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Central Banks – Paradise Lost^{*}

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Introduction

The development of economics is influenced if not driven by cycles and trends in the economy. In the case of monetary economics, this connection is especially visible in times of severe crises. The great depression of the 1930s is an example which is still showing its influence in renewed discussions on the causes and consequences of this macroeconomic disaster. What is true for theory in general, is obviously even more relevant for the conduct of policy. And, monetary theory and policy are fields in which a strong interaction between changes in the economy, new avenues in theory, and policy reactions can be observed. Necessarily central banking, central banks as the institutions responsible, and central bankers as the acting persons, is in the center for such developments.

This is not the occasion to analyze the ups and downs from a long-term perspective (see Goodhart 2010). However, the rise of central banks to the top of respected institutions in the 1990s and the much more critical perception in the context of the financial crisis is an outstanding example.

A crisis is always an occasion, one might even say a chance to analyze what went wrong and why, and to think about improvements in theory for a better understanding, and in policy to avoid repeating past mistakes and delivering better results in the future. To the extent that central banks have contributed to the financial crisis or at least not done the utmost to prevent it they are faced with a threefold challenge: economic, intellectual and institutional (Borio 2011). “Rethinking Central Banking” is a title which reflects this challenge (Committee 2011).

As success and failure of monetary policy is often attributed to individuals, it is not surprising that leading central bankers have often been exposed to extreme variations in public appraisal. Brunner (1981) saw central bankers as people who have always been surrounded by a peculiar and protective political mysticism, which in turn is expressed in an essentially “metaphysical approach” to monetary policy. Central bank policy was presented as an esoteric art in which only the initiated can participate. Such an attitude, he argues, is firstly dangerous because it exposes monetary policy to almost limitless exploitation for political purposes; and, secondly, this arrangement is all the more questionable as the choice of incumbents is (in his judgment) at best arbitrary, and the filling of executive posts with competent people is the exception rather than the rule (see Issing 1996).

Times have changed. Transparency has become a kind of mantra for central banks. Anyway, the intention of this paper is not to contribute to the numerous personality stories, although the influence of individuals on monetary policy should never be underestimated. The focus here is to analyze how the heyday of central banks developed over time and how the crisis and its consequences will have an influence on this institution.

I will begin my lecture giving a short description of how the reputation of central banks evolved over time (with the relief from administrative measures, the acknowledgement of the rational expectations theory and the focus on a clear, single mandate of price stability being milestones). I will then discuss the concept of Inflation Targeting in Section 2 and (– although central banks around the world seem to have reached a consensus being the optimal monetary policy –) I will make the case that IT is based on shaky grounds. Considerable flaws characterize also the Jackson Hole consensus, with the unfolding of the financial crisis being only the most recent and prominent manifestation of those flaws. In Section 3, I will explain the lessons to be drawn from that experience. While the close monitoring of money and credit developments is one of these lessons, it does, however, not imply the extension of the central bank’s mandate to financial stability (as other, even more important tools – such as regulation and supervision – lie beyond the monetary policy sphere). After saying a couple of words concerning the complexity of communication taking time lags and real time data uncertainty into account, I will stress the point of not challenging central banks’ reputation even further by imposing tasks upon them for which they have no competence.

1. The heyday of Central Banks

Around the turn of the last century central banks were at the peak of their reputation. There was a widespread impression that inflation was forever under control, the situation of growth and employment on a global level looked better than any time before. The “great moderation” indicates that this was a period in which inflation had come down from rather high levels and variability of output had substantially declined. The discussion to what extent this “goldilocks economy” was the result of just good luck – i.e. from the policy makers’ perspective due to exogenous factors – or the consequence of improved macro policies, especially monetary policy, is still going on. It might be too early to draw a final conclusion.

Stock and Watson (2003) e.g. present empirical evidence for a decline in the size of exogenous shocks after the 1970s whereas Romer and Romer (2002) see the development to

greater stability primarily as a result of improvements in policy. Not surprisingly central banks overall tend to prefer the latter explanation. And, although this debate is anything but solved there is reason for attributing at least some influence to changes in monetary policy.

This becomes obvious if one looks back into the history of central banking during the last 60 years. After the Second World War the world of central banks was divided by very different approaches. It took a while before they were relieved from obligations imposed upon them during the war. Quite a number of central banks relied on administrative measures such as credit ceilings or other types of quantitative controls (see e.g. Icard, Issing, King, Wellink 1994). Those instruments proved increasingly ineffective and incompatible with free-market conditions. The more foreign exchange controls were lifted, the more central banks abolished such instruments and relied increasingly on open market operations.

The 1970s had a fundamental impact on concepts of monetary policy, the “philosophy” of monetary policy. The “great inflation” in the US was identified as a consequence of a discretionary monetary policy misguided by unreliable indicators such as the output gap (Orphanides 2002), relying on the Phillips-curve trade-off and neglecting money (Meltzer 2009).¹ When this policy ended in stagflation, the Fed under chairman Volcker reoriented its policy in the direction of pragmatic monetarism (Meltzer 2009).

Research responded to this anything but satisfying experience by painstakingly studying questions of optimal monetary policy (for the following see Issing 2010).

If one had to condense the experience of monetary policy in theory and practice in one principle it should read: Controlling, I would prefer anchoring, inflation expectations (Woodford 2003). The rational expectations theory (Lucas and Sargent 1981) explains the interactions between policy makers and private agents and the formation of expectations is at the centre of considerations for optimal monetary policy. There is now a vast literature on the theory of expectations and its implications for monetary policy (surveys by Blinder 1998; Mishkin 2009; Walsh 2007). A first, decisive step concentrated on the importance of credibility (Barro and Gordon 1983) which is the cornerstone of a monetary policy that aspires to achieve optimal macroeconomic results (Cukierman 1992). Only a credible central bank can guide expectations of private agents in a consistent way. Credibility is gained by a

¹ The “misleading potential” of real time data of the output gap is a conceptual flaw. In a new study Orphanides shows that as late as 2008 these data saw 2006 as a year of wasted resources. Revised figures in 2009, however gave the message that in 2006 the euro area was overheated and output exceeded its potential by a significant amount. An activist policy would have been a serious error (see Orphanides 2011).

convincing track record. But to maintain its credibility, the central bank must commit itself to a policy that is appropriate to deliver on its goal and communicate its policy intentions in a transparent way. The theory of dynamic inconsistency (Kydland and Prescott 1977) provided strong support for the concept of a credible commitment, and central bank communication is nowadays seen as an indispensable element of a successful monetary policy (Issing 2005b; Blinder et al. 2008). Theory and practice have discarded the option of a purely discretionary monetary policy.

On the other extreme, strict rules which would not allow for any deviation from the side of policy makers did not stand the test in theory – not to talk about the practice of monetary policy. Friedman's proposal (1959) e.g. for a constant growth rate for money – the so-called k-per-cent rule – was later rejected even by the author himself and is now not more than a footnote in the history of ideas. However, the discussion on rules has delivered many useful insights in how to conduct monetary policy (e.g. Taylor 1999). Instead of following a restrictive and likely suboptimal rule and avoiding the pitfalls of pure discretion central banks should adapt a kind of rule-governed or rule-based behavior as embodied e.g. in the commitment to an explicit monetary policy strategy (ECB 2001).

Whereas following a strict rule would eliminate any influence of individual preferences of central bankers, pure discretion would give the widest latitude for decision makers. The practice of monetary policy remaining somewhere in between implies that the traditional debate “rules versus authorities” (Simons 1936; Woodford 2003) continues. So, implicitly the “personality issue” remains relevant in theory and practice. Rogoff's (1985) paper demonstrated how the appointment of a conservative central banker might give a strong signal on future monetary policy and thereby influence the forming of expectations by the public. To constrain personal preferences which might get in conflict with the public interest, optimal contracts for central bankers (Walsh 1995) could be designed; an idea which so far has been tried only in the case of New Zealand.

To draw the consequences from mistakes of the past and new insights into the impact of monetary policy, the central bank must also be able to adopt this improved knowledge. It is interesting to note that the vast literature of the 1970s and 1980s hardly discussed the issue of the optimal institutional arrangement for central banks (Issing 1993). One might be surprised that a fundamental aspect of a central bank's statute, namely the degree of independence from government was for a long time widely ignored. An early finding of a correlation between independence and the degree of price stability (Bade and Parkin, 1980) was neglected.

However, starting in the nineties (Cukierman 1992; Alesina and Summers 1993) the literature has grown into such a dimension that it is hard even to survey it. The political economy argument for giving independence to the central bank is best summarized by the following statement of then Chancellor of the Exchequer Gordon Brown (1997): “The previous arrangements for monetary policy were too short-termist, encouraging short but unsustainable booms and higher inflation, followed inevitably by recession. This is why we promised in our election manifesto to ... reform the Bank of England to ensure that decision-making on monetary policy is more effective, open, accountable and free from short-term political manipulation.”

A central bank, especially one endowed with independence in its monetary policy decision must be given a clear mandate. There is a broad consensus that the mandate must include price stability in the form of low inflation. However, the discussion of a single versus a dual or even more-dimensional mandate goes on.

No central bank will ignore the situation of the real economy and the impact of monetary policy in the short to medium term. A medium-term oriented monetary policy will take this into account on the basis of a single mandate. However, if a dual mandate obliges the central bank to foster employment it might be very difficult for the central bank to explain the limits of what it can do – or rather cannot do – in the long run or 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, p. 1207 and passim). From a constitutional point of view it is questionable if such a choice should be left to an independent central bank and political pressure in favor of “employment” is to be expected. Central banks must be aware of what they can do – and what is beyond their influence (Friedman 1968), and must communicate this limitation convincingly to the public. If they seem to promise more than they can deliver they will severely undermine their credibility.

As a result of a huge bulk of literature but also practical experience one could conclude that an optimal institutional arrangement for a central bank should include three principles:

- independence in the conduct of monetary policy
- a clear mandate
- prohibition of monetary financing .

This consensus is reflected in the statute of the European Central Bank which was agreed on in Maastricht in 1991. The successful policy of the Deutsche Bundesbank which had avoided the great inflation (Issing 2005a; Beyer et al. 2008) in this context has played a major role as a kind of benchmark for an optimal institutional arrangement.

2. What consensus? Will it survive?

Conferences on monetary policy for quite some time had provided a forum for heated debates. Academics were divided into Monetarists and Keynesians, with many fractions within each of those groups, and central bankers represented institutions with very heterogeneous views.

In the course of the 1990s this constellation changed fundamentally and central banks around the world seemed to have reached a general consensus on the optimal monetary policy strategy. Inflation Targeting was identified as state of the art of monetary policy. And, proponents of this approach see inflation targeting still as the optimal strategy or even more so as a consequence of the financial crisis (Mishkin 2010). “In the end, my main conclusion so far from the crisis, 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).

This statement obviously immunizes the strategy against any critique. And stating that a strategy should fulfill these demanding conditions, i.e. using all information etc. comes close to a tautology (Issing 2011). This argument is supported by the history of this approach which started from a straightforward concept connecting decisions of the central bank on the interest rate directly with the results of the inflation forecast to “inflation targeting with judgment” and finally “flexible inflation targeting” which leaves the door wide open to further refinements. This by itself does not deserve critique, quite the opposite. Any policy approach should be designed in a way that is robust in an environment of uncertainty and open to take into account changes in the structure of the economy, innovations in financial markets etc. (see e.g. ECB 2000). Nevertheless, it’s crucial not to endanger or even destroy the fundamentals of the concept while constructing it in such a way that it allows the integration of new developments.

It is hard to see how inflation targeting as it is presented in the literature can deal with the fundamental flaw which is the neglect of money and credit as a source of risks for price stability. It is mainly for this reason that the ECB discarded this option and adopted its two pillar strategy which gives the development of money and credit an important role (Issing et al. 2001, Issing 2008).

Before dealing with the question which consensus will survive, it is important to clarify what the “consensus” included and what it did not.

The consensus which includes almost all central banks and is in line with research is based on the following principles:

1. Price stability or rather low and stable inflation is the objective of monetary policy.
2. This objective should be pursued by a strategy which comprises these elements:
 - a) A quantitative definition of the objective of price stability
 - b) A forward-looking monetary policy
 - c) Transparency of the decision-making process and corresponding communication with the public.

If this were the definition of inflation targeting there would be indeed a very broad consensus with still an open question of whether the mandate should be a single one (price stability) or should also include other objectives, e.g. the goal of high employment. The crucial element of divergence remains the issue if monetary policy decisions in principle are based on an inflation forecast which is mainly derived from a real economy model or on a strategy which gives money and credit a relevant or even prominent role (see Goodfriend 2004 and 2007).

Therefore, ignoring this fundamental difference and claiming an overall consensus is the result of not only ignoring the strategy of at least one central bank, the ECB, but also research on the relevance of money and credit for the conduct of monetary policy.

3. The financial market crisis – its consequences for central banks and monetary policy

The financial market crisis has triggered questions with a wide range: Could central banks have prevented or at least mitigated it? Or have they actually contributed to the crisis, if not even laid the basis for it?

In any case the “great moderation” was a short lived episode and a fundamental illusion. It is not the first time that this kind of overconfidence in current “success” initially found broad support and turned out later as a premature farewell to past patterns of ups and downs. Remember a time when part of the economics profession believed in the control of the economy and declared the business cycle as obsolete? (Bronfenbrenner 1969).

Central banks will suffer from the outcome of the recent crisis. To start with an institutional aspect: Whatever the appropriate answer will be, it is almost inevitable that this event will imply a negative shock to the reputation of central banks. It also has to be seen what the implications for the status of independence will be.

A major aspect of the role of central banks towards financial stability has been and is still debated under the headline of monetary policy and asset prices. Before the crisis the dominant view – also connected with the strategy of inflation targeting – was that central banks should follow simple principles, namely not target asset prices, not try to prick a bubble, and should follow a “mop-up” strategy after the burst of a bubble, which means injecting enough liquidity to avoid a macroeconomic meltdown. As this position was presented several times at these conferences I called it the “Jackson Hole” consensus (for the following see Issing 2011).

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).

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 Buiters 2008). However, risk management as a strategy to deal with low-probability events and severe outcomes should by construction be neutral toward 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 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?

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 2010). The challenge for central banks is not to assess whether specific assets were properly valued. What matters for central banks is the development of asset 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 2010).

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 are taken at an early stage before “irrational exuberance” and the “This-time-is-different” syndrome (Rogoff and Reinhart 2009) 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 signaling 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 behavior.

These are strong arguments against (only) “cleaning”, that is, following the asymmetric approach described earlier (White 2009). The policy of “leaning” against the wind of asset price booms must be based on a reliable assessment of substantial misalignments. The ECB’s monetary pillar draws attention to rising imbalances in the monetary sector which are well-correlated with financial imbalances. “A market bubble which progresses in symbiosis with a credit bubble, and which then spills over into excess money creation, is certainly a policy-relevant event. Being vigilant to the monetary imbalance means for a central bank being better able to discriminate between benign and less-benign phenomena in financial markets” (Fahr et.al. 2011, p.48).²

3.1. Central Banks and Financial Stability

It is hard to expect that the asymmetric approach to asset prices could survive – intellectually and in the practice of monetary policy. In several publications by the BIS policies following this approach were identified of having contributed to bubbles and imbalances (e.g. Borio and White 2003, Borio 2009). At the same time advocates of inflation targeting are trying hard to develop this approach into a model which includes the problem of asset prices (Svensson 2009; Curdia and Woodford 2010, Woodford 2011).

This dimension has already become a central aspect of monetary theory. However, can one really expect the strategy of inflation targeting and its underlying model to be developed in such a way that it can deal with this challenge? White in his 2010 Mayekawa Lecture discussed fundamental theoretical questions.

In the end financial and monetary factors are and will remain an alien element in the concept of inflation targeting. And, ignoring the development of money and credit, of imbalances in various sectors of the economy is exactly the reason why monetary policy has at least contributed to the boom and bust of asset prices.

Asset price dynamics are only one, though important element of the much broader concept of financial stability. Therefore, it is not surprising that the discussion is now whether and in case to what extent central banks should be made responsible for preserving financial stability. There are (at least) two dimensions of this problem. The institutional aspect relates

² In a number of papers Shin has argued that monetary aggregates can convey important information on the emergence of risks to financial stability (see Kim, Shin and Yun 2012).

mainly to the question if central banks should be given a formal mandate for financial stability. Depending on the answer central banks must have instruments at their disposal to be able to fulfill this mandate.

While there is a broad literature on the definition of price stability, “financial stability” as a goal for the central bank remains a vague concept. This is highly relevant as the actions of the central bank could and would always be challenged from different positions to the interpretation of the mandate. But, what is even more critical is the risk of conflicts between the goals of price stability and financial stability. Full responsibility for financial stability would necessarily imply that the central bank is provided with additional tools from the area of regulation and supervision. The more the central bank would interfere with the existence of individual financial institutions, the more the question of political responsibility would emerge. When it finally comes to taxpayers’ money, the decision has to be made in the area of parliamentary responsible politics. Conflicts of any kind are programmed and the statute of independence would every time be undermined. This is a lose-lose situation in the following sense. In case the central bank succeeds in preserving financial stability by applying its instruments, independence would be challenged exactly for the reason of too much power given to such an institution (e.g. Cihak 2010). In case of failure the central bank itself would deliver the arguments.

One might argue that independence of the central bank is a means and not an end in itself, and as a consequence this institutional aspect should not be a barrier for a better arrangement to preserve financial stability. Before subscribing to this logic one should reflect for a moment on the consequences and potential negative repercussions.

The simple, but fundamental argument to make the central bank independent is based on the experience that inflation correlates negatively with the degree of independence which is supported also by strong theoretical arguments. A clear mandate to maintain price stability (or low and stable inflation) to be delivered by an independent central bank is the nominal anchor in a paper standard system. One would have to expect that with the removal of the precondition of independence, inflation expectations would be deprived of this anchor and over time the period of low inflation would remain a rather short lived episode.

Isn’t this a too high price? This is even more compelling as this change in the institutional framework would hardly improve the conditions for financial stability. Out of crisis relief the case for slightly higher inflation rates seems tempting, but who would argue that a system in

which inflation expectations are not anymore anchored would be an environment in which the chances for financial stability will have improved?

The conclusion that central banks should not be given a formal mandate for financial stability does not exclude them from responsibility completely – formally or informally. There is an intense discussion on options for interactions of central banks and other institutions in the area of regulation and supervision. There are strong arguments why central banks should have all the information they need and might contribute or take responsibility for macro-prudential supervision. The “line in the sand” should be drawn where the intrinsic goal of the central bank – maintaining price stability – is endangered.

For a long time the view dominated that guaranteeing price stability is the best and in the end only, because only possible, contribution of central banks to financial stability. The notion that price stability is not enough rests on the observation that financial instability as documented in credit and asset prices’ booms happened at a time when (consumer price) inflation remained subdued. In fact, the financial sector in many countries came to the brink of collapse during a period of price stability. The argument that the situation of price stability (and the expectation that this regime would also extend into the future) has contributed to higher risk taking and thereby to future financial instability misses, however, an important aspect of the environment where it occurred, namely very low interest rates. The justification for the monetary policy stance was the reference to low inflation. However, this approach neglected the strong increase in money and credit. A monetary policy strategy taking these monetary developments into account would imply an automatic leaning against the wind (Issing 2003a,b).

This is the proper contribution of the central bank and monetary policy to foster financial stability. This will hardly be enough. But, the implementation of other tools – regulation and supervision – should be organized in a way which does neither blur nor hurt the intrinsic task of the central bank.

3.2. Time horizon, monetary policy and communication

Whereas central banks for most of the time of their existence had a preference for opaqueness in their decision making, transparency has become a principle of modern monetary policy. Unlimited transparency however is a mirage (Issing 2005b). There are strong arguments in

favour of limits to transparency (Cukierman 2009) without falling back to the previous level of opaqueness. Corresponding communication is used as an indispensable tool to guide market expectations. Monetary policy can only fix the short term rate. The influence of monetary policy on the long end of the interest rate spectrum – and over the entire yield curve – depends crucially on expectations regarding future monetary policy decisions. Communication, which is also important in the context of accountability, can be used to guide these expectations (Woodford 2003). The steering of expectations has two dimensions (Issing 2005a). The first is of a short-term nature involving pending policy decisions. The second dimension is communication on the medium to long-term policy of the central bank.³ Consistency between the two dimensions is a crucial requirement of efficient communication and monetary policy per se.

Credibility is the fundament for any attempt of steering expectations over the medium-to longer-term. Ensuring consistency of the sequence of monetary policy decisions is a key element of the central bank's monetary policy strategy. Applying simple logic requests that a strategy is needed which itself has a medium-to-long-term orientation. As central banks still seem to agree that over the longer term inflation is a monetary phenomenon it is hard to see how a strategy can fulfill the requirement of credibility guiding inflation expectations over this extended time horizon without taking monetary developments into account. Lucas (1996) refers to the overwhelming empirical evidence that the relationship between monetary growth and inflation “needs to be the central feature of any macroeconomic theory that claims empirical seriousness”. It is true that since the early 1990s it has become more difficult to forecast inflation. However, money-based inflation forecasts even in the new environment are a useful tool to give guidance for monetary policy to maintain price stability (see Papademos and Stark 2010).

The usual inflation forecasts underlie severe limitations concerning the time horizon. Fan charts or ranges show increasing uncertainty which demonstrate that the forecasting horizon can hardly be extended beyond two years. Considering the long and variable time lags of monetary policy on prices this creates a challenge which is hard to solve. Communication which is concentrated on predictability of the instrument which is the central bank short term interest rate, is not only confronted with the requisite to clarify whether the commitment is

³ It is interesting to note that in a survey (Barclays 2009) market participants are mostly interested in predictability of monetary policy decisions over the next three to twelve months, but not for a longer period.

conditional or unconditional, but also with the intellectual challenge to explain how such a commitment can be based on a forecast which by construction lacks a longer term orientation.

This aspect is especially relevant in the context of the financial crisis and its aftermath (see e.g. White 2010). It is now widely recognized that the great inflation of the 1970s was to a large extent the consequence of reliance on real time information on the output gap. In these days there is a high risk that relying on models which contain such structural elements could lead to a repetition of mistakes made in the past (Wieland 2012). Estimates on the current output gap for the large economic areas vary widely which could be seen as warning that future revisions of data might be substantial. There is high uncertainty to what extent the financial crisis has an impact on potential growth or rather the level of potential output. It is difficult to see how a signaling of the future path of the central bank interest rate which is based on such shaky ground can reduce uncertainty and guide market expectations.

The complexity of good communication is demonstrated when the relation between sender and receiver is taken into account. Research in psychology has shown the limited skills of information processing (Kahneman 2003). Selecting and weighting of formation e.g. depends on its intuitive accessibility. Furthermore, information is generally simplified and categorized before it is collated. This raises high borders for successful central bank communication and creates a substantial risk of failure. Striking the balance between the need for clear and simple messages and the requirement to adequately convey complexity is a constant challenge (Winkler 2000).

Widening the forecast horizon implies higher uncertainty with the consequence that publishing an interest rate path might mislead markets and the general public. Morris and Shin (2002) have shown that public information can crowd out private information and imply a risk of welfare losses.⁴

⁴ For an interesting example, see minutes of the Swedish Central Bank's Executive Board of 1 September 2010: „Mr. Svensson believed that the repo rate path in the main scenario is unreasonably high. It is far above market expectations and the corresponding short-term and long-term market rates. If it were to achieve full credibility, market expectations would shift upwards to the same degree. This would have fateful consequences. Mr Svensson called on his colleagues on the Executive Board to point out any faults in his reasoning. ... Normally, the Riskbank's wish and endeavour is that the repo rate path shall gain credibility and be incorporated into market expectations and market pricing. In this way, monetary policy will have the largest possible impact. However, this time it is the opposite. Mr Svensson claimed that if the repo rate path in the main scenario is supported by the majority (of the board), one must hope that it is still not credible and thus will not have very large consequences before it can hopefully be corrected at the next monetary policy meeting. There is an old saying that one should be careful what one wishes for. This is because getting what you wished for may sometimes have unforeseen consequences. This could be one of those times. Mr. Svensson claimed that in this case, one should not wish for better credibility for the repo rate path.”

Communication can be an important tool for central banks, but the complexity of the challenge implies also a substantial risk for the credibility of the central bank on its reputation. This is the case already for a central bank with the single mandate of maintaining price stability. It is getting more complicated with a dual mandate which includes responsibility for the real economy, e.g. in form of employment, and it might end in total confusion once financial stability is added to the mandate of the central bank.

A further source of risk for the credibility of the central bank arises if it is perceived as just following the markets. Praise and complaints from financial actors has become a permanent companion of monetary policy. Central banks are therefore exposed to the temptation of attributing an importance to market reactions that goes beyond their interest in the transmission of monetary policy. It is obvious that this risk is especially relevant in times of instability in financial markets. At the same time this is a situation in which stability-oriented guidance can come only from a central bank which leaves no doubt on the commitment to its mandate.

In assessing the time horizon of communication on future central bank actions it also has to be considered that any signaling on the interest rate path which rests on the traditional forecasts seems to neglect the time lag of monetary policy decisions. There is broad agreement that the time lag of the impact of monetary policy on the real economy is at least around one year, and on prices the lag is in the order of two years and beyond. It is a daunting challenge to anticipate proper policy actions over such a horizon. (If “unorthodox measures” are adopted at the same time the signaling on the interest rate path is even more complex.)

The alternative is not to resign and to fall back to unguided ad-hocery. The appropriate answer is not to overcome heightened uncertainty by a pretence of knowledge about the future, but by designing a monetary policy strategy which is based on those fundamentals that are relevant and reliable for identifying longer term risks to price stability.

It is hard to see how this can be achieved without integrating monetary factors in the strategy. For the euro area there are a number of studies which do not ignore the complexity of the situation, but which provide convincing evidence that the longer run relation between money and prices is still intact (Calza and Sousa 2007; Papademos and Stark 2010; Belke and Czudaj 2010; Baeriswyl and Ganarin 2011; ECB 2012). On the basis of such a strategy a credible commitment to maintain price stability can be communicated without falling into the trap

which is hardly avoidable in the concept of publishing an interest rate path based on widely used models.

3.3. Reputation at Risk

The financial market crisis saw central banks in the role as “savior” of last resort. True, the function as lender of last resort in theory has always been part of the monetary system. Central banks were supposed to follow two rules: “First. That these loans should only be made at a very high rate of interest. This will operate as a heavy line on unreasonable timidity, and will prevent the greatest number of application by person who do not require it ... Secondly. That at this rate these advances should be made on all good banking securities, and as largely as the public ask for them” (Bagehot 1873).

In providing liquidity at zero or close to zero interest rates against collateral which hardly in all cases qualifies as “good securities” a number of central banks have gone far beyond Bagehot’s famous principle. In the subsequent crisis of high public debt central banks were seen also as the ultimate buyer of public debt. This is, however an inappropriate extension of the role of lender of last resort. Solvency of a sovereign debtor is traditionally defined as a state being able to service its debt by collecting taxes. Bringing this responsibility into the domain of the central bank means transferring an obligation of public finance into a monetary phenomenon. There is a long discussion about the demarcation line between fiscal policy and monetary policy. But, the arguments in favor of the central bank being the ultimate buyer of government bonds imply that the central bank could and will finally be taken hostage by politics. Prominent bad examples for the consequences of such a regime are not lacking.

There are convincing reasons for open market operations implying huge purchases of government bonds in case of deflationary risks. Without such a convincing “monetary” explanation, however, the dividing line between monetary and fiscal policy is crossed and the central bank becomes part of politics (for a classification see Goodfriend 2011).

In this context another discussion triggers pressure on central banks. There are two strands of arguments why currently central banks should tolerate higher inflation, respectively raise their inflation target. One is derived from the problem of the zero bound for nominal central bank interest rates. To reduce the risk of being trapped by the zero bound the inflation target should

be raised in order to achieve more room for manoeuvre (Blanchard et al. 2010). The other argument is based on the idea that higher inflation would facilitate the service on public debt.

The acceptance of a higher inflation rate by the central bank would be a major blow to their reputation. How credible would be a statement that this would be a temporary measure? Inflation expectations would lose their anchor, long term interest rates would rise and include an inflationary risk premium which would have a negative impact on growth and employment.

The other concerns coordination – explicitly or implicitly – of monetary policy and fiscal policy. This coordination for which academics show a lasting preference has in practice failed too often and too badly to try it again. “Perhaps the most serious flaw in the economic analysis underlying policy was the belief that policymakers could maximize economic welfare by choosing the optimal mix of monetary and fiscal stimulus or restraint to achieve the optimal combination of inflation and unemployment” (Meltzer 2009, p. 286). This perception of the advantages of coordination seems to be ineradicable. Once a central bank would engage in such a game of “give and take”, it would be exposed to the problem of time inconsistency, its reputation and credibility would be at stake and its independence de facto would be lost.

The argument for “coordination” gets even more doubtful when it is extended to the global level. The idea that the major central banks should internalize the spillover effects of their policies by creating an “International Monetary Policy Committee” that will “report regularly to world leaders on the aggregate consequences of individual central bank policies” (Committee 2011) lacks any convincing theoretical basis. Such a concept would establish an international system without a nominal anchor.

True, the world is complex, financial markets are exposed to high risks, spillover effects of any kind are abundant and financial stability is a major challenge. However, is this a reason to react with a concept of policy which is getting so complex that it would end in a situation where the competence and responsibility for various goals is impossible to disentangle? One conclusion seems to be sure: this would establish a regime in which price stability (or low inflation) will be at the very low end of the hierarchy of goals.

Society would have to pay a high price. The period of low inflation would finally remain a short episode. The world would be back to the time of rising and highly volatile inflation.

After a while only to stop inflation would be difficult and the way to reduce inflation would again be painful and costly.

Confronted with these requests from politics and the financial industry, supported strongly by seemingly attractive concepts developed by academics, central banks are in an extremely difficult position. Following these ideas would ruin their credibility and reputation as defenders of the value of money. It does not pay credit to the economic profession that a number of proponents openly argue in favor of expropriating savers via planned higher inflation without even considering the consequences for society. Should and could central banks participate in such a concept?

Central banks will, however in the short term, be on the loser's side once they defend independence and their responsibility for maintaining the value of money. This will be the case because they will be blamed for all the negative consequences which will be attributed to them for their resistance to participate in the "coordination game". In the longer term such firmness might turn out as the best contribution central banks can make for the welfare of society. For that central banks should demonstrate modesty in what they promise to deliver, explain convincingly what they have no competence for, be transparent on their actions, open to discussion, but firm in their determination to preserve the value of money which is the final anchor in a paper standard.

9. Bibliography

- Adrian, T., and Shin, H. S., "Prices and Quantities in the Monetary Policy Transmission Mechanism", *International Journal of Central Banking*, December 2009.
- Alesina, A. and Summers, L., "Central Bank Independence and Macroeconomic Performance: Some Comparative Evidence", *Journal of Money, Credit and Banking*, May 1993.
- Bade, R. and Parkin, M., "Central Bank Laws and Monetary Policy", Department of Economics, University Western Ontario, 1980.
- Baeriswyl, R. and Ganarin, M., "The non-inflationary great leveraging", *École polytechnique fédérale de Lausanne, The Macroeconomics of Financial Crises SINERGIA*, Working Paper, 2011.
- Bagehot, W., "Lombard Street – A Description of the Money Market", New York 1873. (Reprint New York 1999).
- Barclays Capital, How Should Central Banks Communicate?, Research, 7 January 2009.
- Barro, R. and Gordon, D., "Rules, Discretion, and Reputation in a Model of Monetary Policy", *Journal of Monetary Economics*, 1983.
- Belke, A., Czudaj, R., "Is Euro Area Money Demand Still Stable? Cointegrated VAR Versus Single Equation Techniques", *Applied Economics Quarterly*, 2010.
- Beyer, A., Gaspar, V. Gerberding, C., and Issing, O., "Opting Out of the Great Inflation", NBER Working Paper 1496, December 2008.
- Blanchard, O., Dell'Ariccia, G., and Mauro, P., "Rethinking Macroeconomic Policy", *Journal of Money, Credit and Banking*, Suppl. 2010.
- Blinder, A. S., "Central Banking in Theory and Practice, Cambridge Mass. 1998.
- Blinder, A. S., Ehrmann, M. and Fratzscher, M., "Central Bank Communication and Monetary Policy: A Survey of Theory and Evidence", *Journal of Economic Literature*, December 2008.
- Borio, C., "Central Banking Post-Crisis: What compass for uncharted waters?", *BIS Working Papers No 353*, September 2011.
- Borio, C. and White, W. R., "Whither Monetary and Financial Stability? The Implications of Evolving Policy Regimes", in: *Federal Reserve Bank of Kansas City, ed., Monetary Policy and Uncertainty: Adapting to a Changing Economy*, August 2003.
- Bronfenbrenner, M., ed., *Is the Business Cycle Obsolete?*, New York 1969.
- Brunner, K., "The Art of Central Banking", in: H. Göppl and R. Henn, eds., *Geld, Banken und Versicherungen*, Königstein 1981.
- Buiter, W. H., "Central Banks and Financial Crises", in *Maintaining Stability in a Changing Financial System*, Federal Reserve Bank of Kansas City, 2008.

- Cihak, M., "Price Stability, Financial Stability and Central Bank Independence", in: Oesterreichische Nationalbank, Central Banking after the Crisis, 38th Economic Conference 2010.
- Committee on International Economic Policy and Reform, Rethinking Central Banking, September 2011.
- Cukierman, A., Central Bank Strategies: Credibility and Independence, Cambridge, Mass. 1992.
- Cukierman, A., The Limits of Transparency, Economic Notes by Banca dei Monte dei Paschi di Siena SpA, 1/2-2009.
- Curdia, V. and Woodford, M., "Credit Spreads and Monetary Policy", Journal of Money, Credit and Banking, 2010.
- European Central Bank, "The Two Pillars of the ECB's Monetary Policy Strategy", Monthly Bulletin, November 2000.
- European Central Bank, "Issues Related to Monetary Policy Rules", Monthly Bulletin, October 2001.
- European Central Bank, "Asset Price Bubbles and Monetary Policy", Monthly Bulletin, April 2005.
- European Central Bank, "Enhancing Monetary Analysis", Monthly Bulletin, November 2010.
- European Central Bank, "The Interplay of Financial Intermediation and its Impact on Monetary Analysis", Monthly Bulletin, January 2012.
- Fahr, S. et al., Monetary Policy Strategies – Experiences during the Crisis and Lessons Learnt, in: Jarocinski et al.eds., Approaches to Monetary Policy Revisited – Lessons from the Crisis, ECB 2011.
- Friedman, M., A Program for Monetary Stability, New York 1959.
- Friedman, M., The Role of Monetary Policy, The American Economic Review, March 1968.
- Friedman, M. and Schwartz, A. J., A Monetary History of the United States, 1867- 1960, Princeton 1963.
- Goodfriend, M., Narrow Money, Broad Money and the Transmission of Monetary Policy, Federal Reserve Bank of Richmond, August 19, 2004.
- Goodfriend, M., How the World achieved Consensus on Monetary Policy, Journal of Economic Perspectives, Fall 2007.
- Goodfriend, M., Central Banking in the credit turmoil: An Assessment of Federal Reserve in Practice, Journal of Monetary Economics 2011
- Goodhart, C. A. E., The Changing Role of Central Banks, BIS Working Papers No 326, November 2010.

- Greenspan, A., "Opening Remarks", in *The Greenspan Era: Lessons for the Future*, Federal Reserve Bank of Kansas City, 2005.
- Hoerova, M., Monnet, C. and Temzelides, T., "Money Talks", ECB Working Paper 1091, 2009
- Icard, A., "Experience Gained with Monetary Policy Instruments in France", *Bankhistorisches Archiv*, Beiheft 27, Frankfurt 1994.
- Issing, O., *Central Bank Independence and Monetary Stability*, Institute of Economic Affairs, Occasional Paper No.89, London 1993.
- Issing, O., "Experience Gained with Monetary Policy Instruments in Germany", *Bankhistorisches Archiv*, Beiheft 27, Frankfurt 1994.
- Issing, O., "Ethics and Morals in Central Banking - Do they Exist, Do they Matter?", in: F. Capie and G. E. Wood, *Monetary Economics in the 1990s*, London, 1996.
- Issing, O., "Monetary and Financial Stability: Is There a Trade-off? ", comments at the Bank for International Settlements, March 2003a.
- Issing, O., Introductory statement delivered at the European Central Bank Workshop on "Asset Prices and Monetary Policy", December 11, 2003b.
- Issing, O., "Why Did the Great Inflation not Happen in Germany?", *Federal Reserve Bank of St. Louis, Review*, March/April 2005a.
- Issing, O., "Communication, Transparency, Accountability. Monetary Policy in the Twenty-first Century", *Federal Reserve Bank of St. Louis, Review*, March/April 2005b.
- Issing, O., *The Birth of the Euro*, Cambridge 2008.
- Issing, O., "Asset Pricing and Monetary Policy", *The Pato Journal*, Winter 2009.
- Issing, O., "The Development of Monetary Policy in the 20th Century - Some Reflections", *Revue bancaire et financière*, Juin 2010.
- Issing, O., *Lessons for Monetary Policy: What Should the Consensus Be?*, IMF Working Paper 11/97, April 2011.
- Issing, O., Gaspar, V., Angeloni, I., Tristani, O., *Monetary Policy in the Euro Area*, Cambridge 2001.
- Kahneman, D., "A perspective on judgment and choice: Mapping bounded rationality". *American Psychologist*, 2003.
- Kim, H.J., Shin, H.S. and Yun, J., *Monetary Aggregates and the Central Bank's Financial Stability Mandate*, March 15, 2012.
- King, M. A., "Monetary Policy Instruments. The UK Experience", *Bankhistorisches Archiv*, Beiheft 27, Frankfurt 1994.
- Kohn, D. L., "Monetary Policy and Asset Prices", in: European Central Bank, ed., *A Journey from Theory to Practice*, Frankfurt 2007.

- Kydland, F. and Prescott, E., "Rules Rather than Discretion: The Inconsistency of Optimal Plans", *Journal of Political Economy*, June 1977.
- Lucas, R.E., *Monetary Neutrality*, *Journal of Political Economy*, 1996.
- Lucas, R.E., and Sargent, T., "After Keynesian Macroeconomics", in: Lucas, R.E. and Sargent, T., eds., *Rational Expectations and Econometric Practice*, Reprint, Allen and Unwin 1981.
- Malliaris, A. G., *Asset Bubbles, Central Banks and Investments*, in: Evanoff, D. D., Kaufmann, G. C., and Malliaris, A. G., *New Perspectives on Asset Price Bubbles: Theory, Evidence, and Policy*, Oxford 2012.
- Meltzer, A., *A History of the Federal Reserve, Vol. 2, Book 2, 1970-1986*, Chicago 2009.
- Mishkin, F. S., "Will Monetary Policy Become More of a Science", NBER Working Paper No. 13 566, 2007.
- Mishkin, F. S., "Will Monetary Policy Become More of a Science", in: Deutsche Bundesbank, ed., *Monetary Policy over Fifty Years*, London 2009.
- Mishkin, F. S., "Monetary Policy Strategy: Lessons from the Crisis, " prepared for the ECB Central Banking Conference, Frankfurt, November 18–19, 2010,.
- Morris, S. and Shin, H. S., "Social Value of Public Information", *American Economic Review*, December 2002.
- Orphanides, A., "Monetary Policy Rules and the Great Inflation", *American Economic Review*, May 2002.
- Orphanides, A. and Wieland, V., "Economic Projections and Rules of Thumb for Monetary Policy", *Federal Reserve Bank of St. Louis, Review*, July/August 2008.
- Orphanides, A. *New Paradigms for Central Banking?*, Working Paper 2011-6
- Papademos, L. D., "The 'Great Crisis' and Monetary Policy: Lessons and Changes", in *Oesterreichische Nationalbank, 37th Economic Conference*, 2009.
- Papademos, L. D. and Stark, J., eds., *Enhancing Monetary Analysis*, Frankfurt 2010.
- Reinhart, C. and Rogoff, K., *This Time is Different: Eight Centuries of Financial Folly*, Princeton 2003.
- Rogoff, K., "The Optimal Commitment to an Intermediate Monetary Target", *Quarterly Journal of Economics*, November 1985.
- Romer, C. D. and Romer, D. H., *The Evolution of Economic Understanding and Postwar Stabilization Policy*, NBER Working Paper 9274, October 2002.
- Simons, M., "Rules versus Authorities in Monetary Policy", *Journal of Political Economy*, February 1936.
- Stock, J. H. and Watson, M. W., *Understanding Changes in International Business Dynamics*, NBER Working Paper 9859, July 2003.

- Svensson, L. E. O., Flexible Inflation Targeting - Lessons from the Financial Crisis, De Nederlandsche Bank, Amsterdam 2009.
- Taylor, J. B., ed., Monetary Policy Rules, Chicago 1999.
- Taylor, J. B., "Housing and Monetary Policy", in: The Federal Reserve Bank, ed., Housing, Housing Finance, and Monetary Policy, 2007.
- Walsh, C., "Optimal Contracts for Central Bankers", American Economic Review, March 1995.
- Walsh, C., "The Contribution of Theory to Practice in Monetary Policy: Recent Developments", in: ECB, ed., A Journey from Theory to Practice, Frankfurt 2007.
- Wellink, N., "Experience Gained with Monetary Policy Instruments in the Netherlands", Bankhistorisches Archiv, Beiheft 27, Frankfurt 1994.
- White, W. R., "Should Monetary Policy 'Lean of Clean'?", Center for Financial Studies, Frankfurt May 27, 2009.
- White, W. R., "Some Alternative Perspectives on Macroeconomic Theory and Some Policy Implications", The Mayekawa Lecture, Monetary and Economic Studies, November 2010.
- Wieland, V., "Next Hike End of 2014: FOMC Matches Historical Responses to Member's Forecasts and Risks Repeating Earlier Mistakes, House of Finance, Policy Platform, White Paper, February 2012.
- Winkler, B., Which Kind of Transparency? On the Need for Clarity in Monetary Policy-Making, ECB Working Paper No. 26. August 2000.
- Woodford, M., "Interest and Prices", Princeton 2003.
- Woodford, M., "Inflation Targeting and Financial Stability", Columbia University, November 10, 2011.

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