

Monetary policy and financial stability – a simple story

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The depth of the recent financial crisis in many economies has forced policymakers and researchers to rethink thoroughly the connection between monetary policy and financial stability. Many argue that central banks, because of their key role in the financial system, should assume greater responsibility in preventing financial crises. Before the recent financial crisis, a common view in central banking was that, rather than deliberately leaning against potential financial imbalances, it is better to just mop up after financial crises. Because overborrowing likely contributes to financial imbalances, many now welcome the emergence of an array of micro and macroprudential policies to limit borrowing. But neither such new policies nor monetary policy can be expected to completely rule out the possibility of a financial crisis.

Introduction

In such a context, this article argues for acknowledging financial stability as an explicit objective of monetary policy, because financial stability and monetary policy are so closely linked that it is not possible to separate them. We argue that this view is based on both practical experience and economic theory, despite the still-modest progress made by economic research in integrating monetary policy and financial stability considerations. Admittedly, several difficult questions remain unanswered, and even unasked, regarding an appropriate role for monetary policy in supporting financial stability. Nevertheless, the article provides a perspective that arguably fits well with standard notions of monetary policy as found, for example, in many macroeconomics textbooks.

We begin our simple story with examples of central banks that explicitly acknowledge the importance of financial instability considerations in their monetary policy decisions. Next, we use a simple model of the central bank's decision problem to describe the connection between monetary policy and financial stability. We then consider a description of modern money markets to explain the complex channels by which monetary policy affects the economy. Finally, we review recent experience before, during and after the recent financial crisis to show the influence of monetary policy on credit conditions and risk-taking. The overall picture is of a strong connection between monetary policy and financial stability considerations.

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Central banks attach importance to financial stability

In practice, many central banks already incorporate financial stability considerations into their monetary policy frameworks.¹ A very clear example is the Bank of Canada, which states that “the Bank must also make a judgment about the most appropriate horizon for returning inflation to target, so as to minimize the economic and financial volatility that these actions may cause”.² Other central banks have made similar statements. For example, the Reserve Bank of New Zealand states much more generally that it takes into account “the soundness and efficiency of the financial system” when deciding monetary policy.³ Norges Bank has stated that it sets the policy rate such that it counteracts the build-up of financial imbalances.⁴ And the Bank of England has announced that its monetary policy decisions are related not only to how it expects inflation and unemployment to develop, but also to potential threats to financial stability.⁵

Based on these statements, it is not particularly surprising to claim that many central banks already attach special importance to financial stability. It is, however, more controversial to argue whether financial stability can be viewed as an explicit objective of monetary policy. To shed light, guidance can be sought in legislation, economic theory, and practical experience. Before proceeding, we can summarise what legislation says about Sveriges Riksbank.

The Sveriges Riksbank Act states that “the objective of the Riksbank’s activities shall be to maintain price stability. The Riksbank shall also promote a safe and efficient payments system”.⁶ This objective is entirely consistent with EU regulations, in which it is stated that the European System of Central Banks (ESCB) shall define and implement monetary policy, but also “promote the smooth operation of payment systems” and “contribute to the smooth conduct of policies pursued by the competent authorities relating to the prudential supervision of credit institutions and the stability of the financial system” (Article 127 of the EU treaty).⁷ The EU regulations thus give the national central banks a certain amount of responsibility for the payments system and the financial system.

The Riksbank equates its task regarding a safe and efficient payments system with financial stability: “A safe and efficient payments system requires a stable financial system so that payments and the supply of capital can function smoothly (...) The Riksbank has chosen to define financial stability as meaning that the financial system can maintain its fundamental functions and also has resilience to disruptions that threaten these functions” (Sveriges Riksbank, 2013a).⁸

1 This claim has been made by several others before, see for example Bryant, Henderson and Becker (2012).

2 Bank of Canada, see www.bankofcanada.ca/wp-content/uploads/2010/11/monetary_policy.pdf

3 Reserve Bank of New Zealand, see www.rbnz.govt.nz/news/2012/4941968.html

4 Norges Bank, see www.norges-bank.no/pages/88292/MPR_1_12.pdf

5 Bank of England, see www.bankofengland.co.uk/publications/Pages/news/2013/096.aspx

6 Sveriges Riksbank, see www.riksbank.se/en/The-Riksbank/Legislation/The-Sveriges-Riksbank-Act

7 European Central Bank, see www.ecb.europa.eu/ecb/tasks/html/index.en.html

8 Such an interpretation of the term financial stability is not uncommon, see Schinasi (2004).

Although there is no self-evident definition of financial stability, most policymakers and economists would agree that financial stability is important or even crucial for monetary policy.⁹ First of all, adverse shocks in financial markets are likely to curb economic activity. One prominent example is the occurrence of a banking crisis that leads to a credit crunch, a fall in aggregate demand, and thus downward pressure on inflation. Secondly, and related, disruptions in financial markets can impair the effectiveness of monetary policy in stabilising the economy. At the same time, however, how to actually predict and prevent the occurrence of a financial crisis remains controversial.¹⁰

A simple model of monetary policy and financial stability

In light of economic theory, it is reasonable to argue that central banks have good reasons to include a financial stability objective in their monetary policy frameworks. To clarify, let us consider the assignment of responsibilities for monetary policy and financial stability in the context of a simple economic model.

For example, for the sake of argument, let us consider the implications of the central bank having three explicit objectives, namely stabilising inflation and economic activity and maintaining financial stability.¹¹ Woodford (2012) explains why this may be a desirable formulation of the central bank's objectives, from a theoretical perspective. Woodford's argument is, briefly, that imperfections in credit markets may reduce welfare through mechanisms that are not fully reflected in forecasts for inflation and economic activity. Such a formulation of the central bank's objective function is also consistent with central banks' practices, judging from the policy statements presented above.

To pursue its objectives, the central bank might have two types of policy tools at its disposal. One set of instruments may be labelled monetary policy and includes the central bank's short-term interest rates on loans to banks, but possibly also other conditions for such lending. Another set of instruments may be the recently introduced macroprudential policies.¹² One example of a macroprudential policy tool is a counter-cyclical capital adequacy requirement for banks; other examples are liquidity requirements for the banks, as well as restrictions on household debt in relation to pledged assets (LTV ratios) or in relation to income (LTI ratios). In such a setting, economic theory offers some guidance as to connecting monetary policy and financial stability, as opposed to a complete division of those responsibilities among separate authorities.¹³

9 See Dudley (2013), King (2013), Ingves (2014), Stein (2014) and Yellen (2014) for more detailed discussions.

10 See, for example, Rajan (2005) for a discussion of various risk indicators and further literature references.

11 Economic research offers some guidance regarding the choice of good measures of inflation, economic activity, and financial stability. Such research also indicates that central banks should monitor a range of indicators to assess performance with respect to each objective, see Woodford (2012).

12 The arguments that follow do not rely on the existence of macroprudential tools. Similar arguments would still hold if the analyses concerned two different instruments of monetary policy instead.

13 For simple and intuitive examples, see Bryant, Henderson and Becker (2012), Cecchetti and Kohler (2012), Svensson (2012) and Woodford (2012). See Smets (2013) for a broad literature review.

In one scenario, monetary policy and macroprudential policy are coordinated. Thus, both types of policy tools (policy interest rate and macroprudential policies) are used together to pursue all three objectives (stabilising inflation and economic activity and maintaining financial stability). In this case, because the central bank ultimately has to balance its objectives, the central bank will deliberately lean against potential financial imbalances in its decisions on monetary policy, because doing so contributes to overall economic performance. As usual, it is difficult to draw straight lines between economic theory and practice. Still, a central bank that comes fairly close to this model of coordination of responsibilities is the Bank of England. In practice, the decisions on monetary policy and macroprudential policy in the Bank of England are taken by two different committees, the Monetary Policy Committee and the Financial Policy Committee, but there is an explicit aim to coordinate between monetary and macroprudential policy.¹⁴

In another scenario, by contrast, the responsibilities for different objectives are assigned to separate authorities.¹⁵ In particular, for the sake of argument, assume that the central bank's task is to use the policy interest rate to stabilise inflation and economic activity, while a separate authority uses the macroprudential policies to pursue financial stability. In this case, even though responsibilities are assigned to separate authorities, each authority has to take into account the effectiveness of both monetary policy and macroprudential policy. For example, the central bank has to factor into its policy rate decisions the potential threats to financial stability, if the degree of financial stability affects inflation and economic activity.¹⁶ At the same time, the authority in charge of macroprudential policies has to factor into its own decisions the uncertainty about the monetary transmission mechanism, if monetary policy has influence on financial stability.

A country that, at first glance, resembles to a certain extent this model of separation of responsibilities is Sweden. In fact, recent legislation in Sweden has assigned to Finansinspektionen (the Swedish Financial Supervisory Authority) the main responsibility for macroprudential policy tools. Nevertheless, a key part of the process regarding macroprudential policy in Sweden is a close cooperation between Finansinspektionen, the Riksbank, the Swedish National Debt Office, and the Government through the Ministry of Finance. Each of these authorities is assigned specific roles in the work with financial stability. At the same time, all of them are represented on the Financial Stability Council, which meets regularly to discuss issues of financial stability and how financial imbalances can be counteracted.

In both scenarios, the quantitative importance of financial stability for monetary policy, and vice versa, will of course depend on the strengths of various transmission mechanisms between disturbances to the economy and the central bank's objectives, as well as the

¹⁴ See www.bankofengland.co.uk/monetarypolicy/Documents/pdf/chancellorletter140319.pdf

¹⁵ Of course, while separate authorities could in principle coordinate, any coordination must be self-imposed.

¹⁶ This example bears resemblance with a monetary policy strategy outlined in the Riksbank's Monetary Policy Report of July 2013 (Sveriges Riksbank, 2013b), in which policy rate decisions take into account the possibility of a financial crisis occurring beyond the usual forecast horizon of two years ahead. Such a strategy is consistent with the policy recommendations given by Borio (2014).

policy response.¹⁷ However, the practical consequences for monetary policy may not be very different between the two “models” described. In both cases, it is probably optimal for monetary policy to respond to changes in the degree of financial stability, while at the same time reacting to the forecasts for inflation and economic activity. But how strong the response of monetary policy should be is a quantitative and empirical issue.

The implication from economic theory, that monetary policy should be used to promote financial stability, is entirely consistent with the roles that central banks have had within the financial system in a historical perspective, as clearly illustrated for example by Capie, Goodhart and Schnadt: “Besides their macro objective of price stability, central banks have a micro objective of maintaining financial stability, especially in the core areas of the payment system and the commercial banks who operate it”.¹⁸ One reason why central banks have been given these roles is that a stable financial system arguably is a prerequisite for an effective monetary policy. This is because the financial markets and how they function affect the impact that monetary policy has through the interest rates that households and firms have to pay on their loans. The economic consequences of a financial crisis also have a direct impact on price stability, growth and employment. Another reason is that central banks, as providers of means of payments, have the capacity to manage financial crises and other serious disruptions in the financial system to ensure that the systems of payments and credit support a well-functioning economy at large. This follows from, among other factors, the central bank’s role as a bank for the banks in normal times and occasionally as a lender of last resort: the central bank is assumed to quickly supply money to the financial system if the need arises. As noted by Smets (2013), there are even researchers who argue that, basically, price stability and financial stability are so closely linked that it is just not possible to separate these two objectives.

Based on both economic theory and the normal roles that central banks have fulfilled throughout history, it is entirely reasonable for the Riksbank to have a mandate to promote a safe and efficient payment system and for this mandate to mean that the Riksbank is responsible for promoting financial stability. But unlike the monetary policy task, the Riksbank shares its responsibility for safeguarding financial stability with other authorities.

It should be stressed that there are also arguments against giving the central bank and monetary policy responsibility for financial stability. The main argument is probably that central banks have been given a high degree of independence from the political system in order to increase the credibility of the narrower objective of price stability. Even if a broader mandate may have economic advantages, these must be weighed against possible disadvantages associated with weaker political support for independence and lowered credibility for the price stability objective. Although a detailed discussion of such issues is beyond the scope of this article, they of course remain relevant.¹⁹

17 See, for example, Gelain, Lansing and Mendicino (2013) and Jonsson and Moran (2014) for formal analyses of such issues. See Smets (2013) for further references.

18 See Capie, Goodhart and Schnadt (1994), pp 91-92.

19 For further discussions, see Bryant, Henderson and Becker (2012), Goodfriend (2012) and Smets (2013).

The role of central banks and modern money markets

So far we have limited our discussion to the implications for monetary policy of the central bank having an objective of financial stability. But we also have to discuss *how* monetary policy influences the degree of financial stability and other objectives.

Economic theory on the roles and effects of monetary policy necessarily relies on highly simplified assumptions, but those simplifications can make it difficult to understand important features of the recent financial crisis. This difficulty, in turn, makes it hard for policymakers to draw clear lessons from the financial crisis. For example, unlike the usual depiction of monetary policy in macroeconomics textbooks, the policy interest rate set by the central bank is clearly not the only interest rate relevant for price stability and financial stability. In modern financial markets, there is actually a vast spectrum of financial assets with varying degrees of “liquidity” and providing different rates of return.²⁰ How the term liquidity should be defined is not clear-cut, but one possible definition is that an asset is more liquid the “more easily” it can be used as, or converted into, a means of payment for different types of transactions. Of course, wanting an asset with relatively high liquidity comes at a cost, in the form of a reduced rate of return earned by the asset.

At the same time, banks are clearly not entirely passive subjects of monetary policy as usually depicted in macroeconomics textbooks. Banks do not mechanically convert deposits collected from the general public into loans and liquidity reserves. Rather, they obtain funding not only through deposits from the general public, but also by selling (issuing) securities on financial markets. They also make active decisions on the extent of credit risks and liquidity risks they are willing to take. The banks’ liquidity risks are typically not managed by them having reserves in deposits with the central bank, but by them investing part of their funding in government bonds and other easily tradable financial assets. The interbank market also plays a role in the liquidity planning and short-term funding of banks. On the interbank market, banks lend to and borrow from each other. Banks that currently have more funding than they need for their current and planned lending can lend to other banks, and vice versa.

In the financial system, central banks steer interest rates through the interbank market.²¹ The interest rates and other conditions set by central banks on their short-term lending to, or deposits from, the banks affect interest rates on the interbank market. For a bank that is able to borrow from or deposit funds with the central bank, the central bank’s interest rate will be an alternative to that of the interbank market. As a result, for example, the interest rate on a three-month loan on the interbank market correlates strongly with the banks’ expectations about how the central bank rate on shorter loans or deposits will develop in the next three months. Thus, like in a simple textbook model, the central bank does not directly steer the borrowing rates faced by households and firms, but the decisions of the central bank have indirect effects on borrowing rates via banks and

²⁰ See, for example, Goodfriend (2011a) for a more detailed discussion.

²¹ Sellin and Åsberg Sommar (2012) describe the implementation of monetary policy in Sweden.

financial markets. The central bank influences the costs of the banks' short-term funding and liquidity management, which, in turn, combined with other factors, affects the interest rates faced by firms and households. Unlike in a simple textbook model, which for the sake of simplicity takes into account only a few types of financial assets, there is actually a vast spectrum of interest rates on different bonds and other securities for different maturities. The shorter the investment horizon, the greater the impact of the central bank's interest rate decisions on market rates.

The effects of macroprudential policies and other regulations of financial markets partly resemble the effects of monetary policy. Capital adequacy requirements for banks, for example, affect bank lending through similar channels as those through which monetary policy affects the economy. Given that monetary policy changes banks' ability and willingness to issue deposits and make loans, monetary policy has an impact on the economy. In practice, capital adequacy requirements affect credit supply in the economy by limiting banks' ability to expand lending and also by influencing bank's funding costs. The cost of equity is often greater than the cost of debt, because equity serves as a buffer against potential future losses that a bank is exposed to. In the case of bankruptcy, equity holders are repaid after debt holders. By changing the amount of capital banks are required to hold, regulators are basically influencing the banks' cost of doing business and, ultimately, the interest rates that households and firms have to pay on their loans.²²

A closer look at how banks, and other financial intermediaries, operate shows that they increase their "leverage" during asset price booms and reduce leverage during busts. A bank's leverage is defined as the total of its assets divided by its equity. One reason for this pro-cyclicality of leverage is due to how banks measure credit risks and adjust their balance sheets when risks change (active management of economic capital and value at risk). During booms, the measured risk of credit losses falls and the banks are able to increase their lending for a given amount of equity. During busts, by contrast, the measured risk of incurring losses rises and the banks reduce leverage. Adrian and Shin (2008), who documented this behaviour for U.S. investment banks, argue that this behaviour tends to amplify cyclical fluctuations.²³ They also find that periods of accommodative monetary policy are normally associated with banks expanding their balance sheets through short-term funding (collateralised borrowing and repos). Conversely, during periods when monetary policy is tight, banks shrink their balance sheets. These effects of monetary policy suggest that the central bank can influence risk-taking in the banking system, both via the effects of monetary policy on general business conditions, and through the bank's incentives to rely on short-term funding.

Although the recent financial crisis probably had many different and still not well-understood causes, it seems very likely that central banks' actions through the channels we

22 See Cecchetti and Kohler (2012) for a discussion and an intuitive example.

23 Of course, in a general equilibrium model, non-leveraged institutions (such as households, pension funds, and insurance companies) can be expected to moderate the amplification mechanism that is due to the banks' balance sheet dynamics. Still, how fully they can offset this mechanism is unclear.

have just discussed affected both the build-up of financial imbalances that led to the crisis and dampened the negative spiral once the crisis erupted. We now broaden our discussion and show how central banks have been acting to promote financial stability since before the global financial crisis of 2008-2009.

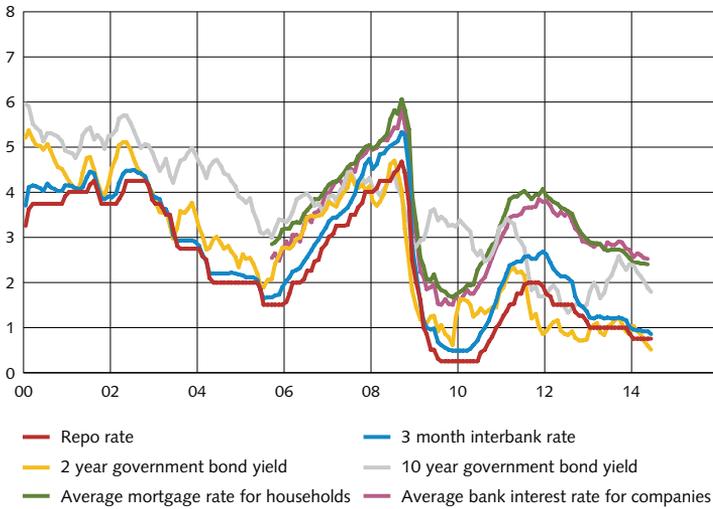
Recent experience in Sweden and abroad

The developments of central banks' actions, market interest rates and credit conditions during the recent decades, and in particular during the financial crisis, demonstrate how strong the connection is between monetary policy and financial stability.

In the financial system, the Riksbank steers interest rates through the interbank market. But interest rates to households and firms also reflect other factors, such as the costs of banks' short-term funding and the uncertainty faced by market participants about the creditworthiness of their counterparties. Figure 1 shows the Riksbank's repo rate, its policy interest rate, together with market interest rates for different maturities and different borrowers, during the period 2000-2014. For Sweden, the most severe phase of the financial crisis was between the autumn of 2008 and the autumn of 2009. Market interest rates have generally co-moved with the repo rate; but the difference, or spread, between market interest rates and the repo rate has changed over time, reflecting both a maturity premium and a credit-risk premium for loans to households and firms.²⁴ Such premiums, in turn, depend on the perceived safety and efficiency of the payment and credit systems. In fact, the spread between the short-term government bond rate and the repo rate has generally been small, as government bonds are viewed as safe assets. The spread between the three-month interbank rate and the repo rate increased during the crisis, but recently fell back to its pre-crisis levels. By contrast, the spread between mortgage rates for households and the repo rate increased in the crisis and still remains elevated. Overall, the risk premium for short-term funding on the interbank market has returned to pre-crisis levels, but nevertheless risk premiums for loans to households and firms remain elevated.

24 This co-movement does not imply that the repo rate has caused the observed changes in market rates, rather it probably reflects common factors.

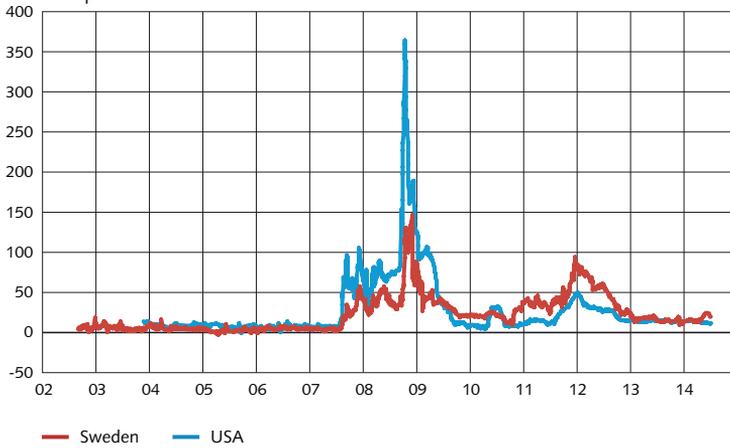
Figure 1. Swedish interest rates
Per cent



Notes. Shown are monthly averages. Government bond yields are for zero-coupon bonds. Bank interest rates for households and companies are on new loans. Sources: Macrobond, Statistics Sweden and the Riksbank

The financial crisis erupted in the middle of September 2008. When the U.S. investment bank Lehman Brothers collapsed, market participants' lack of confidence in the creditworthiness of their counterparties became widespread. As a consequence, access to credit on financial markets declined around the world and some markets more or less ceased functioning. Many market participants that had earlier funded themselves cheaply through short-term loans now had problems renewing these loans, and if they obtained new loans, these were much more expensive than before. The basis spread, or the difference between the three-month interbank rate and the expected overnight rate in three months' time, rose sharply in both the United States and Sweden, although to a lesser extent in Sweden (Figure 2). The basis spread rose to about 3.5 per cent in the United States and to 1.5 per cent in Sweden. But this increase in the cost of short-term funding on the interbank market did not lead to equivalent hikes in the interest rates faced by firms and households, because central banks took decisive actions to supply funding for the banking system and thereby restore confidence in the markets. Between October 2008 and July 2009, for example, the Riksbank cut the repo rate by a total of 4.5 percentage points, to the all-time low of 0.25 per cent (Figure 1). This large cut in the repo rate also limited the Riksbank's ability to use further repo rate cuts to make funding conditions for banks even more generous.

Figure 2. Basis spreads (interbank rates less expected policy rates)
Basis points



Note. The basis spread is calculated as the difference between the three-month interbank rate and the overnight swap index.

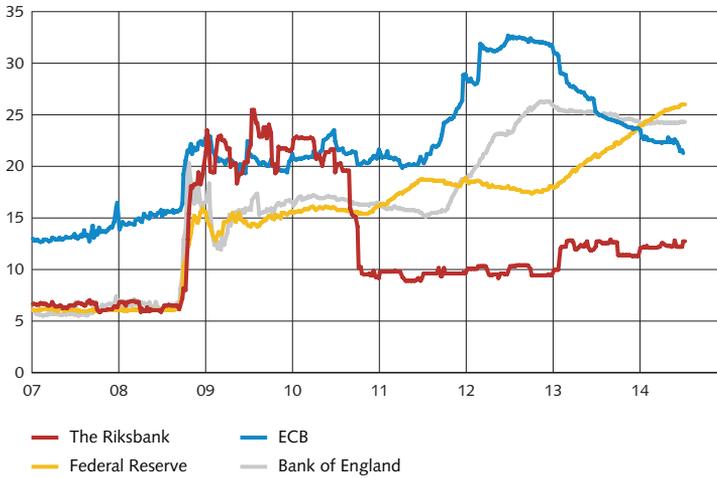
Sources: Macrobond, Reuters and the Riksbank

To further ease financial conditions, beyond what could be attained by reducing policy interest rates, many central banks took additional steps to facilitate the flows of payments and credit in financial markets. These other monetary policy measures involved, basically, the provision of loans at longer maturities than usual, accepting a broader range of assets as collateral, and extending the circle of counterparties that had access to central bank liquidity. They also involved, for some central banks but not the Riksbank, direct purchases of assets on financial markets.²⁵ This monetary easing resulted in an unprecedented expansion in the size of central bank balance sheets (Figure 3). For example, the Riksbank’s balance sheet before the financial crisis was about 5 per cent of GDP (gross domestic product). It started to expand rapidly after the crisis erupted in the autumn of 2008 and reached well over 20 per cent of GDP by the end of the year. But it later fell to about 10 per cent of GDP by the end of 2010, as the loans extended at longer maturities to Swedish banks were repaid. Thus, the Riksbank’s balance sheet has now largely returned to more normal levels than prevailed before the crisis.²⁶ Unlike in Sweden, however, balance sheets of other central banks, such as the Bank of England, European Central Bank and Federal Reserve, are still unusually large, relative to pre-crisis levels.

25 Some argue that such measures should be labelled “credit policy” rather than “monetary policy.” See, for example, Goodfriend (2011b) for a discussion.

26 For more detailed discussions of the Riksbank’s monetary policy measures during the financial crisis, see Bryant, Henderson and Becker (2012) and Elmér, Guibourg, Kjellberg and Nessén (2012).

Figure 3. Central bank balance sheets
Per cent of GDP

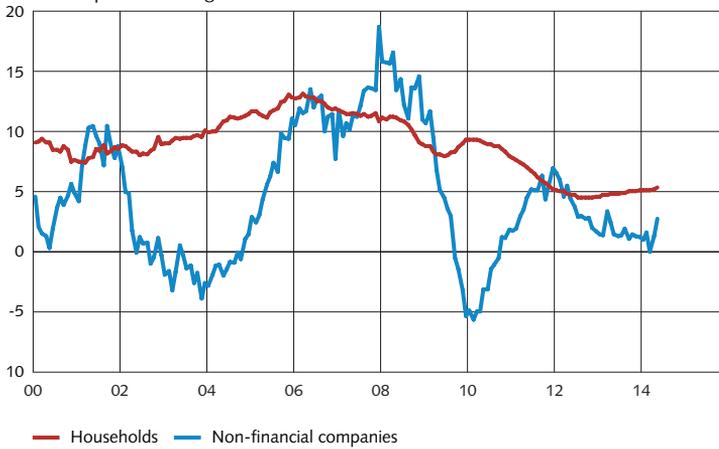


Sources: Bureau of Economic Analysis, Eurostat, Office for National Statistics, Statistics Sweden, and respective central banks

The connection between monetary policy and credit conditions is reflected in the financial system’s lending to households and firms. In Sweden, bank lending to households rose about 10 per cent annually in the years before the financial crisis (Figure 4). By comparison, nominal GDP is expected to grow on average between 4 to 5 per cent annually, if average inflation is 2 per cent and average real GDP growth is between 2 to 3 per cent. Thus, in relation to economic growth, bank lending to households before the financial crisis was growing twice as fast as nominal GDP, as households were willing to borrow at such a fast pace. Bank lending to firms also surged before the financial crisis; but as a caveat this aggregate is known to be substantially more volatile than GDP, even under usual circumstances, as firms adjust spending in reaction to general business conditions. The sharp decline in bank lending to firms after the crisis erupted reflects the weak demand for credit and investments in the economy.

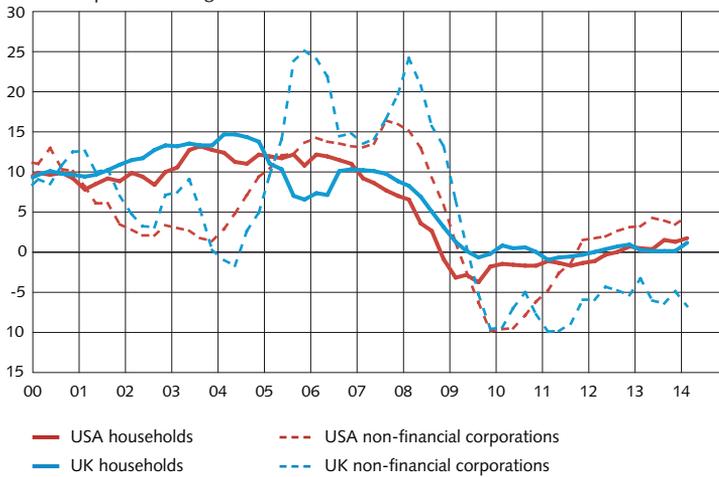
In the United Kingdom and the United States, bank lending to households and firms shows a somewhat different pattern than in Sweden (Figure 5). Credit surged in the years before the financial crisis and later plummeted, as in Sweden. But in contrast to Sweden, bank lending to households is still growing very slowly relative to pre-crisis levels. It is probable that the adjustment would have been much more abrupt if central banks had not taken decisive actions once the crisis erupted.

Figure 4. Bank lending to households and firms, Sweden
Annual per cent change



Source: Statistics Sweden

Figure 5. Bank lending to households and firms, USA and UK
Annual per cent change



Sources: Bank of England, Federal Reserve Board and Riksbank calculations

A quick summary of these developments is as follows. Before the financial crisis, risk premiums were generally low, banks had easy access to funding and credit growth was high. Most would agree this was a global phenomenon that had several causes. One notable reason was probably the high level of savings in fast-growing countries and the associated low level of real interest rates. However, the fact that risk premiums on interbank markets were very small (Figure 2) probably also reflected expectations about monetary policies. In such an environment, the banks were thus not worried about their own, or other banks', short-term funding. It seems reasonable that this widespread

feeling of certainty among banks, an expectation of continued solid economic growth, contributed to the low borrowing rates for households and firms and the high growth rates of credit.²⁷

During the financial crisis, by contrast, banks faced great uncertainty about short-term funding, risk premiums rose, liquid assets became scarce, and credit growth decelerated. Central banks cut their interest rates, but this action was soon viewed as not enough to counter the negative spiral. They also felt compelled to support credit supply in other respects. Thus, central banks expanded their balance sheets in unprecedented ways.

Most would agree that, during a financial crisis, central banks should take action to stabilise financial markets and the broad economy by encouraging risk-taking in the banking system. A more controversial issue is to what extent central banks' monetary policies contribute to the build-up of financial imbalances that lead to financial crises. Because the channels by which monetary policy affects the economy are partly the same for crisis management and for normal stabilisation policy, it is entirely reasonable to argue that a somewhat less accommodative monetary policy before a financial crisis could lead to better economic performance. In this sense, in our opinion, maintaining financial stability should be an explicit objective of monetary policy, not only in times of financial crisis but also in normal times.

Concluding remarks

In recent years, central banks in most economies have had to focus on mopping up after global financial crises, while an array of micro and macroprudential policies are being developed and tested. In such an environment, policymakers and researchers are forced to rethink thoroughly the connection between monetary policy and financial stability. Should financial stability considerations be kept separate, as before the financial crisis?²⁸ Or should monetary policy decisions take into account the possibility of a financial crisis occurring?

We find that, in light of both economic theory and practical experience, financial stability and monetary policy are so closely linked that it is just not possible to separate them. However, the effects of monetary policy and of micro and macroprudential policies are a quantitative and empirical issue.²⁹ Macro models in use before the financial crisis could apparently not predict the crisis. These models thus provide insufficient (but still useful) guidance on the quantitative and empirical relationships. Indicators of credit conditions, such as credit volumes, risk premiums and house prices, were not directly taken into account in monetary policy decisions before the crisis. As new policy tools emerge, a

27 Rajan (2005) presents an overview of the signs of increased risks and their possible causes, including monetary policy. The existence of a "risk-taking channel" of monetary policy is discussed, for example, by Adrian and Shin (2008) and Jiménez and other (2014). See Apel and Claussen (2012) for a literature review.

28 An example of the separation of monetary policy and financial stability before the crisis is that the Riksbank and many other central banks published separate reports on monetary policy and financial stability. This is still the case, but the ambitions to bring the analytical frameworks closer together have been raised.

29 See Yellen (2014) for a recent statement, and further references to recent research, about the relative importance of monetary policy, macroprudential policy and other regulations.

new analytical framework has to be developed, to help policymakers make good decisions and communicate those decisions clearly to the general public. To make progress, we argue that less time should be spent debating whether monetary policy and financial stability are connected. Instead, more resources should be devoted to improving our understanding of the connections.

References

- Adrian, T. and H.S. Shin (2008), "Liquidity, Monetary Policy, and Financial Cycles," Federal Reserve Bank of New York, *Current Issues in Economics and Finance*, vol. 14, no. 1, pp 1-7.
- Apel, M. and C.A. Claussen (2012), "Monetary policy, interest rates and risk-taking," *Sveriges Riksbank Economic Review*, 2012:2, pp 68-83.
- Borio, C. (2014), "Monetary policy and financial stability: what role in prevention and recovery?" *BIS Working Papers* no 440.
- Bryant, R.C., D.W. Henderson and T. Becker (2012), *Maintaining Financial Stability in an Open Economy: Sweden in the Global Crisis and Beyond*, SNS Förlag.
- Capie, F., C. Goodhart and N. Schnadt (1994), "The development of central banking," in Capie, F., C. Goodhart, S. Fischer and N. Schnadt (eds.), *The future of central banking: the tercentenary symposium of the Bank of England*, Cambridge University Press, pp 1-261.
- Cecchetti, S.G. and M. Kohler (2012), "When capital adequacy and interest rate policy are substitutes (and when they are not)," *BIS Working Papers* no 379.
- Dudley, W.C. (2013), "Why Financial Stability is a Necessary Prerequisite for an Effective Monetary Policy," Remarks at the Andrew Crockett Memorial Lecture, Bank for International Settlements 2013 Annual General Meeting, Basel, Switzerland.
- Elmér, H., G. Guibourg, D. Kjellberg and M. Nessén (2012), "The Riksbank's monetary policy measures during the financial crisis – evaluation and lessons learnt," *Sveriges Riksbank Economic Review*, 2012:3, pp 1-24.
- Gelain, P., K.J. Lansing and C. Mendicino (2013), "House Prices, Credit Growth, and Excess Volatility: Implications for Monetary and Macroprudential Policy," *International Journal of Central Banking*, vol. 9, no. 2, pp 219-276.
- Goodfriend, M. (2011a), "Money Markets," *Annual Review of Financial Economics*, vol. 3, no. 1, pp 119-137.
- Goodfriend, M. (2011b), "Central banking in the credit turmoil: An assessment of Federal Reserve practice," *Journal of Monetary Economics*, vol. 58, pp 1-12.
- Goodfriend, M. (2012), "The Elusive Promise of Independent Central Banking," Bank of Japan, *Monetary and Economic Studies*, vol. 30, pp 39-54.
- Ingves, S. (2014), "Monetary policy and financial stability in a globalised world," Speech at the Swedish Economic Association, Stockholm School of Economics, Stockholm.
- Jiménez, J., S. Ongena, J.L. Peydró and J. Saurina (2014), "Hazardous Times for Monetary Policy: What Do Twenty-Three Million Bank Loans Say About the Effects of Monetary Policy on Credit Risk-Taking?," *Econometrica*, vol. 82, no.2 pp 463-505.
- Jonsson, M. and K. Moran (2014), "The linkages between monetary and macroprudential policies," *Sveriges Riksbank Economic Review*, 2014:1, pp 6-26.
- King, M. (2013), "Monetary policy: many targets, many instruments. Where do we stand?" Remarks at the IMF Conference on "Rethinking macro policy II: first steps and early lessons," Washington, D.C.
- Rajan, R.G. (2005), "Has Financial Development Made the World Riskier?" in *The Greenspan Era: Lessons for the Future*, A symposium sponsored by the Federal Reserve Bank of Kansas City, Jackson Hole, Wyoming.
- Schinasi, G.J. (2004), "Defining Financial Stability," IMF Working Paper no. 187.
- Sellin, P. and P. Åsberg Sommar (2012), "Review of the Riksbank's operational framework for the implementation of monetary policy," *Sveriges Riksbank Economic Review*, 2012:2, pp 44-67.

Smets, F. (2013), "Financial Stability and Monetary Policy: How Closely Interlinked?" *Sveriges Riksbank Economic Review*, 2013:3, pp 121-160.

Stein, J. C. (2014), "Incorporating Financial Stability Considerations into a Monetary Policy Framework," Remarks at International Research Forum on Monetary Policy, Washington, D.C.

Svensson, L.E.O. (2012), "Comment on Michael Woodford: Inflation Targeting and Financial Stability," *Sveriges Riksbank Economic Review*, 2012:1, p. 33-40.

Sveriges Riksbank (2013a), *The Riksbank and Financial Stability*, February 2013.

Sveriges Riksbank (2013b), *Monetary Policy Report*, July 2013.

Woodford, M. (2010), "Financial Intermediation and Macroeconomic Analysis," *Journal of Economic Perspectives*, vol. 24, no.4, pp 21-44.

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

Yellen, J. L. (2014), "Monetary Policy and Financial Stability," Remarks at 2014 Michel Camdessus Central Banking Lecture, International Monetary Fund, Washington, D.C.