

Two Decades of Inflation Targeting: Main Lessons and Remaining Challenges

CLAES BERG, KERSTIN HALLSTEN, VIRGINIA QUEIJO VON HEIDEKEN AND ULF SÖDERSTRÖM

Claes Berg holds a PhD in economics and is senior advisor to the Governor of the Riksbank, Kerstin Hallsten holds a PhD in economics and is senior advisor to the General Secretariat, Virginia Queijo von Heideken holds a PhD in economics and is an economist at the Monetary Policy Department and Ulf Söderström holds a PhD in economics and is head of the Modelling Division of the Monetary Policy Department.

Introduction

In June 2013, the Riksbank arranged an international conference to mark 20 years of inflation targeting in Sweden. The four papers presented at the conference are published in this special issue.

Today, around 30 central banks worldwide work with floating exchange rates and a numerical target for inflation.¹ The pioneers include New Zealand and Canada, which introduced inflation targeting in 1990 and 1991, respectively. The UK and Sweden introduced inflation targeting early on (in 1992 and 1993, respectively) following the breakdown of their fixed exchange rate regimes. Several emerging market economies switched to inflation targeting in the latter half of the 1990s, such as the Czech Republic (1997), Korea (1998) and Brazil (1999). In recent years, two major advanced economies have introduced inflation targeting – the US (2012) and Japan (2013) – by specifying a numerical target for inflation and starting to publish inflation forecasts.

Inflation-targeting monetary policy comprises several parts. The main purpose is to achieve price stability. The inflation target is numerical and publicly known.² The central bank produces and publishes inflation forecasts and adapts monetary policy to attempt to reach the target. Monetary policy also generally aims to achieve stability in the real economy, which is sometimes expressed as “flexible” inflation targeting. Some central banks, including the Riksbank, also publish projections for the policy rate, which are deemed to provide an appropriate balance between stabilising inflation and stabilising the real economy. Inflation-targeting central banks are typically independent, transparent in their assessments and stand publicly accountable for their decisions. The purpose of an inflation-targeting regime is to facilitate economic decisions by establishing a high degree of confidence in low inflation, low inflation volatility and a stable real economy.

In countries that have introduced inflation targeting, inflation has been low and inflation expectations clearly anchored around the target.³ Stable inflation expectations have meant that various temporary shocks, such as major fluctuations in the oil price and exchange

1 See Hammond (2012) for an overview of the regulations in various inflation-targeting countries.

2 Most advanced economies have opted for inflation targets around 2 per cent, while emerging market economies may have a slightly higher target, often around 4-5 per cent.

3 Svensson (2010).

rates, have had limited effects on inflation.⁴ This has been achieved without GDP growth becoming more volatile. Table 1 compares key macroeconomic variables in countries with different monetary policy regimes. Inflation-targeting countries fare well in this comparison, particularly inflation-targeting emerging market economies. Since 2000, fluctuations in inflation, GDP growth and inflation expectations have been lower in emerging market economies with an inflation target than in countries without an inflation target. The more stable development in inflation-targeting emerging market economies is even clearer during the period since 2007, which includes the global financial crisis. In advanced economies, the differences between countries with and without inflation targets are smaller. This is probably because monetary policy in several major currency areas (e.g. the US and the euro area) has in practice worked in a way similar to the inflation-targeting countries.⁵

Table 1. Macroeconomic variables in countries with inflation targets and other countries

	INFLATION				INFLATION EXPECTATIONS				GDP GROWTH			
	2000-2006		2007-2012		2000-2006		2007-2012		2000-2006		2007-2012	
	MEAN	ST. DEV.	MEAN	ST. DEV.	MEAN	ST. DEV.	MEAN	ST. DEV.	MEAN	ST. DEV.	MEAN	ST. DEV.
Inflation-targeting advanced economies	2.20	1.38	2.30	1.60	2.12	0.24	2.25	0.51	2.99	1.63	1.26	2.53
Non-inflation-targeting advanced economies	1.47	0.70	1.41	1.59	1.44	0.24	1.29	0.55	1.97	1.66	0.40	3.38
Inflation-targeting emerging market economies	4.14	1.19	4.50	1.76	4.29	0.73	4.19	0.54	4.51	1.80	3.65	3.85
Non-inflation-targeting emerging market economies	7.29	3.01	5.25	2.72	7.33	2.69	4.65	1.20	7.13	4.50	4.13	5.53

Note. The mean and standard deviation are calculated as an unweighted annual average in each group. Inflation and GDP growth are based on the quarterly percentage change calculated in annualised terms of seasonally-adjusted CPI and real GDP. Inflation expectations refer to the average of the current and the following years' inflation forecasts in per cent according to Consensus Forecast. Inflation-targeting advanced economies: Australia, Canada, New Zealand, Norway, the UK and Sweden. Non-inflation-targeting advanced economies: Denmark, the euro area, Japan, Switzerland and the US. Inflation-targeting emerging market economies : Brazil, Chile, Colombia, the Czech Republic, Hungary, Indonesia, Israel, Korea, Mexico, Peru, the Philippines, Poland, Romania, South Africa, Thailand and Turkey (Indonesia, Romania and Turkey not included, however, before 2006). Non-inflation-targeting emerging market economies: Argentina, Bulgaria, China, Croatia, Hong Kong, India, Latvia, Lithuania, Malaysia, Russia and Singapore.

Source: Banerjee, Cecchetti and Hofmann (2013)

Monetary policy with inflation targeting may also have provided certain advantages during the financial crisis. When production fell sharply in connection with the financial crisis, confidence in inflation targets contributed to the ability of inflation-targeting central banks to cut interest rates more than other central banks.⁶ Inflation expectations remained relatively stable during the crisis. However, countries with inflation targeting could not

⁴ Mishkin and Schmidt-Hebbel (2007).

⁵ According to the ECB's price stability target, inflation in the euro area shall be less than (but close to) 2 per cent. The ECB also attaches importance to the trend for credit aggregates in the euro area when monetary policy is determined. In 2012 the Federal Reserve announced an explicit inflation target of 2 per cent, which many experts had previously perceived to be an implicit target. Another objective of the Federal Reserve is striving to achieve maximum employment.

⁶ Carvalho-Filho (2011).

avoid being affected by the crisis. A key lesson learned is therefore that price stability in itself is no guarantee for countries to avoid the impact of financial crises. Low, stable inflation forms a basis for financial stability, but does not suffice. Risks in the financial system can build up nevertheless. A discussion is thus under way about whether central banks, besides stable inflation and a stable real economy, also ought to aim at reducing the risk and costs of financial crises.⁷ At the same time, extensive efforts are being made to introduce new macroprudential tools to curb risk-taking and make the financial system more resilient.

Against this backdrop, the four papers presented at the conference described monetary policy experiences and challenges.

The first challenge is about the trade-off between stabilising inflation and the real economy, and how this trade-off affects monetary policy decisions. It also addresses how the effects of monetary policy can be estimated and evaluated. These matters have been under discussion for a long time and are addressed in the papers of Lars Svensson and Michael Woodford, both of whom have played a key role in developing the framework for “flexible” inflation targeting.

The second challenge is about how monetary policy decisions can best be communicated to the public. Transparency and clarity have always formed an important part of inflation targeting, but there are differences in the degree of openness between different central banks. Even before the crisis, some central banks started to publish their view on future monetary policy (i.e. the policy rate), while others have provided less information. The financial crisis and subsequent sluggish recovery have, however, prompted many more central banks to opt for clarifying their own intentions regarding future monetary policy. In their papers, Lars Svensson and particularly Michael Woodford discuss how central banks communicate monetary policy.

The third challenge is about how monetary policy is affected by financial imbalances and the introduction of new macroprudential tools. Before the financial crisis, the view of many was that monetary policy should focus on stabilising inflation and possibly the real economy, but it should not take explicit account of financial imbalances and risks to financial stability. The financial crisis has called this view into question. Lars Svensson and, in particular, Frank Smets discuss these matters in their papers. Smets analyses the relationship between monetary policy and financial stability and also describes different perspectives on the role of central banks in achieving financial stability.

The fourth challenge relates to how financial globalisation affects the possibility of conducting domestic oriented autonomous monetary policy. The matter relates to what economists call the “trilemma” of the economy, i.e. that there are three jointly unattainable objectives: monetary policy independence, fixed exchange rates and free capital mobility. There is, for instance, empirical support for the view that, with free capital mobility, countries with floating exchange rates have greater possibilities of conducting autonomous

⁷ See e.g. Woodford (2012) and Svensson (2012).

monetary policy than those with stable exchange rates. Linda Goldberg discusses in her paper the role of banking globalisation in the possibility of conducting independent monetary policy.

Conference papers

LESSONS FROM PRACTICAL MONETARY POLICY

The first paper, "Some Lessons from Six Years of Practical Inflation Targeting" was written by Professor **Lars E.O. Svensson**, Deputy Governor of the Riksbank from May 2007 to May 2013. Svensson summarizes his experiences from his time at the Riksbank into six lessons.

The first lesson is that the central bank must be clear about its mandate and not diverge from this. The Riksbank's monetary policy mandate is characterised as "flexible" inflation targeting,⁸ which Svensson specifies as the Riksbank seeking to achieve price stability and the highest sustainable employment – an interpretation based on the preparatory work for the Sveriges Riksbank Act. A clear monetary policy objective leads to more systematic monetary policy and facilitates evaluation, which is necessary for an independent central bank. In order not to neglect inflation targeting, monetary policy should focus on keeping average inflation over a longer period on target. Svensson also argues that the deviation of unemployment from a long-run sustainable level is the best measure of resource utilisation, and that monetary policy should thus focus on stabilising unemployment around an estimated long-run sustainable level (which is determined by factors independent of monetary policy). Compared with other measures of resource utilisation (e.g. the deviation of GDP from a long-run sustainable trend), the long-run unemployment level is easier to estimate, and high unemployment has clearer effects on people's well-being.

A second lesson is that monetary policy should not use household indebtedness as an additional target variable besides price stability and the highest sustainable employment. Recently, a majority of the Riksbank's Executive Board voted in favour of an unchanged repo rate, even though a lower rate would have meant CPIF inflation approaching the target faster, and lower unemployment. Svensson argues that this policy, "leaning against the wind", has involved unnecessarily tight monetary policy for a long time, leading to unnecessarily low inflation and high unemployment. He argues that a higher repo rate does not have any major effects on household debt in the short run (and perhaps even leads to *higher* real indebtedness and debt ratio to disposable income). But in the long run, actual inflation and expected inflation below the inflation target will lead to a higher real debt in the form of an unexpected and unwanted capital loss for borrowers, in comparison with inflation in line with the target. Also, interest rate changes are not an efficient instrument in affecting household debt; different types of microprudential and macroprudential instruments are more appropriate.

8 See Sveriges Riksbank (2010).

Svensson's third lesson is that inflation targeting based on forecasts of inflation and resource utilisation (unemployment) should in practice be carried out in two steps. In the first step, forecasts are made under the assumption that the repo rate path is kept unchanged since the last decision. This shows how new information since the previous decision affects the economy. In the second step, the rate path that leads to the best trade-off between inflation and resource utilisation (unemployment) is selected. This trade-off can be formalised using mean squared gaps, which measure the average squared deviation of the inflation forecast from the inflation target and the unemployment forecast from the long-run sustainable level.⁹

A fourth lesson is about how to evaluate monetary policy *ex ante* and *ex post*. *Ex ante*, i.e. when the monetary policy decision is to be made, different monetary policy alternatives can be evaluated by assessing how the inflation forecast stands in relation to the inflation target, and how the resource utilisation forecast stands in relation to its normal level. The deviations can be measured using mean squared gaps. *Ex post*, i.e. after the fact, the monetary policy conducted can be evaluated by analysing, using counterfactual experiments, how different monetary policy would have affected the economy. Svensson has himself used four-panel graphs at monetary policy meetings to show how alternative interest rate paths lead to different inflation and resource utilisation forecasts. He has also used counterfactual experiments to illustrate how more expansionary monetary policy would have affected the economy.¹⁰

Svensson's fifth lesson is about the classic trade-off in monetary policy between inflation and unemployment. According to mainstream economic theory, there is a short-term relationship between inflation and unemployment – lower unemployment is linked to higher inflation and vice versa – so a trade-off in monetary policy can arise between these two objectives, but in the long term there is no such relationship. However, if the inflation target is credible and inflation expectations are stable at the target, a long-term relationship emerges between inflation and unemployment, and hence so too a trade-off in monetary policy. Svensson argues that it is then very important that inflation is not below the inflation target on average for a long period of time, because unemployment would then be higher than normal.¹¹ Between 1997 and 2011, average CPI inflation in Sweden was 1.4 per cent, i.e. 0.6 percentage points below the inflation target. Svensson notes that, despite this, inflation expectations have been stable around the target and he estimates that the average low inflation has therefore led to unemployment being around 0.8 percentage points higher than necessary. Svensson's conclusion is that it is important to keep average inflation over a longer period in line with the target – a monetary policy strategy that resembles price level targeting.

Svensson's sixth lesson is that central banks should not confuse monetary policy and "financial policy", i.e. policy aimed at securing financial stability. Instead, central banks

9 See the article "A method for comparing different monetary policy alternatives" in Sveriges Riksbank (2012).

10 Svensson (2013).

11 See Svensson (2013) for a detailed account and Guibourg, Nilsson and Söderström (2013) for a summary.

should use monetary policy to achieve its monetary policy objectives (price stability and the highest possible employment), and financial policy to maintain financial stability. If the two areas are confused, the central bank risks poorer fulfilment for both targets. This does not mean that monetary policy does not affect financial stability, and that financial policy does not affect monetary policy objectives. Under normal circumstances, however, it is more efficient to separate the two policy areas. This is in line with the government's decision to give Finansinspektionen (The financial supervisory authority) the main responsibility for various macroprudential instruments in Sweden.

Eric Leeper, professor at Indiana University and advisor to the Riksbank, discussed Svensson's article at the conference. Leeper focused on the interplay between monetary policy and financial stability and, in particular, household debt. He began by referring to his own research on the sustainability of fiscal policy. Sustainable fiscal policy is fundamental to successful monetary policy, and the reforms to the fiscal policy framework in Sweden in the 1990s have likely been an important reason for the stable economic development since then.

Fiscal policy is sustainable when the government's future possibilities of collecting taxes are greater than expected total expenditures. If this is not the case, there is a risk of hitting a "fiscal limit," defined as the maximum expected present value of primary fiscal surpluses. As a country's level of government debt approaches the distribution of the fiscal limit, the probability rises that fiscal policy becomes unsustainable. In addition, at the fiscal limit monetary policy is not able to meet the inflation target as private agents anticipate that the only way to reduce the real value of sovereign debt is through high inflation. In such situations, monetary policy is exposed to "fiscal dominance".

Leeper extended this conceptual framework to household indebtedness and pointed out that households' possibility of holding debt partly depends on the cost of the debt burden (i.e. the interest rate), but also on their expected future income. The policy discussion about household indebtedness focuses primarily on the cost of holding debt, and on the fact that a lower interest rate increases total household debt and thus makes households more vulnerable to shocks. However, monetary policy also affects households' future income; in the medium term, a lower interest rate increases economic activity and hence household income. This strengthens households' ability to hold debt. Monetary policy thus affects households' vulnerability in different ways, and the overall effect is ambiguous.

In addition, fiscal policy affects households' income in the longer term too, for instance, through the tax and pension system. A tightening of fiscal policy which is intended to make fiscal policy more sustainable, e.g. through higher taxes or lower pensions, could at the same time reduce household income and make households more vulnerable in the long run. More sustainable fiscal policy could thus reduce the sustainability of household indebtedness.

Leeper therefore drew the conclusion that a comprehensive conceptual framework for analysing household indebtedness and the effects of monetary policy on households' debt must also take into account the stance of fiscal policy and macroprudential policy.

CHALLENGES FOR MONETARY POLICY COMMUNICATION

The second article, “Forward Guidance by Inflation-Targeting Central Banks” is written by **Michael Woodford**, professor at Columbia University and scientific advisor to the Riksbank.

Woodford analyses how inflation-targeting central banks ought to communicate to the public about their policy intentions. He first discusses communication about how the interest rate is set to meet the target, and describes how central bank communication about this has become more sophisticated over time. When inflation targeting was introduced, it was common for central banks to base their inflation projection on the assumption that the policy rate would be kept unchanged throughout the projection period. Such an assumption is generally not internally consistent, however, as the resulting projections about inflation and the real economy may themselves imply that the interest-rate target should be expected to change, if the same sort of forecast-targeting procedure is employed in the future. In most cases, private agents (for example, financial market participants) will understand that the interest rate will be changed in the future. Their expectations and decisions (which determine how the economy develops) would then be based on a different view of monetary policy than that which forms the basis of the central bank’s projections. To avoid this problem, many central banks began basing their inflation projections on market expectations of the future path of short-term interest rates. However, Woodford points out that, even with such an assumption, a problem still persists in monetary policy communication, because in practice the view of the central bank of the future rate path may differ from that of financial market participants. Uncertainty then persists about the reasoning behind policy decisions. Woodford argues that the risk of being misunderstood by market participants can be decreased if the central bank is clearer about its own intentions regarding future policy. The central bank should therefore publish its own policy rate projection. Woodford also discusses how the policy rate path should ideally be based on criteria for how inflation approaches the target and how the real economy is stabilised.

Woodford discusses the Riksbank’s method of communicating using repo rate projections, which have been published since 2007. During the initial years, communication of the rate path is deemed to have worked relatively well. There have sometimes been substantial deviations between the Riksbank’s rate path and monetary policy expectations in financial markets. This could be due to the fact that the repo rate projection is a “forecast”, and not a “promise” of the future policy rate, while at the same time market participants may hold a different view of inflation and the real economy than the Riksbank. The gap between the Riksbank’s forecasts and market expectations may, however, be narrowed by increasing market confidence in the rate path. This could be achieved through the Riksbank strengthening its commitment to pursuing a clearly specified approach to making interest rate decisions, that is in turn assumed in its repo rate projections.

Woodford also discusses the special advantages of increasing the explicitness of a central bank’s policy commitments and enhancing the transparency of decision-making at a time when the policy rate reaches its lower bound, while at the same time the economy requires further stimulus. A clearly binding commitment from the central bank can then contribute

to influencing expectations about economic developments in a positive direction. In this context, Woodford gives particular attention to the type of inflation and unemployment thresholds introduced by the Federal Reserve and Bank of England for facilitating the understanding of monetary policy.¹² He sees advantages in conditioning the future rate path upon how the economy develops. However, at the same time he raises questions about whether formulating this conditionality in terms of thresholds for unemployment and inflation expectations is the best approach. In particular, he questions how clear such an approach may be in practice, e.g. if inflation and unemployment give opposite signals about how the thresholds affect the interest rate decision. An alternative approach that he recommends would be to base monetary policy on a target for the path of nominal GDP. This would mean making statements about the economy's future evolution that would represent a promise rather than merely a projection, though no promise would be made about the specific rate path that the policy would require.

John Williams, President of Federal Reserve Bank of San Francisco, discussed Woodford's article at the conference. Williams pointed out that, during the past decade, the Federal Reserve has become increasingly transparent in how it communicates its views of future monetary policy. Williams also noted that there is empirical support for the view that the Federal Reserve's monetary policy forward guidance influences the market's view of future policy rates.¹³ At the same time, however, it is important to be aware of the fact that, in practical monetary policy, there are certain limitations. Central bank communication is given limited media space, which calls for simplified clarity on a few points, rather than a comprehensive description of policy. Also, there are many different views held within the FOMC (Federal Open Market Committee) and it is difficult to describe a "consensus" policy reaction function. Instead, the FOMC communicates through multiple channels: a consensus statement about longer-run goals and policy principles, FOMC policy statements and minutes, quarterly policy projections based on individual assessments of appropriate monetary policy, as well as speeches and testimony to Congress. Much of the communication therefore focuses on turning points, such as the timing of an interest rate lift-off from near zero and the scaling down of the Federal Reserve's asset purchases, rather than a more general monetary policy reaction function.

12 The FOMC (Federal Open Market Committee) stated in December 2012 that [the current] exceptionally low range for the federal funds rate will be appropriate at least as long as unemployment remains above 6.5 per cent, inflation between one and two years ahead is projected to be no more than a half percentage point above the Committee's 2 per cent longer-run target and longer-term inflation expectations continue to be well anchored. The MPC (Monetary Policy Committee) of the Bank of England stated in August 2013 that it did not intend to raise the policy rate or reduce asset purchases until unemployment had fallen to a "threshold" of 7 per cent. However, the proposition linking the policy rate and asset sales to the unemployment threshold would cease to hold if any of the following three "knockouts" were breached: in the MPC's view, it is more likely than not that CPI inflation 18 to 24 months ahead will be 0.5 percentage points or more above the 2 per cent target; medium-term inflation expectations no longer remain sufficiently well anchored; or the FPC (Financial Policy Committee) judges that the stance of monetary policy poses a significant threat to financial stability that cannot be contained by the substantial range of mitigating policy actions available to the FPC, the Financial Conduct Authority and the Prudential Regulation Authority in a way consistent with their objectives.

13 Swanson and Williams (2012).

As for a nominal GDP target, as Woodford advocates, Williams agreed that it has several theoretical advantages. Such a monetary policy target would probably be robust to uncertainty in terms of the long-term sustainable unemployment rate level and uncertainty about the functioning of the economy.¹⁴ A nominal GDP target would also ease economic recovery when the interest rate approaches zero, as indicated by Woodford.¹⁵ Monetary policy communication could also benefit because a nominal GDP target imposes a “balanced approach” to monetary policy (equal weights being given to the price level target and the target for stabilising the real economy).

But there are, according to Williams, also a number of practical problems in using a nominal GDP level as a monetary policy target. One problem is that GDP statistics are revised quarterly, even far back historically. It could therefore be difficult to conduct and communicate monetary policy in a way that is consistent over time. In addition, unanticipated shifts in potential output growth would for example translate into persistent deviations of inflation from the desired target. This could contribute to a difficult challenge for the central bank. Another problem with nominal GDP targeting is that it relies on a credible commitment to not let “bygones be bygones”. In practice, it might be difficult to communicate that temporary deviations from the inflation target in one year will affect monetary policy in subsequent years.

MONETARY POLICY AND FINANCIAL STABILITY

The third article, “Financial Stability and Monetary Policy: How Closely Interlinked?” is written by **Frank Smets**, Director General of the Directorate General Research of the European Central Bank, ECB.

The paper starts by describing the financial imbalances that emerged in the euro area in the 2000s. A lesson learned from the events of that period is that achieving price stability does not suffice to achieve financial stability. Moreover, financial instability can complicate the ability of monetary policy to achieve price stability. The experience also shows that banking crises are often protracted and very costly. It therefore does not suffice for policymakers to focus on cleaning up after a crisis – instead preventive policy measures are called for in order to avoid a crisis emerging.

Since the financial crisis, a consensus view has therefore emerged that a new macroprudential policy framework must be bolstered to increase resilience in the financial sector and reduce the risk of financial cycles. The implications of the crisis for the monetary policy framework are, however, more debated, according to Smets. Some argue for minimal changes to the pre-crisis framework, while others argue for a radical rethink, giving financial stability and price stability equal weights as monetary policy objectives. Smets distinguishes three views in the literature. He calls them: (i) the “modified Jackson Hole consensus”, (ii) “leaning against the wind vindicated”, and (iii) “financial stability is price stability”.

¹⁴ Orphanides and Williams (2002, 2006).

¹⁵ Williams (2006).

The “modified Jackson Hole consensus” view argues in favour of only slight changes to the framework, with the central bank keeping its relatively narrow mandate of maintaining price stability and stabilizing resource utilisation, whereas macroprudential authorities should pursue financial stability, with each having their own instruments. In this view, monetary policy should only care about financial stability to the extent that it affects the outlook for inflation and resource utilisation. This resembles the view argued by Lars Svensson in his paper.

The “leaning against the wind vindicated” view is that macroprudential policy cannot fully address the financial cycle, and that this cycle interacts with the business cycle in complicated and often non-linear ways. This implies that, while inflation stabilization should remain the primary objective of monetary policy, the central bank cannot avoid keeping an eye on financial stability as a secondary objective. In this view, the central bank should lean against the build-up of financial imbalances by raising the policy rate by more than would be justified on the basis of the short-run inflation outlook, in order to reduce the probability of a financial crisis later on. Practically, this can be done by extending the policy horizon, as the financial cycle is typically longer than the business cycle. In this approach, central banks may thus face additional trade-offs, which will require increased credibility of the medium-term inflation target.

The final view, “financial stability is price stability”, involves a more radical reshaping of the traditional inflation targeting framework for monetary policy. This view argues that financial stability and price stability are so intimately intertwined that it is impossible to make a distinction. It assumes that monetary policy is fundamentally about stabilising the financial system, leaning against emerging financial imbalances in the boom and addressing malfunctioning markets and unclogging the monetary transmission process in the bust.

Smets argues that which view one is likely to adhere to depends on the answers one gives to the three following questions: (a) how effective is the new macroprudential policy framework in maintaining financial stability?; (b) what is the impact of monetary policy on financial stability?; and (c) what is the risk of “financial dominance”, i.e. a situation in which financial stability concerns dominate monetary policy considerations and undermine the credibility of the central bank’s price stability objective.

On the first question, both the literature and the actual country experiences in advanced economies are relatively scant. Overall, the relatively few empirical studies that analyse the effectiveness of various macroprudential tools support their effectiveness in dampening fluctuations in the financial cycle. Recent negative country experiences, such as in Spain, show, however, also that the extent to which such tools significantly curb overall systemic risk is still unclear. The effectiveness of macroprudential policies will also depend on the ability to avoid regulatory arbitrage, i.e. attempts by the financial sector to circumvent regulatory measures, and to coordinate such policies internationally.

Regarding the second question, views on the effectiveness of monetary policy in addressing financial stability vary. On the one hand, Smets refers to the literature that indicates that monetary policy does affect risk-taking in the financial system. Keeping

interest rates low for a long period may sow the seeds of financial instability by increasing the risk-taking especially of banks with low capital buffers. On the other hand, a number of studies have highlighted the collateral damage to the real economy that may arise from attempts to curb risk-taking by raising policy rates. According to Smets, there is a need for further research, e.g. on the potential non-linear relationships between interest rate changes, lending and house prices, to reconcile those different views.

Finally, on the last question Smets presents an analytical framework to illustrate the risk of “financial dominance” if macroprudential authorities fail to take sufficient measures to curb credit growth (e.g. due to political pressures) and thereby shift the burden of maintaining financial stability to the monetary authority. The financial crisis has clearly demonstrated that central banks have a unique role as lenders of last resort; i.e. in times of financial stress they can provide liquidity support to prevent a bank from being forced to suspend payments, and thereby avoid the contagious effects throughout the system. This role as crisis manager gives central banks an incentive to attempt to prevent the occurrence of financial crises. At the same time, this role can also give rise to problems because expectations emerge about the central banks always acting in a crisis, which increases the risk of having to intervene. Smets discusses different ways of reducing this risk.

Based on this review, Smets concludes that the “leaning against the wind” view may be the most reasonable view at the current stage. First, while macroprudential tools should form the first line of defense against the building up of financial imbalances, the macroprudential policy framework is still under construction, and its effectiveness in avoiding systemic crises is as yet unproven. Second, there are signs that monetary policy interacts with variables linked to the emergence of financial imbalances, such as lending, liquidity and risk-taking. Third, as lenders of last resort, central banks cannot avoid having to deal with financial stability in crisis times. Moreover, a number of monetary policy measures are closely associated with macroprudential tools. However, in order to mitigate the risk of overburdening monetary policy and undermining its credibility, Smets finds it is important that price stability remains the primary objective of monetary policy and that a lexicographic ordering is introduced with financial stability as a secondary objective. This would enable the central bank to lean against the wind as needed, while at the same time the primary focus on price stability is maintained in the medium to long run.

Stefan Gerlach, Deputy Governor of the Central Bank of Ireland, discussed Smets’ paper during the conference. He started by saying that he agreed with most of what Smets writes about. He then chose to focus on four aspects in his presentation: the euro area, fiscal policy, another implication of the risk-taking channel and, finally, the question of the risk of a central bank not meeting its inflation target.

First of all, he discussed whether the choice between using monetary policy and macroprudential policy differs for the euro area and other currency areas. He stated that there are many arguments for using macroprudential policy in the euro area. For instance, if financial imbalances arise in just one country, this cannot be addressed by the common monetary policy. The imbalances must be managed by national macroprudential policy.

This also ensues from the mandate held by the European Central Bank, ECB. The ECB is to contribute to financial stability, but this is not its primary objective – that is instead price stability. Financial stability and macroprudential policy should primarily be addressed by national authorities.

The fact that the financial system in the euro area is bank-based also suggests that the use of macroprudential policy in addressing financial imbalances is justified.¹⁶ In the opposite case – that of a market-based financial system – monetary policy might be more justified, because it then works on a broader front and reaches more parts of the financial system. Gerlach furthermore noted that fiscal policy is not mentioned in the paper. Fiscal policy is of importance, because it can often give rise to financial imbalances since, for instance, a tightening of fiscal policy might prove hard when asset prices are rising rapidly. In his view, monetary policy is not suitable for addressing rapidly increasing house prices. One reason is that the real costs (in terms of e.g. GDP or employment) can be high if monetary policy needs tightening to curb house prices. The advantage of macroprudential policy in this case is that the measures can be more focused.

Gerlach did not find the risk-taking channel to be an argument against expansionary monetary policy. Overly high risk-taking at banks is mainly due to banks being insufficiently capitalised. The effects of expansionary monetary policy on the risk-taking of banks can then be counteracted by higher capital requirements and better supervision of poorly capitalised banks.

Finally, Gerlach argued against the idea that inflation can get too high if monetary policy also focuses on financial stability. Such a risk is motivated by the fact that monetary policy can be forced into a highly expansionary mode in connection with a financial crisis. In his opinion, however, the risk is rather the opposite. If a financial crisis emerges, conducting a sufficiently expansionary monetary policy would be difficult. The risk instead is that of inflation being below the target. In Gerlach's view, this suggests that monetary policy should maintain its focus on price stability.

MONETARY POLICY WITH GLOBAL BANKS

The fourth article, "Banking Globalization, Transmission, and Monetary Policy Autonomy" is written by **Linda S. Goldberg**, Vice President of Financial Intermediation at the Federal Reserve Bank of New York.

Goldberg departs her analysis from the "international policy trilemma" i.e. that there are three desirable but jointly unattainable objectives: monetary policy autonomy, stable exchange rates and free capital mobility. Free capital mobility might force a country to relinquish either the stable exchange rate or monetary policy autonomy. The country

¹⁶ There is a tradition of differentiating between bank-based and market-based financial systems by analysing measures that relate the size of financial markets to the assets or lending of banks. In such an analysis, Germany for instance is considered to have a bank-based financial system, while the UK and US have market-based financial systems. There are signs, however, that the differences between these two types of system have diminished over time.

may choose to keep monetary policy autonomy and free capital mobility by introducing a floating exchange rate, as Sweden has done. Another alternative is to relinquish monetary policy autonomy and introduce a currency board to address the stable exchange rate, as Lithuania has done, or support a fixed exchange rate, as Denmark had done vis-à-vis the euro. A third alternative is to limit international capital mobility. By curbing cross-border capital mobility, for example through the use of binding capital controls, monetary policy can be conducted independently of other countries while the exchange rate is stable.

Earlier empirical research provides some support for the trilemma. Countries with stable exchange rates have, for instance, less freedom in monetary policy than other countries. Countries with floating exchange rates or capital controls have greater possibilities of conducting autonomous monetary policy.

Goldberg's article discusses the role of the globalisation of banks in the possibility of conducting domestic-oriented monetary policy. First Goldberg provides evidence on the changing form and scale of global banking in recent decades. She then argues that the establishment of banks' subsidiaries and affiliates in other countries can reduce financial frictions in international capital markets. In that sense, the increased globalisation of banks can contribute to greater capital mobility and exacerbate the trilemma – especially in countries with stable exchange rates. At the same time, global banking achieved through branches and affiliates established in another country can increase the information that the parent bank has about its counterparties in lending and other transactions. Enhanced information content in capital flows could contribute to greater stability in lending, especially in connection with financial stress, which can weaken the trilemma, rather than enhance it. The form and function of the global bank's activities in a country should matter for the trilemma outcomes.

Expanding on the literature, Goldberg conducts empirical tests of the trilemma and analyses the co-movement of the short nominal interest rate in a country with the interest rate in a country to which the home country has some degree of *de facto* or *de jure* exchange rate pegs. She studies how the choice of the exchange rate regime, capital controls and global bank presence in the first country affect the degree of interest rate co-movement. The results show that in countries with pegged exchange rate regimes, rate co-movement is higher and monetary policy is more dependent on the monetary policy of the pegged country. However, she finds less clear support than earlier studies for the view that countries with capital controls have more autonomous monetary policy than other countries. Goldberg also finds some support for the view that the presence of global banks affects interest rate co-movement. Both for countries with pegged and flexible exchange rates, there is an increase in rate co-movement in countries where foreign banks account for a large proportion of lending. This result is especially strong for economies that already have a high degree of capital account openness. However, the statistical explanatory power does not increase much when variables that are to capture the scope of global bank presence are added. According to Goldberg, this results arises because global banks conduct their business very differently across the countries that serve as their hosts. The

overall effect of the globalisation of banks on the possibility of conducting autonomous monetary policy will depend on the degree and information-intensity of lending in host markets, especially relative to the overall international activities of the global banks hosted by a country.

Karolina Ekholm, Deputy Governor, Sveriges Riksbank, discussed Goldberg's paper at the conference.

Ekholm considered that the way banking globalization affects central bank policy is an important and under-researched issue, most likely partly due to a lack of relevant data. From a central bank perspective, the globalization of banks raises many questions that are not necessarily related to the autonomy of monetary policy. For instance, banking globalization could be a reflection of "too-big-to fail": banks become global because by becoming large they get a stronger insurance from taxpayers. If so, one could wonder whether a SIFI surcharge (the amount of extra capital that will have to be held by systemically important financial institutions) is sufficient to deter "excessive" globalization. On the other hand, Ekholm wondered whether uncertainties regarding the recovery and resolution of cross-border banks could be so large that there is "too little" globalization. She added that an issue that emerged in connection with the financial crisis 2008-2009 was the difficulty to determine global banks' real need for liquidity support and thereby the difficulty to avoid creating opportunity for arbitrage. These banks have access to liquidity from more than one central bank.

Ekholm also stressed that to evaluate monetary policy autonomy, it is important to address how monetary policy abroad affects expectations of domestic monetary policy and what role the exchange rate plays in shaping those expectations. Even with a completely flexible exchange rate, the co-movement in policy rate expectations might be strong simply because market participants find it unlikely that the monetary policy authorities would welcome exchange rate movements brought about by increased interest rate differentials.

Although she considered Goldberg's analysis important, she found it difficult to draw strong conclusions given some limitations in the analysis. Among those, she mentioned that the analysis focuses solely on the host country perspective, it ignores the nationality of foreign banks and in particular whether they originate in the country to which there is some degree of *de facto* or *de jure* exchange rate peg, and there may be endogeneity problems affecting the econometric estimations. She suggested that it could be useful to quantify the results by simulating the response to interest rate changes abroad for particular type of countries, such as for instance the Baltic States, which have had fixed exchange rates and their banking sectors dominated by foreign banks.

Last, Ekholm mentioned that it could be interesting to include macroprudential policy in the analysis, since such policy is sometimes used in order to create more monetary policy autonomy in countries with exchange rate pegs. She speculated that a possible result could be that the presence of global banks would make such policy less effective.

Editors' comments

WHAT ROLE CAN FORWARD GUIDANCE PLAY IN INCREASING THE UNDERSTANDING OF MONETARY POLICY?

The papers presented at the conference gave rise to several discussions. A key area discussed was how monetary policy forward guidance of central banks can affect the economy, and how such guidance should be implemented.

During the financial crisis, most central banks cut their policy rates to historically low levels, and in many countries policy rates reached what is considered to be their lower bound. In order to make monetary policy more expansionary despite the inability to cut the policy rate further, central banks have started to use two different strategies. Many central banks have introduced quantitative easing, purchasing great volumes of financial assets (e.g. government bonds or mortgage bonds) in order to raise asset prices and stimulate the economy. Many central banks have also become clearer in their forward guidance for monetary policy.¹⁷

In the past year, both the Federal Reserve and the Bank of England have announced their intention to keep the policy rate low at least until unemployment comes down to a certain level (6.5 per cent in the US and 7 per cent in the UK), as long as they see no risks to price stability or (in the Bank of England's case) financial stability. The idea is to influence long-term interest rates by convincing households, companies and financial market participants that monetary policy will be expansionary for a long time. By linking any policy rate increases to economic development, the central bank's "reaction function" (i.e. how it reacts to the economy) is also clarified.

Similar communication has been used by other central banks on various occasions both before and after the financial crisis. For example, in April 1999 the Bank of Japan announced that it would keep the policy rate low until the risk of deflation was considered to be over, and when the policy rate of the Federal Reserve reached 1 per cent during the 2003-2004 recession, it was announced that monetary policy would be expansionary for a long period of time.

The Riksbank has, like the Reserve Bank of New Zealand, Norges Bank and the Czech central bank, gone further by publishing policy rate forecasts for the coming years. In this way, the central banks are clear about how they believe monetary policy will develop ahead.¹⁸ In addition, the Riksbank (and other central banks) publishes alternative scenarios showing how monetary policy could react if the economy develops differently to the way it does in the main scenario. This serves to illustrate the central bank's reaction patterns.

The Riksbank's communication can thus be considered more general than that used by e.g. the Federal Reserve and the Bank of England. The communication of these central

17 Söderström and Westermarck (2009) describe various monetary policy alternatives when the policy rate has reached its lower bound.

18 Since January 2012, the Federal Reserve's Federal Open Market Committee (FOMC) has been publishing information about how the various members believe the policy rate will develop in the coming three years.

banks is focused on describing monetary policy at the lower bound of the policy rate, and attempts to communicate a simple rule for when the central bank will start to increase the rate. The Riksbank's choice to publish an interest rate path is a more general strategy that can be used in all circumstances, irrespective of the policy rate level. And, together with alternative scenarios for macroeconomic developments, the Riksbank attempts to provide a more comprehensive presentation of the fundamentals of monetary policy, and describe how various shocks affect the economy and monetary policy. The Riksbank's strategy of publishing an interest rate path could also be used if the rate were to reach its lower bound, for describing the circumstances in which rate increases could commence. This was actually done in 2009-10 when the repo rate was at 0.25 per cent, which was considered to be the lower bound by the Riksbank's Executive Board. At the time, alternative scenarios were published describing circumstances which could cause the repo rate to be increased earlier than in the main scenario, later than in the main scenario, or even be cut to below 0.25 per cent.

However, it is possible that the guidance used by the Federal Reserve and the Bank of England is more effective at the lower bound, because it clearly ties changes in monetary policy to a handful of observable macro variables (unemployment and inflation).¹⁹ This resembles the tradition of describing monetary policy in terms of a simple rule for the policy rate, such as a Taylor rule and, like for a simple rule, there are pros and cons. Simplicity can be good and increase clarity in monetary policy, but reality is naturally more complicated. Therefore, both the Federal Reserve and Bank of England have announced that, in certain circumstances, they may increase the policy rate even if unemployment has not reached its threshold, for instance if inflation is too high or (in the Bank of England's case) if financial stability is considered to be under threat. Moreover, both central banks have pointed out that they monitor a broad array of indicators to assess labour market developments.

The Riksbank's communication is more general and could therefore be perceived as less clear, but it can take into account many different relevant factors. How monetary policy reacts to the development of a certain macroeconomic variable generally depends on why the variable has developed in a certain way, i.e. which underlying shock has affected the economy. This is often illustrated in the alternative scenarios published in the Monetary Policy Report. Adding to that, the Riksbank's strategy is useful whatever the state of the economy, irrespective of the repo rate level.

HAS MONETARY POLICY IN SWEDEN CONTRIBUTED TO UNNECESSARILY HIGH UNEMPLOYMENT?

Another key question is whether inflation targeting in Sweden has contributed to unnecessarily high unemployment, as maintained by Lars Svensson in his paper. At the same time as actual inflation has on average been below the target, inflation expectations, which have formed the basis for wage contracts, have been stable at around 2 per cent.

¹⁹ At the conference, John Williams stressed the advantages of providing guidance in a simple manner.

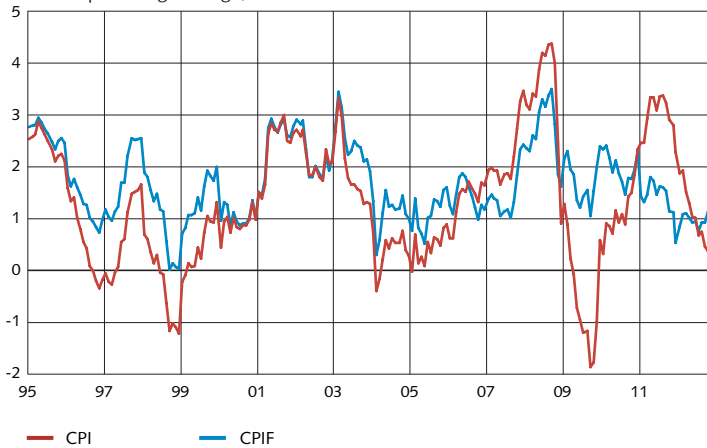
If over a long period of time actual inflation is below the inflation target while wage demands are based on expectations of inflation being close to the target, real wages for the employed might be higher and employment lower, even in the long run. This rationale is supported by traditional macroeconomic theory.

There is, however, reason for exercising caution when estimating the long-term Phillips curve and interpreting the results.

First, the choice of inflation measure can be discussed. Svensson bases the analysis on CPI inflation. After the introduction of the inflation target in Sweden, the general level of interest rates has been much lower than before. Lower interest rates have led to lower costs for housing and housing costs are included in the CPI. Housing costs are measured by the interest rate costs of households for their mortgages. When the Riksbank cuts the policy rate to stimulate the economy, this leads to lower mortgage rates and hence lower CPI inflation in the short term. Because the general level of interest rates has fallen for a long time, this effect is not only temporary in nature. In order to study the relationship between inflation and unemployment, there may therefore be a reason to discount the effects of falling interest rates on the CPI by using CPIF inflation (the CPI with a fixed rate of interest). Then, inflation averages 1.7-1.8 per cent since 1995, which is much closer to the target than CPI inflation (see Figure 1).²⁰

Figure 1. CPI inflation and CPIF inflation 1995-2012

Annual percentage change, revised data. The CPIF is the CPI with a fixed interest rate.



Source: Statistics Sweden

Second, there are econometric difficulties in estimating a long-term Phillips curve. At the beginning of the 1970s, Robert Lucas and Thomas Sargent published fundamental criticism of econometric estimates based only on one equation, because a valid test involves several equations of a complete model of the economy. According to Benati (2012), this criticism

²⁰ See Andersson, Palmqvist and Österholm (2012) for an in-depth analysis of the Riksbank's attainment of the inflation target over a longer period of time.

may also apply to the estimates made by Svensson. Benati claims that inflation over time has become less persistent in countries with a credible inflation target, which adds to the unreliability of estimates of the relationship between unemployment and inflation. Even in an economy with a long-run vertical Phillips curve (such that there is no long-term relationship between inflation and unemployment), an estimate based on only one equation that relates inflation to unemployment may, according to Benati's calculations, lead to the incorrect conclusion that the Phillips curve is flat (sloping downwards) and that there is a long-term relationship.

Other economists have pointed out that the relationship in the Phillips curve is only valid in the long term if it is assumed that inflation expectations are constant – an assumption that is not explicitly tested in Svensson's paper.²¹ In addition, different measures of inflation expectations behave differently over time. While survey data from Prospera (used by Svensson) are stable around the inflation target, inflation expectations for the corporate sector as measured by the National Institute of Economic Research's survey are more variable over time.²²

It is thus difficult to interpret the relationship between unemployment and inflation as a causal link. In practice, many different factors can affect inflation, unemployment and other real economic variables in the long run. Since the beginning of the 1990s, inflation in Sweden has been much lower than previously, while GDP growth has increased slightly. However, it is not only the inflation target and monetary policy that have contributed to this. The Swedish economy has also been affected by joining the EU, a more stable regulatory fiscal policy framework, new rules and regulations for wage formation and the deregulation of various product markets. Adding to that, globalisation and increased competition curbed inflation in several countries during the decades preceding the financial crisis that started in 2008.

Inflation and unemployment are thus affected by different types of shocks on both the supply and demand side. This speaks in favour of using an econometric model with more relations for analysing the role that monetary policy has played since the inflation target became credible. Using the Riksbank's macroeconomic model Ramses, the development of inflation since 1995 can be explained as follows.²³

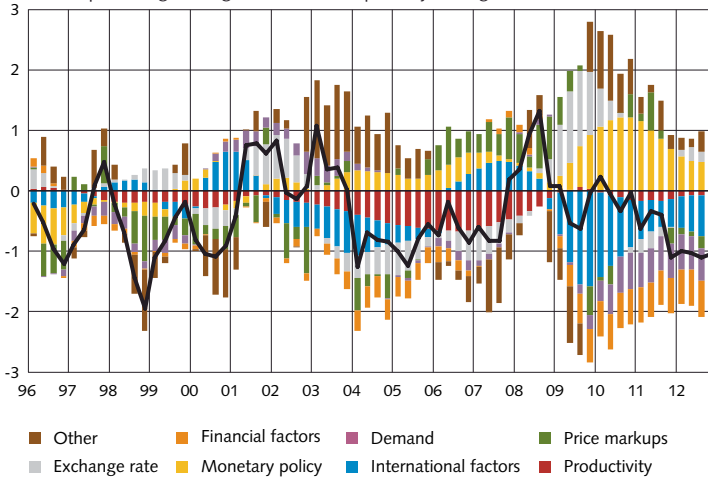
Figure 2 shows how the deviation of CPIF inflation from 2 per cent can be broken down into a number of exogenous shocks according to Ramses. Inflation was low mainly in 1998–2000, 2004–07, 2009 and 2012. According to the model, the low inflation can mainly be explained by unexpectedly strong productivity (the red bars). We can also see that developments abroad have kept a lid on inflation during several periods, mainly 2002–2005 and from 2009 onwards (the blue bars). At the same time, the model shows that monetary policy has contributed to buoying inflation by being more expansionary than normal (the yellow bars) for a long time.

21 See also Guibourg, Nilsson and Söderström (2013).

22 Flodén (2012).

23 Söderström and Vredin (2013).

Figure 2. Historical explanation of CPI inflation's deviation from two per cent since 1995 according to the Riksbank's macro model Ramses
Annual percentage change, revised data, quarterly averages.



Source: Söderström and Vredin (2013)

The main reason for inflation being low since 1995 is therefore, according to the model, that productivity has been unexpectedly strong. If productivity rises faster than expected, it can contribute to increased unemployment in the short term. Companies can produce the same volume of goods or services with a slimmer workforce. However, in the longer term, increased productivity leads to the ability of companies to pay higher salaries and employ more people, which stimulates demand, boosts employment and reduces unemployment. The model also shows that unexpectedly strong productivity developments have contributed to keeping unemployment below its long-term trend.²⁴ However, developments abroad have led to higher unemployment. The conclusion is that productivity has contributed to keeping a lid on both inflation and unemployment, while developments abroad have curbed inflation and increased unemployment. The relationship between inflation and unemployment is therefore not stable over time, but is affected by the shocks to which the economy is exposed.

It is thus difficult to estimate how low average inflation has affected employment and unemployment. Yet this is an important question for inflation-targeting central banks. Inflation expectations being well anchored around the inflation target is a major success for inflation targeting, because the economy is then less vulnerable to shocks. At the same time, however, well-anchored expectations make it important for the central bank to avoid inflation falling below the target for long periods of time, because this could have negative effects on, for instance, employment.

²⁴ Söderström and Vredin (2013).

HOW IS MONETARY POLICY AFFECTED BY FINANCIAL IMBALANCES AND THE INTRODUCTION OF NEW MACROPRUDENTIAL TOOLS?

A third question discussed in many of the papers is how monetary policy is affected by financial imbalances and the introduction of new macroprudential tools. There is an international consensus view that microprudential policy must be bolstered while, at the same time, new macroprudential tools are being introduced to make the financial sector more resilient and reduce the risk of financial crises. Macroprudential tools are normally divided into structural tools, i.e. those intended to reduce the structural risks in the financial sector, and cyclical tools intended to vary over time, e.g. the countercyclical capital buffer. Internationally, the European macroprudential body – the ESRB (European Systemic Risk Board), has a key role. For instance, the ESRB has issued a recommendation on intermediate targets and macroprudential instruments in the EU countries. This helps provide the EU countries with a carefully considered and similar toolbox.

However, views about how macroprudential policy should be organised and its implications for monetary policy diverge between different countries. In some countries, central banks have been assigned a key role in macroprudential policy, while in other countries they have been given a less prominent role.

In the UK, there is a specific committee responsible for macroprudential policy in the Bank of England – the FPC (Financial Policy Committee). The central bank Governor and two Deputy Governors are members of both the FPC and MPC (Monetary Policy Committee), which is a way of promoting coordination between monetary policy and macroprudential policy. A reason for why such coordination might be needed is that monetary policy and macroprudential policy to a great extent operate through the same channels. Both the policy rate and several macroprudential tools affect credit growth and asset prices, for example.

In Sweden, the government has proposed that Finansinspektionen (The financial supervisory authority) be given the main responsibility for the macroprudential tools, including the countercyclical capital buffer. The government has also proposed that a formalised financial stability council be established, comprising the Minister for Financial Markets and the heads of Finansinspektionen, the Riksbank and the National Debt Office. The council is to be a forum with meetings recorded by minutes, but not a decision-making body. In the council, risks in the financial system and views on appropriate measures for managing and counteracting such risks will be discussed.

It is not expected that the new macroprudential policy order will affect the Riksbank's formal tasks and objectives. The Riksbank will still maintain price stability and promote a safe and efficient payment system, i.e. in practice promote the stability of the financial system. The Riksbank will also support the objectives of general economic policy, the purpose of which is to achieve sustainable growth and high employment. This gives the Riksbank a key role also in the future in terms of ensuring sustainable and stable macroeconomic developments.

It can also be noted, however, that in Sweden it will not be possible to coordinate macroprudential policy and monetary policy as closely as in the UK.²⁵ The introduction of new macroprudential tools will nevertheless affect the fundamentals for monetary policy. But how they will be affected and at which rate is difficult to ascertain at present. As indicated by Smets, there is still only limited experience of how macroprudential policy works in practice. Academic research in the area is in its infancy in terms of both empirical and theoretical studies.

Even when macroprudential policy is in place, however, monetary policy might have a role in counteracting financial imbalances, in line with Smets' "leaning against the wind" view. One reason is that it may be hard to devise macroprudential tools that are not circumvented by innovative market participants by means of regulatory arbitrage, which aims to transfer financial operations from a regulated to an unregulated sector. An advantage of monetary policy is that it operates on a broader and more efficient front than the macroprudential tools by "getting into all of the cracks", even the parts of the financial system not covered by financial regulation.²⁶

Exactly how the interplay between macroprudential policy and monetary policy will be devised ahead is hard to know. However, as various macroprudential tools are introduced and knowledge increases about how they work in practice, the implications for monetary policy will gradually become clearer. The Riksbank will, just like before, need to follow and analyse risks and resilience in the financial system, partly to see how they affect the general economic development (and hence monetary policy) and particularly to contribute to promoting financial stability.

HOW DOES FINANCIAL GLOBALISATION AFFECT THE POSSIBILITY OF CONDUCTING AUTONOMOUS MONETARY POLICY?

A fourth question is how financial globalisation affects the possibility of conducting autonomous and domestic-oriented monetary policy. This question is linked to the economic trilemma, i.e. that there are three jointly unattainable objectives: monetary policy independence, stable exchange rates and free capital mobility.

According to Goldberg's paper, it is difficult to draw any certain conclusions about the overall effect of the globalisation of banks on the possibility of conducting domestic-oriented monetary policy. On the one hand, the establishment of banks in other countries can contribute to reducing financial frictions, which increases cross-border capital mobility and hence the risk of financial imbalances emerging. On the other hand, such establishment could involve strengthening the parent bank's control of the subsidiary's lending in another country, which could contribute to improving financial stability.

In a broader perspective, one might wonder what happens if financial globalisation and completely free capital mobility lead to real interest rates being fully equalised between

²⁵ Ingves (2013).

²⁶ Stein (2013).

different countries. Would the possibility of conducting autonomous monetary policy then disappear? Theoretically, no, because monetary policy, through effects on the exchange rate, can still influence demand and inflation.²⁷ The idea is that the difference in inflation between two countries is determined by the exchange rate. The central bank can thus announce an altered orientation in monetary policy, e.g. a change in the inflation target, which affects inflation expectations and the exchange rate. Even in a financially globalised world, it is theoretically possible for a central bank to autonomously influence inflation.

However, there is empirical research that suggests that flexibility in domestic-oriented monetary policy is limited in practice, one reason being that there is a global financial cycle that is affected by the policy rate in major currency areas.²⁸ For example, cross-border capital flows, asset prices, domestic lending and the leverage of banks are seemingly affected by monetary policy in the US. There is a certain degree of empirical support for the view that this global financial cycle poses a limitation on how autonomous monetary policy can be, whatever a country's choice of exchange rate regime.²⁹

This also means that the trilemma of the economy could be a dilemma of the economy in practice, i.e. it is difficult to combine domestic-oriented monetary policy with free capital mobility, even with a floating exchange rate. Such signs have emerged lately in several emerging market economies. The reason is the protracted process of recovery that emerged after the global financial crisis, which has contributed to the monetary policy of several advanced economies being unusually expansionary. Low policy rates and quantitative easing have kept a lid on the general interest rate level in the US and Europe, leading to capital flows to emerging market economies. This has raised the question about the risk of capital outflows from emerging market economies in connection with monetary policy starting to normalise in the US and other major currency areas. Capital outflows and a weakening of the exchange rate could then limit flexibility in monetary policy, especially in emerging market economies with large current account deficits and/or substantial debts in foreign currency.³⁰

This suggests that inflation targeting, particularly in emerging market economies, might need supplementing with different types of macroprudential measures and/or capital controls. Such measures could enable limiting the growth rate for domestic lending and risk-taking in the financial sector, particularly in the upturn phase of the global financial cycle.

²⁷ Woodford (2009).

²⁸ Rey (2013).

²⁹ Rey (2013).

³⁰ After the Federal Reserve signalled in May 2013 that asset purchases could start to be scaled down, the exchange rate of e.g. Brazil, India, Indonesia, South Africa and Turkey weakened.

Concluding remarks

Monetary policy with inflation targeting has been very successful, both in Sweden and other countries. Inflation has been low and stable, while at the same time production and employment have been high. However, the financial crisis shows that many challenges remain. The articles in this issue of the Sveriges Riksbank Economic Review discuss some important challenges, to both practical monetary policy and academic research.

References

- Andersson, Björn, Stefan Palmqvist and Pär Österholm (2012), "The Riksbank's Attainment of its Inflation Target over a Longer Period of Time," *Economic Commentaries*, 4, Sveriges Riksbank.
- Banerjee, Ryan, Stephen Cecchetti and Boris Hoffmann (2013), "Flexible Inflation Targeting: Performance and Challenges," in *Is Inflation Targeting Dead*, VoxEU.org Book, eds Lucrezia Reichlin and Richard Baldwin, Centre for Economic Policy Research.
- Benati, Luca (2012), "The Long-Run Phillips Curve," Working Paper, University of Bern.
- Carvalho-Filho, Irineu (2011), "28 Months Later: How Inflation Targeters Outperformed Their Peers in the Great Recession," *The B.E. Journal of Macroeconomics*, 11, 1, p. 1-44.
- Flodén, Martin (2012), "A Note on Swedish Inflation and Inflation Expectations," unpublished paper, September 2012.
- Guibourg, Gabriela, Christian Nilsson and Ulf Söderström (2013), "Inflation, Unemployment and Monetary Policy – New Research Findings," *Sveriges Riksbank Economic Review*, 2, p. 1-16.
- Hammond, Gill (2012), *State of the Art of Inflation Targeting – 2012*, Handbook no. 29, Centre for Central Banking Studies, Bank of England.
- Ingves, Stefan (2013), "Central Bank Policies – The Way Forward after the Crisis," speech on 4 October at Royal Bank of Scotland, Sveriges Riksbank.
- Mishkin, Frederic and Klaus Schmidt-Hebbel, "Does Inflation Targeting Make a Difference?," in *Monetary Policy under Inflation Targeting*, eds Frederic S. Mishkin och Klaus Schmidt-Hebbel, Central Bank of Chile.
- Orphanides, Athanasios and John Williams (2002), "Robust Monetary Policy Rules with Unknown Natural Rates," *Brookings Papers on Economic Activity*, 2, p. 63-145.
- Orphanides, Athanasios and John Williams (2006), "Monetary Policy with Imperfect Knowledge," *Journal of the European Economic Association*, 2-3, p. 366-375.
- Rey, Hélène (2013), "Dilemma not Trilemma: The Global Financial Cycle and Monetary Policy Independence," paper presented at the conference in Jackson Hole in August 2013, Federal Reserve Bank of Kansas City.
- Söderström, Ulf and Andreas Westermarck (2009), "Monetary Policy when the Interest Rate is Zero," *Sveriges Riksbank Economic Review*, 2, p. 5-30.
- Söderström, Ulf and Anders Vredin (2013), "Inflation, Unemployment and Monetary Policy," *Economic Commentaries*, 1, Sveriges Riksbank.
- Stein, Jeremy (2013), "Overheating in Credit Markets: Origins, Measurement and Policy Responses," Speech at "Restoring Household Financial Stability after the Great Recession: Why Household Balance Sheet Matter," Research Symposium sponsored by Federal Reserve Bank of St. Louis.
- Svensson, Lars E.O. (2010), "Inflation Targeting," in *Handbook of Monetary Economics*, Vol 3a, eds Benjamin Friedman and Michael Woodford.
- Svensson, Lars E.O. (2012), "Comment on Michael Woodford: Inflation Targeting and Financial Stability," *Sveriges Riksbank Economic Review*, 1, p. 33-39.
- Svensson, Lars E.O. (2013), "The Possible Unemployment Cost of Average Inflation below a Credible Target," unpublished paper. Available at www.larseosvensson.se.
- Sveriges Riksbank (2010), *Monetary Policy in Sweden*.
- Sveriges Riksbank (2012), *Material for Assessing Monetary Policy 2011*.

Swanson, Eric and John Williams (2012), "Measuring the Effect of the Zero Lower Bound on Medium- and Longer-Term Interest Rates," Working Paper no. 2012-02, Federal Reserve Bank of San Francisco.

Williams, John (2006), "Monetary Policy in a Low Inflation Economy with Learning," in *Monetary Policy in an Environment of Low Inflation, Proceedings of the Bank of Korea International Conference 2006*, Seoul: Bank of Korea, p. 199-228.

Woodford, Michael (2009), "Globalization and Monetary Control," in *International Dimensions of Monetary Policy*, eds Jordi Galí och Mark Gertler, University of Chicago Press.

Woodford, Michael (2012), "Inflation Targeting and Financial Stability," *Sveriges Riksbank Economic Review*, 1, p. 7-32.