



SPEECH

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■ Inflation targeting after the financial crisis^{*}

As the world economy begins to recover from the financial crisis and the resulting deep recession of the global economy, there is a lively debate about what caused the crisis and how the risks of future crises can be reduced. Some blame loose monetary policy for laying the foundation for the crisis and there is a lively debate about the future of monetary policy and its relation to financial stability. Here I will discuss the lessons for inflation targeting after the crisis. My view is that the crisis was not caused by monetary policy but mainly by regulatory and supervisory failures in combination with some special circumstances. Ultimately, my main conclusion for monetary policy from the crisis so far is that flexible inflation targeting, applied in 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. But a better theoretical, empirical and operational understanding of the role of financial factors in the transmission mechanism is urgently required and needs much work, work that is already underway in academia and in central banks.

So I will focus on two particular issues: whether monetary policy caused the crisis and what the possible lessons for future monetary policy are.¹

Best practice before the crisis: flexible inflation targeting

It is probably not a surprise to hear that I consider flexible inflation targeting the best-practice monetary policy. The Riksbank and all the other inflation-targeting central banks conduct *flexible* inflation targeting rather than *strict* inflation targeting. Flexible inflation targeting means that monetary policy aims at stabilizing *both* inflation around the inflation target and the real economy, whereas strict inflation targeting aims at stabilizing inflation *only*, without regard to the stability of the real economy, what Mervyn King (1997) has described as being an “inflation nutter”. By stabilizing the real economy I mean stabilizing resource utilization around a normal

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¹ I have previously discussed these issues in Svensson (2009 b).

level, keeping in mind that monetary policy cannot affect the long-term level of resource utilization.²

Because of the time lags between monetary-policy actions and their effect on inflation and the real economy, flexible inflation targeting is more effective if it relies on forecasts of inflation and the real economy. Therefore, flexible inflation targeting can be described as “forecast targeting”: the central bank chooses a policy-rate path so that the forecast of inflation and resource utilization “looks good.” By a forecast that looks good I mean a forecast for inflation and resource utilization that effectively stabilizes both inflation around the inflation target and resource utilization around a normal level. In the event of conflicting objectives, it achieves a reasonable compromise between the stability of inflation and the stability of resource utilization. Different central banks express this in slightly different words. The Riksbank has often used the term “well-balanced” monetary policy.³

The forecasts of inflation and the real economy are then conditional on the central bank’s view of the transmission mechanism, an estimate of the current state of the economy and a forecast of important exogenous variables. The central bank uses all relevant information that has an impact on the forecast of inflation and the real economy. In this framework, the central bank takes financial conditions such as credit growth, asset prices, imbalances, potential asset price bubbles and so on into account only to the extent that they have an impact on the forecast of inflation and resource utilization. Inflation and resource utilization are target variables, that is, variables that the central bank tries to stabilize. Financial conditions are not target variables. Instead, they are only indicators, as they provide information to the central bank about the state of the economy, the transmission mechanism and exogenous shocks. Financial conditions then affect policy rates only to the extent that they have an impact on the forecast of inflation and resource utilization.⁴

Now, is there any reason to modify this view of monetary policy given the experience of the financial crisis so far? Let me approach this question by first asking what the causes of the financial crisis were, whether monetary policy contributed to the crisis, and whether a different monetary policy was warranted and could have prevented or reduced the size of the crisis.

The financial crisis was not caused by monetary policy

Many have claimed that excessively easy monetary policy by the Federal Reserve after 2001 helped cause a bubble in house prices in the U.S., a bubble whose inevitable bursting proved to be a major source of the financial crisis.⁵ However, as I see it, the crisis was mainly caused by factors that had very little to do with monetary policy and were mostly due to background macro conditions, distorted incentives in financial markets, regulatory and supervisory failures (also when central banks have

² The term “inflation nutter” for a central bank that is only concerned about stabilizing inflation was introduced in a paper by Mervyn King at a conference in Gerzensee, Switzerland, in 1995 and later published as King (1997). The terms “strict” and “flexible” inflation targeting were to my knowledge first introduced in a paper of mine presented at a conference at the Bank of Portugal in 1996, later published as Svensson (1999).

³ The idea that inflation targeting implies that the inflation forecast can be seen as an intermediate target was introduced in King (1994). The term “inflation-forecast targeting” was introduced in Svensson (1997), and the term “forecast targeting” in Svensson (2005). See Woodford (2007a, b) for more discussion and analysis of forecast targeting.

⁴ Several central banks that do not call themselves inflation targeters effectively do conduct flexible inflation targeting, although they may not be quite as transparent about their inflation target, the role of stability of the real economy, etc.

⁵ See, for instance, Taylor (2007).

■ been responsible for regulation and supervision), information problems and some specific circumstances, including the U.S. housing policy to support home ownership for low-income households.⁶

The *macro conditions* preceding the crisis included low world real interest rates associated with global imbalances, as well as the Great Moderation, with a long period of very stable growth and stable low inflation, which led to a systematic underestimation of risk and very low risk premia in financial markets. There were *distorted incentives* for commercial and investment banks to increase leverage that were made possible by lax regulation and supervision and the lack of an appropriate bank resolution regime. There were also distorted incentives to exercise less due diligence in loan origination because of securitisation and to conduct regulatory arbitrage by setting up off-balance-sheet entities, which for various specific reasons ended up still effectively remaining on the balance sheet. There were also distorted incentives for traders and fund managers to take excessive risks because of myopic and asymmetric remuneration contracts. There were eventually enormous *information problems* in assessing the risks of extremely complex asset-backed securities, and there was a huge underestimation of the potential for correlated systemic risks. None of these causes had anything to do with monetary policy, except that monetary policy may have contributed to the Great Moderation.

Regarding the role of Federal Reserve monetary policy in the crisis, there are two relevant questions. First, was the low interest rate reasonable given the information available at the time? Second, could a different monetary policy with higher interest rates have prevented the crisis? The first question, whether the low interest rate was reasonable given the available information, is the relevant one when evaluating monetary policy. It is more relevant to evaluate policy taking into account the information available *ex ante* to the policymaker rather than information *ex post* that was unknown to the policymaker at the time (see Svensson, 2009a, on evaluating monetary policy *ex ante* and *ex post*).⁷ During the period in question, given the information available, there was a genuine and well-motivated fear of the U.S. falling into a Japanese-style deflationary liquidity trap, and the optimal policy in such a situation is a very expansionary monetary policy.⁸ It may be that, in retrospect, the risk of deflation was exaggerated, but there was no way to know this *ex ante*. Hence, I consider the expansionary policy very appropriate. Adding some *ex post* evaluation, one can note that it did not lead *ex post* to very high inflation or an overheated economy.⁹

The second question, whether a different monetary policy could have prevented the crisis, is relevant when assessing to what extent monetary policy can be blamed for causing the crisis, notwithstanding if it was reasonable from an *ex ante* perspective. The credit growth and the housing boom in the U.S. and elsewhere were very powerful. Real interest rates were low to a large extent because of global imbalances, the global saving glut and investment shortage. I believe that somewhat higher interest rates would have made little or no difference. Empirical evidence indicates that only

⁶ See Bean (2009) for an extensive and excellent discussion of the crisis, including the credit expansion and housing boom, the macroeconomic antecedents, the distorted incentives, the information problems, the amplification and propagation of the crisis into the real economy, the policy responses and the lessons for monetary policy and economics generally. The Bank for International Settlements (2009) provides a more detailed account of the possible macro- and microeconomic causes of the crisis.

⁷ I remember this period very vividly, because I was fortunate to have the opportunity to discuss and debate the problems of current monetary policy, deflation and liquidity traps in a group of great economists at Princeton University that included Ben Bernanke (before he left to be a Governor on the Federal Reserve Board), Alan Blinder, Paul Krugman, Chris Sims and Michael Woodford.

⁸ See Svensson (2003) for a discussion of policy options before and in a liquidity trap.

⁹ Bernanke (2010) shows that Fed policy rates do not seem excessively low given real-time FOMC forecasts.

■ a small portion of house-price increases can be attributed to monetary policy.¹⁰ Bernanke (2010) shows that the recent phenomenon of a higher share of adjustable-rate mortgages was unlikely to have significantly increased the sensitivity of house prices to monetary policy. The availability of new, more exotic mortgage types mattered much more for initial mortgage payments than the level of short-term interest rates. In my view, interest rates would probably have had to be raised very high so as to cause considerable damage to the real economy in order to stop the credit growth and housing boom.¹¹ That could have thrown the U.S. right into Japanese-style deflation and eventually a liquidity trap. Certainly, higher interest rates would have had no impact on the regulatory problems, distorted incentives and information problems mentioned above (although they could have ended the Great Moderation with a deep recession and deflation).¹²

However, going beyond the Fed's actual monetary policy, perhaps it is possible that the Fed's emphasis on its readiness to relax monetary policy aggressively in the wake of a sharp fall in asset prices, as expressed by Greenspan (2002) for example, may have induced expectations of a floor under future asset prices and contributed to the asset-price boom, the so-called Greenspan put (Miller, Weller and Zhang, 2002). Arguably, this is more of a communication issue than one of actual policy, and less emphasis on the readiness to clean up after a sharp fall in asset prices might have been a preferable alternative.

The International Monetary Fund (2009, Chapter 3) has investigated the role of monetary policy in causing financial crises. A large number of countries and financial crises were included in the sample. The conclusion is that "the stance of monetary policy has not generally been a good leading indicator of future house price busts... There is some association between loose monetary policy and house price rises in the years leading up to the current crisis in some countries, but loose monetary policy was not the main, systematic cause of the boom and consequent bust." Furthermore, the overall relationship between the stance of monetary policy and house-price appreciation across countries in the years before the current crisis is statistically insignificant and economically weak, and monetary policy differences explain only about 5 percent of the variability in house price appreciation across countries.¹³

Lessons for flexible inflation targeting

What conclusions can we draw so far from the financial crisis about the conduct of monetary policy and any need to modify the framework of flexible inflation targeting? One obvious conclusion is that price stability is not enough to achieve financial stability (Carney 2009, White 2006). Good flexible inflation targeting by itself does not achieve financial stability, if anyone ever believed that. Specific policies and instruments are needed to ensure financial stability.

Another conclusion is that interest-rate policy is not enough to achieve financial stability. Other instruments like supervision and regulation, including appropriate bank resolution regimes, should be the first choice for financial stability. In many countri-

¹⁰ See Del Negro and Otrok (2007), Jarocinski and Smets (2008), Edge, Kiley, and Laforge (2008), and Iacoviello and Neri (2008).

¹¹ See Nyberg (2010) for similar arguments.

¹² Kohn (2008), after extensive discussion, concludes that there is insufficient evidence that low interest rates would have contributed much to the house-price boom and that higher interest rates would have had much dampening effect on it.

¹³ The relationship for the Euro area countries is less weak, but for reasons explained by Bernanke (2010) it is potentially overstated.

es, the responsibility for these instruments rests on authorities other than the central bank. Generally, to the extent financial instability depends on specific distortions, good regulation should aim to attack these distortions as close to the source as possible. To counter the observed procyclicality of existing regulation, macro-prudential regulation that is contingent on the business cycle and financial indicators may need to be introduced to induce better financial stability. Possible macro-prudential regulation includes variable capital, margin, and equity/loan requirements. As expressed by Bean (2009), “the best approach is likely to involve a portfolio of instruments”.¹⁴

More generally, what is the relation between financial stability and monetary policy? Financial stability is an important objective of economic policy. A possible definition of financial stability is a situation when the financial system can fulfil its main functions (of submitting payments, channelling saving into investment and providing risk sharing) without disturbances that have significant social costs. I find it helpful to conceptually distinguish financial-stability policy from monetary policy. Different economic policies and policy areas, such as fiscal policy, labor market policy, structural policies to improve competition, etc., can be distinguished according to their objectives, the policy instruments that are suitable for achieving the objectives, and the authority or authorities controlling the instruments and responsible for achieving the objectives. Monetary policy in the form of flexible inflation targeting has the objective of stabilizing both inflation around the inflation target and resource utilization around a normal level. The suitable instruments are under normal circumstances the policy rate and communication, including possibly a published policy-rate path and a forecast of inflation and the real economy. In times of crisis, as we have seen during the current crisis, other more unconventional instruments can be used, such as fixed-rate lending at longer maturities, asset purchases and foreign-exchange intervention to prevent currency appreciation. The authority responsible for monetary policy is typically the central bank.

Financial-stability policy has the objective of maintaining or promoting financial stability. The available instruments are under normal circumstances supervision, regulation and financial-stability reports with analyses and leading indicators that may provide early warnings of stability threats. In times of crisis, there are instruments such as lending of last resort, variable-rate lending at longer maturities, special resolution regimes for financial firms in trouble, government capital injections and so forth. The responsible authority or authorities vary across countries. In some countries it is the central bank, in other countries there is a separate financial supervisory authority, sometimes the responsibility is shared between different institutions. In Sweden, the Financial Supervisory Authority is responsible for supervision and regulation, the Riksbank is responsible for lending of last resort to solvent banks and for promoting a safe and efficient payment system, while the National Debt Office is responsible for the resolution of failed banks. During times of crisis, these authorities cooperate closely with the Ministry of Finance.

My point here is that financial-stability policy and monetary policy are quite different, with different objectives, instruments and responsible authorities, the latter with considerable differences across countries. This does not mean that there is no interaction between them. Financial stability directly affects the financial markets, and financial conditions affect the transmission mechanism of monetary policy. Problems in financial markets may have a drastic effect on the real economy, as the current financial crisis has shown. Monetary policy affects asset prices and balance sheets and can thereby affect financial stability. But the fact that financial-stability policy

¹⁴ Nyberg (2010) provides more discussion of macroprudential regulation and regulation reform.

■ and monetary policy are conceptually distinct, with distinct objectives and distinct suitable instruments, has to be taken into account when considering the lessons of the financial crisis for monetary policy. In particular, it makes little sense to extend the mandate of monetary policy to include financial stability.¹⁵

What are the specific conclusions for flexible inflation targeting? One important lesson from the financial crisis is that financial factors may have a very strong and deteriorating effect on the transmission mechanism, making standard interest-rate policy much less effective. This motivates more research on how to incorporate financial factors into the standard models of the transmission mechanism used by central banks. A rapidly-increasing volume of such research is now being produced by academic and central-bank researchers and presented at an increasing number of conferences on financial factors and monetary policy. Important and challenging questions include how potential output and neutral real interest rates are affected by financial factors and financial distortions (Curdia and Woodford 2009, Walsh 2009), and what impact financial factors have on the general equilibrium effects of alternative policy-rate paths on inflation and resource utilization forecasts.¹⁶

Even with much better analytical foundations concerning the role of financial factors in the transmission mechanism, there will of course, as always, be considerable scope for the application of good judgment in monetary policy.

Another conclusion, which is not new, is that consideration of the impact of financial factors on the forecast of inflation and resource utilization may require longer forecast horizons. Several inflation-targeting central banks (including the Bank of England, Norges Bank and the Riksbank) have for other reasons already extended their forecast horizon from the previously common two years to three years. There is nothing that in principle prevents an inflation targeter from considering forecasts beyond a three-year horizon, but in practice there is usually little information about anything at longer horizons except the tendency to revert to the long-term average.

What about “leaning against the wind” (as advocated by, for instance, Borio and White, 2003, and Cecchetti, Genberg and Wadhvani, 2002), the idea that central banks should raise the interest rate more than what appears to be warranted by inflation and resource utilization to counter rapid credit growth and rising asset prices? It has sometimes not been quite clear whether advocates of leaning against the wind mean that credit growth and asset prices should be considered targets and enter the explicit or implicit loss functions alongside inflation and resource utilization, or whether they mean that credit growth and asset prices should still be considered just indicators and are emphasized only because credit growth and asset prices may have potential negative effects on inflation and resource utilization at a longer horizon. In the latter case, leaning against the wind is a way to improve the stability of inflation and resource utilization in the longer run. Then it is completely consistent with flexible inflation targeting.¹⁷

¹⁵ However, conceptually distinguishing the two policy areas does not rule out that there might be advantages of to keeping a large part of the responsibility for financial-stability policy within the central bank, as argued by, for instance, Blinder (2010) and Nyberg (2010).

¹⁶ Walsh (2009) points out that when financial factors cause distortions, these distortions will in general introduce corresponding terms in a loss function for monetary policy that is a second-order approximation to household welfare. Curdia and Woodford (2009) present a model where the second-order welfare approximation is a standard quadratic loss function of inflation and the output gap between output and potential output, but where potential output is affected by financial factors. Then inflation and the output gap remain the target variables, with and without financial factors. The neutral rate in the model, that is, the real rate consistent with output equal to potential output, is then also affected by financial factors.

¹⁷ Adrian and Shin (2007, 2009) argue, in a model with a risk-taking channel as in Borio and Zhu (2008), that short interest-rate movements may have considerable effects on the leverage of securities broker-dealers in the

■ However, in line with the previous discussion, instruments other than interest rates are likely to be much more effective in avoiding excessive credit growth and asset-price booms, and should thus be used as a first best alternative. Interest rates that are high enough to have a noticeable effect on credit growth and asset prices may have strong negative effects on inflation and resource utilization, and a central bank will probably rarely have sufficient information about the likely beneficial longer-horizon effects on inflation and resource utilization for the trade-off to be worthwhile and motivated.¹⁸

In particular, if there is evidence of rapidly-rising house prices and mortgage loans, and these developments are deemed to be unsustainable and a possible bubble, there are much more effective instruments than policy rates. Restrictions on loan-to-value ratios and minimum mortgages and requirements of realistic cash-flow calculations for house buyers with realistic interest rates are much more effective in putting a break on possible unsustainable developments than a rise in the policy rates. In particular, more transparency about future policy rates, in the form a policy-rate path published by the central bank, may help in providing realistic information about future interest rates.

Ultimately, my main conclusion from the crisis so far is that flexible inflation targeting, applied in 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. But a better theoretical, empirical and operational understanding of the role of financial factors in the transmission mechanism is urgently required and needs much work, work that is already underway in academia and in central banks.

The outcome might very well be that financial factors are considered to have a larger role in affecting the transmission mechanism and as indicators of future inflation and resource utilization. If so, central banks would end up responding more to financial indicators, in the sense of adjusting the policy rate and policy-rate path more to a given change in a financial indicator. However, this would not mean that financial factors and indicators have become independent targets besides inflation and resource utilization in the explicit or implicit central-bank loss function. Instead, it would be a matter of responding appropriately to financial indicators in order to achieve the best possible stabilization of inflation around the inflation target and resource utilization around a normal level over time.

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market-based financial sector outside the commercial-banking sector. However, new regulation may affect the magnitude of these effects, and the size of the market-based financial sector may end up being smaller after the crisis. In Europe, the commercial banks dominate the financial sector.

¹⁸ Kohn (2006, 2008) specifies three conditions that should be fulfilled for central banks to take "extra action" to deal with a possible asset-price bubble: "First, policymakers must be able to identify bubbles in a timely fashion with reasonable confidence. Second, a somewhat tighter monetary policy must have a high probability that it will help to check at least some of the speculative activity. And third, the expected improvement in future economic performance that would result from the curtailment of the bubble must be sufficiently great." He concludes, also in 2008 and after thorough considerations, that those conditions would rarely be met. See also Kohn (2009).

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