to monetary policy. Quite a number of other tools to preserve financial stability, mainly of a regulatory nature, are already available or should be developed (e.g., Bank of England, 2009). Depending on the institutional arrangement, these instruments either are in the hands of the central bank itself or lie with another institution, which makes good cooperation indispensable. The question to what extent there might be a conflict between maintaining price stability and preserving financial stability has now become a major topic for discussions (for an early contribution, see Issing, 2003b). Macroprudential supervision is now being established almost everywhere, and it will be interesting to observe the working of the new European Systemic Risk Board. It will be fundamental that identification of macroeconomic risks should not create pressure on the monetary policy of the ECB and that necessary actions are taken by the supervisory authorities.

III. ROLE OF MONEY AND CREDIT

Progress in economic research is not linear. Economic theory develops in cycles—one might even sometimes speak of fashions—even with loops (Issing, 2010).

It is no exaggeration to say that for many years, “money”—in a very broad sense—was widely ignored in mainstream economics. To a large extent this was also the case in central banks. Overall, the fundamental argument was that for reasons of financial innovation (etc.), the historical relationships between “money,” nominal GDP growth, and inflation had broken down. Velocity had become unpredictably volatile.⁶

This verdict on “money” refers, in the first place, to the relation between monetary aggregates and inflation. However, the neglect extended to monetary factors in general, including the composition of monetary aggregates and their counterparts, above all credit.

Now the tide seems to turn. Interestingly, it is the financial crisis that has triggered the consideration whether asset price booms caused by credit expansion should not be a matter of concern (Blinder, 2010; Mishkin, 2010). There should have been ample evidence before the crisis that money and especially credit can be a driving factor of asset prices.⁷ Research by the BIS (e.g., Borio and Lowe, 2002; Borio and Lowe, 2004) and by the ECB (e.g., Detken and Smets, 2004) support the view that nearly all major unsustainable booms in asset prices were accompanied if not preceded by strong increases in credit and/or money. Monetary

⁶ However, Meltzer (2009) shows that annual data delivers a stable relationship for the US. See also Lucas (2007).

⁷ For an interesting “loop“ in research on the relation between large movements in money and credit and boom-bust cycles in asset prices, see Fisher (1932) or Hayek (1933).

factors—I use this term in a broad sense, including credit in all its manifestations—can be used for the analysis of ongoing asset price developments as well as for forecasting those developments (ECB, 2010a; ECB, 2010b; Gerdesmeier, Reimers, and Roffia, 2009). A central bank that monitors the development of money and credit and takes these factors into account when making monetary policy decisions therefore implicitly applies a “leaning against the wind strategy” without having to identify the emergence of bubbles (or the opposite).

In a world of globalized financial markets, “domestic” money and credit and therefore asset prices (as well as domestic inflation) might be influenced by global developments. This aspect has been studied by a number of papers (e.g., Sousa and Zaghini, 2004; Borio and Filardo, 2007; Ruffer and Stracca, 2007; Alessi and Detken, 2009; Ciccarelli and Mojon, 2010). This leads to the question of what a central bank can achieve acting alone and what would then be the consequence for the exchange rate.

As already discussed, notwithstanding the fact that macroprudential tools should play a major role, the challenge for monetary policy is how to integrate asset price considerations—that is, “leaning against the wind”—into the monetary policy strategy. For inflation targeting this seems very hard to do. Inflation targeting, with all its refinement, is based on a forecast for (goods price) inflation using models in which monetary factors do not play an active role. Including “frictions” in such models might be useful as a research strategy, but cannot give practical advice to monetary policymakers (see e.g. Curdia and Woodford, 2010). Svensson (2009, p. 7) makes a rather sober statement:

“Before such extensions of the modelling framework are operational policymakers and staff have to improvise and apply unusual amounts of judgement on the effects of the financial crisis on the transmission mechanism. Even with much better analytical foundations concerning the role of financial factors in the transmission mechanism, there will be of course, as always, considerable scope for the application of good judgement in monetary policy.”

This “confession” raises fundamental questions on appropriate communication, on the predictability and credibility of the central bank, and finally on anchoring inflation expectations. Is it unfair to say that what was once seen as the “beauty” of an approach connecting monetary policy decisions with the forecast of inflation seems now to be more or less dissolved?

The fundamental problem of inflation targeting becomes obvious in a situation in which the forecast for (goods price) inflation signals “no need to change central bank interest rates” or might even indicate downward risks, whereas credit (and money) are rising together with asset prices increases. The “risk taking channel” (Borio and Zhu, 2008; Adrian and Shin, 2009) explains how low interest rates foster the emergence of financial imbalances and create the risk of a following collapse of asset prices (see also BIS, 2010). Rajan (2005) had already developed this idea in the “search for yield” approach. How can the challenge stemming from low interest rates, the development of money and credit, and risks of asset price

imbalances be reconciled with the philosophy of inflation targeting? Just by ignoring the fundamentals of this approach and applying “good judgement?”

Taking asset price developments into account is a challenge for any monetary policy strategy. Monetary factors are and will remain an alien element in inflation targeting. However, they were important in the ECB’s monetary policy strategy. “Money” was given a prominent role from the beginning. In contrast to what is still said to discredit (?) this strategy by calling it monetary targeting (Clarida, 2010, p. 2), the ECB explicitly rejected that approach before the start.⁸ Monetary analysis and economic analysis are the “two pillars” of the ECB’s strategy, which are connected via cross-checking into an integrated approach (see e.g. Beck and Wieland, 2008).

As intended from the beginning, monetary analysis was deepened and broadened over time (Issing, 2005). Analyzing the developments of different monetary aggregates, components, and their counterparts by monitoring all aspects of credit is a huge challenge, but it also delivers important insights (see Papademos and Stark, 2010; ECB, 2010b).⁹

Important as money and credit are in the context of asset price developments, the fundamental question is which role these factors should play in a monetary policy strategy designed to deliver price stability. As mentioned before, neglect of money and credit was a common factor not only in academic research (see e.g. Woodford, 2003; Eggertson and Woodford, 2003) but also in a number of central banks (see e.g. the impressive work by Meltzer, 2009). Though being fully aware of all the problems demonstrated over time by a lot of research, I never understood how monetary policy could ignore “money” and how the central bank should not care about “money creation.” There is of course a complex transmission mechanism from central bank money to the narrow and, even more so, to the broad monetary aggregates and credit—and also in the reverse direction!—to nominal GDP, the real economy, and prices. Even the definition of what is “money” is anything but easy, and measuring “credit” is not simple either. Here is not the place to try even a modest assessment of the result of libraries of research. But I would like to make just two points.

First of all, there is hardly any dissent from the view that in the long run, inflation is a monetary phenomenon. Lucas (1996) refers to the overwhelming empirical evidence and sees as a consequence that the relationship between monetary growth and inflation “needs to be the central feature of any monetary or macroeconomic theory that claims empirical seriousness.” Or as King (2002) phrased a headline: “No Money, no Inflation.”

⁸ See for example the headline, “Deciding Against a Monetary Target,” in Issing (2008, p. 93) and Issing, and others (2001).

⁹ An interesting approach is Shin and Shin (2011), which distinguishes monetary aggregates on the criterion of the money-holding sector and differentiates between bank- and market-dominated financial systems.

So, the question cannot be *if*, but *how* central banks should take this relationship into account when assessing risks to price stability and making monetary policy decisions. With its monetary policy strategy, the ECB has taken up this challenge. It has never claimed that its approach would be the final answer. However, it seems strange to me that critiques were directed mainly at giving monetary factors a role at all—without presenting an alternative that would meet this challenge in a better way. Admittedly, the strategy could not be formulated in an elegant model like (however, only initially) inflation targeting, and from the beginning it included an element of judgement. As a consequence, it lacked the “elegance” which made it obviously unattractive to academics.

Lamfalussy (2005) has an interesting comment:

In such a situation adopting an eclectic monetary policy strategy is an act of intellectual and professional honesty, for which the ECB deserves praise, rather than blame. At the same time, such a strategy deprives the ECB’s policy-makers of the possibility of enjoying what we would call in French a “confort intellectuel.”

Blanchard (2007) gave a warning:

...I worry that we have been lulled—or we have lulled ourselves—into a sense of complacency which is not warranted. There are still many issues we do not understand, and these may come back to bite us with a vengeance in the future.

See also Orphanides (2009). The “future” was waiting just around the corner, and is this experience not a strong argument for “robustness”?

The recent financial crisis, which is also a crisis of mainstream macroeconomics, should be an argument for honesty or humility also for other approaches than that of the ECB.

Second, monetary analysis in the ECB’s monetary strategy identifies longer-term risks to price stability, which economic analysis and the usual forecasts cannot deliver. Monitoring monetary developments therefore provides the basis for a medium-term orientation that pays tribute to substantial time lags and protects the central bank from the risk of destabilizing “activism” (see Issing, 2002). Friedman’s (1968, p.12) warning is today as relevant as ever:

The first and most important lesson that history teaches about what monetary policy can do—and it is a lesson of the most profound importance—is that monetary policy can prevent money from being a major source of macroeconomic disturbance.

At the same time, monitoring money and credit can create a “barrier” against major policy mistakes and following macroeconomic disasters (Christiano and Rostagno, 2001). The monetary pillar warns of rising imbalances in the monetary sector, which are in general correlated with financial imbalances, and helps the central bank maintain a steady hand (Fahr and others, 2010). “Leaning against the wind” in both directions is therefore an implicit consequence, whereas focussing on short-term inflation developments may exaggerate the boom-bust behavior driven by expectations of productivity elements.

Interestingly, monetary analysis may also overcome information problems in identifying developments in the real sector (see e.g. Gerberding, Scharnagel, and Seitz, 2010).

IV. MORE LESSONS?

There are a number of other important issues which are usually discussed under the headline “Lessons from the Crisis.” The challenge from the “zero bound” has been discussed for some time. Central banks in the meantime have demonstrated that monetary policy also has efficient tools in such an environment. Another approach to deal with this problem is to raise the inflation target, to get more room for manoeuvre to reduce interest rates in case of major shocks. Blanchard, Dell’Ariccia, and Mauro (2010) argue in favour of raising the target, because the zero nominal interest rate bound has proven too costly in the context of the recent crisis.

To avoid the costs of higher inflation, they suggest changes in the tax system and issuance of indexed bonds. Evidence from a large bulk of studies conducted during times of high inflation does not suggest that this is either easy to implement or efficient. However, there is another dimension of economic and social costs which go far beyond those calculations. This is the loss of credibility of central banks, having successfully convinced the public and markets that low and stable inflation is essential. By raising the inflation target, well guided inflation expectations would lose their anchor. Why should people believe that a target once increased is now the “final” limit? What arguments could be used tomorrow in favor of another increase? It is hard to imagine that central banks could stabilize inflation around the new target. And even if they were successful, higher inflation volatility would be unavoidable.

In this context, it has to be mentioned that defining “price stability” as an annual inflation rate of not more than 2 percent is already not easy to explain to the general public. Such a number is already a compromise and violates in some respect the principles of stable money. It is not so long ago that “zero inflation” was debated, and there is still research on the optimal inflation rate that results in rates below 2 percent.¹⁰ How could a central bank like the ECB with a constitutional mandate of maintaining price stability argue that this is consistent with even higher annual inflation?

When the ECB evaluated its monetary policy strategy, it also studied the risk of the zero bound and the appropriate definition of price stability (Issing, 2003a). As a result, strong arguments against an “upper bound” of more than 2 percent were presented.

A fundamental objection against the consideration to raise the target in order to have more room for reducing central bank interest rates in case of a major shock is the fact that the “need” for this flexibility is not independent of the preceding monetary policy. Raising the

¹⁰ Schmitt-Grohé and Uribe (2010), for example, discuss optimal inflation rates of at most zero percent a year.

target, with all the consequences mentioned, would lead to stronger growth of money and credit, thereby contributing to if not causing monetary imbalances and asset price booms. According to the logic of the argument, the subsequent collapse of asset prices might implicitly deliver new arguments for further raising the inflation target.¹¹ As a consequence, it becomes obvious that the idea of raising the inflation target has to be seen in the context and as a consequence of an activist monetary policy with a strong commitment to steer output and employment.

This leads to the question of the mandate of the central bank, which is also discussed as a consequence of the crisis. No central bank will ignore the situation of the real economy and the impact of its policy. A central bank will take those considerations best into account by conducting a medium-term-oriented monetary policy to maintain price stability, anchoring inflation expectations and avoiding fine-tuning. This is in line with a single mandate to maintain price stability. For a central bank with a dual mandate, it might be very difficult to explain the limits of what it can do—or rather not do—especially in the case of structural unemployment. The most likely outcome of a dual mandate will be that the central bank is trying to achieve one objective at a time (Meltzer, 2009). This approach can hardly be reconciled with a monetary policy in which monitoring money and credit is an essential element of a medium-term orientation.

Central banks, whether on the basis of a formal mandate for financial stability or as an informal obligation as a consequence of the recent crisis, will be confronted with a tremendous challenge. For a central bank with a medium-term orientation, taking developments of money and credit into account while focussing on maintaining price stability, implies a strong presumption that monetary policy itself will not cause major financial imbalances but further contribute to financial stability. This is not at all an argument against macroprudential supervision and regulation. How responsibility in this field should best be allocated is a difficult question.

The independence of the central bank would be hard to defend if it also had the competence to deal with individual financial institutions up to the question of whether such a firm should be closed. The crisis management and some forms of unorthodox measures or quantitative easing have also raised concerns about the relation of the central bank to the fiscal authority.

The world of central banking will not be the same as it was before (see e.g. Goodhart, 2010). However, this is no reason to ignore the principles of sound monetary policy, which were developed over time. Progress in policy comes by crises, and research has to work on the scientific foundation for conducting good policies. Both central banks and research have to take “lessons”—hopefully, the right ones.

¹¹ Blanchard et al.(2010) also mention shocks like terrorist attacks. But is this a challenge for the zero bound?

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