

Monetary Policy and Macroprudential Policy: Different and Separate? *

Lars E.O. Svensson

Stockholm School of Economics, CEPR, and NBER

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Abstract

The paper discusses how monetary and macroprudential policies can be distinguished, how appropriate goals for the two policies can be determined, whether the policies are best conducted separately or coordinately and by the same or different authorities, and how they can be coordinated when desired. The Swedish example of strong leaning against the wind followed by a policy turnaround is summarized, as well as what the costs and benefits of monetary policy leaning against the wind are.

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1 Introduction

What is the relation between monetary policy and macroprudential policy? How can they be distinguished? How similar or different are they? Should they have the same or different goals? How should they be conducted? Should they be conducted in a coordinated or separate way? Should they be conducted by the same or different authorities? What if monetary policy would pose a threat to financial stability? Should monetary policy “lean against the wind” (of asset-price and credit booms) for financial-stability purposes?

The answers to these questions continue to be discussed and debated. In order to answer them, it is necessary to specify how different economic policies, in general, and monetary and macroprudential policies, in particular, can be distinguished; how appropriate goals and policy instruments for each economic policy can be determined; and how responsibility for achieving the goals and control of the appropriate instruments can be assigned to authorities and decision-making bodies.

The paper is organized as follows: How to distinguish different economic policies in general is discussed in section 2. Section 3 discusses how to distinguish monetary and macroprudential policies in particular. Section 4 deals with whether financial stability is a suitable additional goal for monetary policy. Section 5 examines whether monetary policy and macroprudential policy are better conducted in a separate or coordinated way. Section 6 discusses whether monetary policy and macroprudential policy are better conducted by the same or separate authorities. Section 7 examines how a situation in which monetary policy poses a threat to financial stability may be handled. Section 8 takes up the issue of monetary policy “leaning against the wind” (of asset prices and credit) (LAW). It includes a summary of the Swedish example of, first, a dramatic LAW and, second, an equally dramatic complete turnaround of policy and abandonment of LAW. It also includes a summary of research on the costs and benefits of LAW, and a demonstration that LAW implies lower average inflation and a lower average policy rate. Section 9 presents some conclusions.

2 How can different economic policies be distinguished?

In general, when we discuss different economic policies, we distinguish them according to their goals, their instruments, and the authorities that control the instruments and are responsible for achieving the goals. For example, without going into details, it is obvious that monetary policy and fiscal policy are different economic policies, with different goals, instruments, and responsible authorities. Furthermore, it is obvious that there is considerable interaction between the policies. For example, fiscal policy has effects on inflation and employment, and these effects have to be taken into account in the conduct of monetary

policy. Also, monetary policy has effects on government revenues and expenditures, including interest on government debt, and these effects have to be taken into account in the conduct of fiscal policy.

In spite of this interaction, normally monetary policy and fiscal policy are conducted separately, with each policy taking the conduct and effects of the other policy into account. This corresponds to a so-called Nash equilibrium in game theory, where each player chooses his or her instruments independently to achieve his or her goals, while taking into account the conduct of the policy by the other player. This is different from a so-called cooperative equilibrium, where the two players coordinate and jointly choose their instruments to achieve joint goals.

Given this, an interesting and relevant question is whether the relation between monetary policy and macroprudential policy is similar to or different from the well-established and well-understood relation between monetary policy and fiscal policy.

3 How can monetary policy and macroprudential policy be distinguished?

In order to distinguish monetary policy and macroprudential policy, let us look at the goals, instruments, and responsible authorities of the two policies.

For *monetary policy*, under flexible inflation targeting, there are two goals, price stability and real stability. This means stabilizing inflation around the inflation target and resource utilization around its estimated long-run sustainable rate. The long-run sustainable rate of resource utilization may be measured as the maximum sustainable employment rate, the minimum sustainable unemployment rate, or the potential output level. For example, under the Federal Reserve's dual mandate, the two goals are price stability and maximum employment (what is often called full employment), that is, to stabilize inflation around the Federal Reserve's inflation target and employment around its (estimated) maximum long-run sustainable rate.¹

In normal times, the instruments of monetary policy are the policy rate and communication. The latter includes publishing forecasts of the target variables, such as inflation and unemployment, and possible forward guidance, such as publishing a policy-rate path, that is, a forecast for the policy rate. In crisis times, the set of instruments of monetary policy is

¹ As is explained in Svensson (2011), I am skeptical about the usefulness of estimates of potential output as a reliable measure of full resource utilization and believe that the estimated minimum long-run sustainable rate of unemployment (or the maximum long-run sustainable rate of employment, when the labor-market participation rate is sufficiently endogenous) normally is a more reliable measure.

larger and includes balance-sheet policies, such as large-scale asset purchases (quantitative easing), fixed-rate lending at longer maturities,² and foreign-exchange interventions and exchange-rate floors. The authority controlling the instruments and responsible for achieving the goals of monetary policy is the central bank.

Before discussing the goals, instruments, and responsible authorities of macroprudential policy, let me clarify that macroprudential policy a subset of a broader financial-stability policy that includes both macro- and microprudential policy as well as resolution.

Furthermore, it is important to distinguish between normal times and (financial) *crisis prevention* on one hand and crisis times and *crisis management* on the other. Macroprudential policy is concerned with crisis prevention.³

For *macroprudential policy*, the goal is *financial stability*. The definition of financial stability is not as clear and obvious as the definition of price stability and full employment. An appropriate definition of financial stability is that *the financial system can fulfill its three main functions* (transforming saving into financing, allowing risk management, and transmitting payments) *with sufficient resilience to disturbances that threaten these functions*. The crucial part of the definition is *sufficient resilience*. In the future, there will unavoidably be disturbances and shocks to the financial system, very likely from unanticipated directions and of unanticipated kinds. The crucial thing is then that there is sufficient resilience to disturbances, so as to limit the probability and magnitude of financial crises.⁴

The resilience of the financial system needs to be considered more broadly. It is not only the resilience of lenders, banks and other financial intermediaries, that matters. The resilience of

² Fixed-rate lending by the central bank can be classified as monetary policy, because it can be seen as primarily a commitment to the keeping the current policy rate fixed at least until the maturity of the loan. Variable-rate lending can be seen as primarily liquidity support (credit easing) and lending of last resort. In crisis times and crisis management, classifying central-bank actions is sometimes not obvious. The same central-bank action may have aspects of fiscal, monetary, or financial-stability policy. In such cases, my preference is to classify actions according to their primary purpose.

³ See Tucker (2015, 2016) for thoughtful discussion of these issues. However, Tucker's definition of macroprudential policy emphasizes the dynamic adjustment of regulatory parameters to maintain a desired degree of resilience in the system. I find the emphasis on dynamic adjustment a bit too restrictive; macroprudential policy might to a large extent include constant policies, such as fixed capital requirements, that are not dynamically adjusted, or at least very rarely changed. Therefore, I prefer a broader definition of macroprudential policy that includes more structural and constant prudential policies.

⁴ This specification of the goal of macroprudential policy is consistent with the definition in IMF (2013, p. 6) of macroprudential policy as "... the use of primarily prudential tools to limit system risk. A central definition in this definition is the notion of systemic risk – the risk of disruptions to the provision of financial services that is cause by an impairment of all or parts of the financial system, and can cause serious negative consequences for the real economy." Everything else equal, more resilience means less systemic risk.

borrowers, including households, and firms, for example in real estate and construction, may also matter.

Importantly, there may be a tradeoff between financial stability and resilience on one hand and efficiency, growth, and prosperity on the other. We clearly do not want the stability of the graveyard. Regulation has benefits to the extent that it remedies negative effects of some market failures, such as externalities, but it may also have costs in terms of less competition, less efficient resource allocation, and so on. Regulation may also have income- and wealth-distribution effects, including intergenerational effects. This means that macroprudential policy needs to have a secondary goal. For example, the Bank of England's Financial Policy Committee has a secondary objective of "supporting the economic policy of Her Majesty's Government, including its objectives for growth and employment." (Hammond, 2017). However, in this paper I will not discuss the role of such a secondary objective further.⁵

Under normal times, that is, under crisis prevention, the instruments of macroprudential policy are supervision, regulation, and communication. They include capital and liquidity requirements, including restrictions on maturity transformation; mortgage loan-to-value (LTV) caps; stress tests of banks, other financial firms, and households; financial-stability reports; and so on.⁶

In crisis times, that is, during crisis management, things are very different. Then all the relevant authorities (the fiscal, monetary, and macroprudential and resolution authorities) cooperate with all available and suitable instruments to minimize the scope and magnitude of the crisis and restore financial stability. In particular, coordinated policy packages by several authorities may have strong effect on private-sector expectations and thereby help to stabilize the situation.

The authority or authorities controlling the macroprudential instruments and being responsible for achieving and maintaining financial stability vary across countries and may include the financial supervisory authority, the central bank, the ministry of finance, and other regulatory and supervisory agencies.

⁵ Given a possible long-run tradeoff between resilience and prosperity, Tucker (2015) discusses the need for an explicit political decision on a standard of resilience that macroprudential policy shall maintain.

⁶ The instruments of micro- and macroprudential policy overlap, and the boundary between them is not clear. This is particularly the case when, as in Sweden and Canada, the financial sector is dominated by a few large and systemically important banks and microprudential policy of individual financial institutions thus have systemic consequences. IMF (2013) provides an extensive discussion of the goals and scope of macroprudential policy and its relation to microprudential policy and to crisis management and resolution policies.

Clearly, from the above perspective, monetary policy and macroprudential policy are quite different and distinct policies. But how closely related are they? Should they really have different goals?

4 Is financial stability a suitable third goal for monetary policy?

In particular, would financial stability be a suitable third goal for monetary policy, beyond the goals of price stability and real stability? First of all, we should realize that the question “is financial stability a suitable goal for *monetary policy*?” is different from the related question “is financial stability a suitable goal for *central banks*?” The answer to the latter depends on whether we are considering crisis prevention or crisis management. In crisis *management*, central banks have a role as a lender of last resort.⁷ Therefore, it is obvious that central banks should have financial stability as an objective in crisis management. In crisis *prevention*, the answer depends on whether or not the central bank has control of any macroprudential instruments. If it has, the goal for the use of those instruments should of course be financial stability. Then the question still remains if the central bank’s *monetary policy* should also have financial stability as a goal. If instead the central bank lacks macroprudential instruments, as is the case for the Riksbank and the Bank of Canada, the question is only whether monetary policy should have financial stability as an additional goal.

Regarding whether monetary policy should have financial stability as a goal, it is appropriate to recall an important principle for economic-policy goals: *Economic policies should only have goals that they can achieve.*⁸ It is meaningless and even counterproductive to assign goals to policies that they cannot achieve. It makes a mockery of holding the policy authorities accountable for achieving the policy objective.

Thus, if this principle is followed, monetary policy should only have goals that it can achieve. Then the question is, what can monetary policy achieve?

⁷ However, the central bank does not have a monopoly on lending of last resort. The Ministry of Finance or the National Debt Office (NDO) can also provide liquidity support at short notice. For instance, during the 2008-2009 crisis, the Swedish NDO provided immediate liquidity support to Swedish banks, by first issuing treasury bills to get cash and then lending the cash to the banks with mortgage-backed securities as collateral (Riksgälden, 2008).

⁸ Obviously that principle is relevant for public policies, not only economic policies. Furthermore, for economic policies the ultimate goal for overall economic policy can be said to be to and safeguard and improve the welfare of the citizens. This ultimate goal is normally expressed in terms of a few more specific goals that contribute to the welfare of the citizens, for example, efficient resource allocation (including an efficient financial system), high and stable growth, full and stable employment, price stability, a fair distribution of living standards, regional balance, and a good environment. Each economic policy could have all these goals. An alternative is to give each economic policy a specific goal that it can achieve and that contributes to the ultimate goals. This way policy can be more effective, and accountability for achieving each specific goal can be more directly assigned.

Monetary policy can stabilize inflation around a given inflation target and resource utilization around its estimated long-run sustainable rate. Because the inflation rate over the longer run is primarily determined by monetary policy, it is possible to select a fixed target for the inflation rate and for the monetary policy to achieve an average inflation rate over a longer period at or close to the target. In contrast, the long-run sustainable rate of resource utilization (measured by, for example, the maximum long-run sustainable employment rate or the minimum long-run sustainable unemployment rate) is largely determined not by monetary policy but by non-monetary factors that affect the structure and working of the economy. These factors may change over time and may not be directly observable and measurable. This means that it is not appropriate to set a fixed monetary-policy target for the long-run rate of resource utilization. Instead the long-run rate of resource utilization must be estimated, and such estimates are necessarily uncertain and subject to revision (FOMC, 2017).

Thus, monetary policy can normally not increase the long-run sustainable rate of resource utilization; for that, structural policies must be used.⁹ Generally, monetary policy cannot solve structural problems.

It follows that price stability and real stability in the above sense are suitable goals for monetary policy.¹⁰ But what about financial stability? Can monetary policy achieve financial stability?

If there is one thing we should have learned from the Global Financial Crisis, it is that price stability does not imply financial stability. Monetary policy can achieve price stability, but it cannot achieve financial stability. Recall that sufficient resilience is the crucial part of the definition of financial stability. There is no way monetary policy can systematically affect and thereby achieve sufficient resilience of the financial system. For example, there is obviously no way monetary policy can ensure that there are sufficient capital and liquidity buffers in the financial system.

Given that monetary policy cannot achieve financial stability, if the above principle is followed, financial stability is not a suitable goal for monetary policy.

But what about LAW? This involves a tighter policy for financial-stability purposes than justified by standard flexible inflation targeting and has been strongly promoted by the BIS (for instance, BIS, 2014, 2016). It has been followed by Norges Bank (Olsen, 2015) and the

⁹ There are exceptions: There can sometimes be hysteresis effects – or very persistent effects – of monetary policy on the labor-market participation rate or on the unemployment rate that need to be taken into account.

¹⁰ It goes without saying that fiscal instability or financial instability can make it difficult or even impossible for monetary policy to achieve its goals.

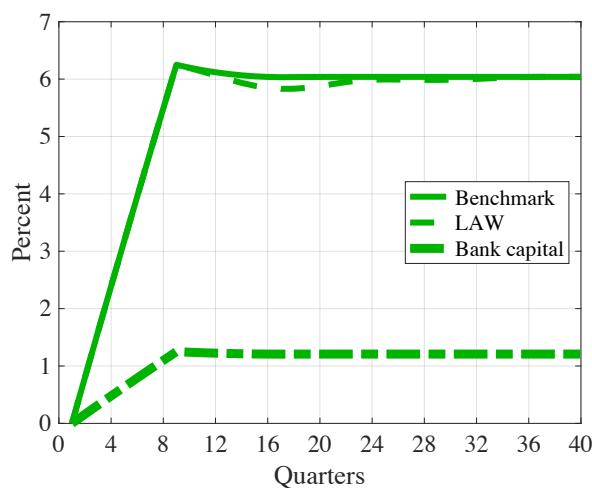
Riksbank (but was later, in the spring of 2014, dramatically abandoned by the Riksbank). But a robust result is that the costs of LAW are higher than the benefits, with a substantial margin. Raising the policy rate simply has too small and uncertain effects on the probability or magnitude of a financial crisis to match the certain substantial costs, in terms of lower inflation and higher unemployment (Svensson, 2017a).

Stein (2013) has put forward the arguably strongest *theoretical* argument in favor of LAW for financial stability purposes:

...while monetary policy may not be quite the right tool for the job, it has one important advantage relative to supervision and regulation – namely that it gets in all of the cracks [of the financial system].

But, given existing *empirical* estimates, a modest policy-rate increase would barely cover the bottom of those cracks. To fill the cracks, the policy-rate would have to be increased so much that it may kill the economy (Svensson, 2017a). As often, *qualitative* effects are not sufficient; estimates of the *quantitative* effects are necessary for a final assessment.

Figure 1. The effect on the annual probability of a crisis in future quarters from either a one percentage point higher policy rate during 4 quarters 1–4 or a ratio of bank capital relative to risk-weighted assets of 20%. Source: Dagher, Dell’Ariccia, Laeven, Ratnovski, and Ton (2016, figure 7) and Svensson (2017a, figures 2 and 7).



As an example of a relevant quantitative result, figure 1 compares the effect on the annual probability of a future crisis of either LAW, in the form a 1 percentage point higher policy rate during quarters 1–4, or macroprudential policy, in the form of a capital requirement of 20 percent bank capital relative to risk-weighted assets. The solid line shows a benchmark annual probability of a future crisis when the annual probability of a crisis is 3.2 percent (corresponding to a crisis of approximately every 33 years) and the duration of a crisis is 2 years (Svensson 2017a, figure 2). The thin dashed line shows how the annual probability of a

future crisis is affected by LAW in the form of a policy-rate increase of 1 percentage point during quarters 1–4, when the case is tilted in favor of LAW by assuming that the policy-rate (unrealistically) has a permanent effect on real debt (Svensson 2017a, figure 7). The effect is small, with a maximum reduction of the probability of a future crisis of 0.2 percentage point in quarter 17, and there is no long-run effect.

The thick dashed-dotted shows the effect on the probability of a future crisis from macroprudential policy in the form of a bank capital requirement of 20 percent. The effect is large and reduces the annual probability of a future crisis permanently by about 4.8 percentage points to about 1.2 percent, a fifth of the benchmark probability. This is inferred from a result in Dagher, Dell’Ariccia, Laeven, Ratnovski, and Ton (2016, figure 7). This result indicates that 20 percent bank capital relative to risk-weighted assets in the OECD countries would have been enough to cover the losses of about 80 percent of the historical banking crises since 1970. This is interpreted in figure 1 as reducing the probability of a future crisis to one fifth of what it otherwise would have been.

It is sometimes suggested that the so-called risk-taking channel would increase the effect of monetary policy on the probability or severity of crises (for instance, Borio and Zhu, 2008, and Adrian and Liang, 2018). But there is reason to doubt that any risk-taking channel is sufficiently strong to be economically significant. Dell’Ariccia, Laeven, and Suarez (2017) provide a thorough examination of the risk-taking channel and the effect of the real federal funds rate on a measure of loan risk for U.S. banks, using extensive confidential Federal Reserve data. They find that an increase in the real federal funds rate of 1 percentage point is associated with a *statistically* significant fall in the loan-risk measure of 0.052 (table IV, column 4). But the effect is *economically insignificant*. The standard deviation of the loan-risk measure is 0.85 (table I, panel B), so the effect of a 1 percentage point higher real federal funds rate is only $0.052/0.85 = 6.1$ percent of the standard deviation of the loan-risk measure. This means that the loan-risk measure is influenced mainly by other of factors than the federal funds rate. This is hardly a risk-taking effect that could have any material effect on the probability or magnitude of a crisis. Furthermore, as the authors emphasize, their results are not well suited for answering whether the additional risk-taking of banks facing more accommodative monetary policy is *excessive* from a social-welfare standpoint.

The conclusion is that, if there are financial-stability problems, in order to ensure financial stability there is hardly any alternative to using other policies than monetary policy, primary macro- and microprudential policy (or other policies, such as housing policy, that are appropriate for the precise problem at hand). Monetary policy simply cannot do it. If the

existing macroprudential policy is insufficient or ineffective, there may be no alternative to developing and applying a better macroprudential policy.

Furthermore, weak or non-existing macroprudential policy does not strengthen the case for LAW. Instead, in that situation, somewhat surprisingly, the margin of costs of LAW over benefits are likely to be even larger (Svensson, 2017a). Indeed, to the extent such weak financial stability policy results in a credit boom with a higher probability of a crisis, a larger magnitude of a crisis, or a longer duration of a crisis, these changes all increase costs more than benefits. This result is consistent with the conclusion of Williams (2015), that “monetary policy is poorly suited for dealing with financial stability, even as a last resort.” LAW is further discussed in section 8.

5 Are monetary and macroprudential policies best conducted in a separate or coordinated way?

Given the above principle for economic-policy goals, the conclusion is that financial stability is not a suitable goal for monetary policy, because monetary policy cannot achieve financial stability. What about macroprudential policy? What can and cannot it achieve?

Macroprudential policy can with sufficient instruments achieve financial stability. Thus, financial stability is a suitable goal for macroprudential policy. But macroprudential policy cannot stabilize inflation around the inflation target and resource utilization around its estimated long-run sustainable level. Thus, by the above principle for economic-policy goals, price stability is not a suitable goal for macroprudential policy.

It follows that both monetary and macroprudential policies are needed to achieve the monetary-policy goals of price stability and real stability and the macroprudential-policy goal of financial stability.

But should monetary macroprudential policies be conducted in a separate or coordinated way? By being conducted in a separate way, I mean that the two policies are conducted as in a game-theoretic Nash equilibrium, that is, each policy is being conducted so as to achieve its goal while taking into account the conduct and effects, but not the goal achievement, of the other. By being conducted in a coordinated way, I mean that the two policies are conducted as in a game-theoretic coordinated equilibrium, that is, the policy actions of both policies are determined together so as to simultaneously achieve the goals of both policies.

Note that the question of whether the policies are best conducted separately or coordinately is relevant also if the same authority, the central bank, is in charge of both policies. In that case,

the question is whether or not the policies work better with separate decision-making bodies within the bank for the two policies, each with its separate goals and its separate instruments.

There is certainly some interaction between the two policies. Macroprudential policy affects financial markets, spreads between different interest rates, and lending by banks. Via loan-to-value caps it affects household borrowing, housing demand, housing prices, and construction. This way it may, depending on the situation, indirectly affect inflation and resource utilization, but not systematically, not strongly, and not always in the same direction. For instance, some regulation may deteriorate the working of the economy, reduce activity, and reduce the sustainable rate of resource utilization. But better regulation and more effective implementation of credit standards may allow financial deepening and more lending to suitable borrowers, increasing activity and the sustainable rate of resource allocation.

Monetary policy affects interest rates, output and employment, profits, credit losses, and assets prices. This way it affects debt service, balance sheets, and leverage. This way it may, depending on the situation, indirectly affect financial stability, but not systematically, not strongly, and not always in the same direction.¹¹

In summary, monetary policy has a strong and systematic effect on inflation and resource utilization but a small and unsystematic effect on financial stability. Macroprudential policy has a strong and systematic effect on financial stability but a small and unsystematic effect on inflation and resource utilization. This means that monetary policy can normally adjust to and neutralize any effect of macroprudential policy on inflation and resource utilization, and macroprudential policy can normally adjust to and neutralize any effect of monetary policy on financial stability. This means that the conditions for a Nash equilibrium being optimal are satisfied and implies that the policies can successfully be conducted separately, while being fully informed of and taking into account the conduct of the other. Thus, under these conditions, the goals of both monetary policy and macroprudential policy can be achieved by each policy conducted separately to achieve its goal, while taking into account the conduct and effects of the other.¹²

¹¹ Furthermore, as emphasized by Bernanke (2015), the neutral/natural/equilibrium interest rate is determined by structural factors, not monetary policy. It follows that monetary policy can only let the policy rate deviate somewhat above or below the neutral rate, this way conducting contractionary or expansionary policy, respectively. The monetary policy stance is therefore measured by the gap between the policy rate and the neutral rate, not by the policy rate. The effect of monetary policy should therefore be measured as the effect of the *gap* between the policy rate and the neutral rate, not of the policy rate itself. The effect of the latter will be the effect of the sum of the monetary policy stance and the neutral rate.

¹² This is consistent with the “principle of effective market classification” of Mundell (1962) according to which “policies should be paired with the objectives on which they have the most influence.” More

Conducting each policy separately furthermore has the considerable advantage that each policy, with its separate goals and instruments, becomes more distinct, more transparent, and easier to evaluate. This in turn makes it easier to hold the decision-making body for each policy accountable for achieving its goals. This creates stronger incentives for (and makes it more likely that) each policy achieves its goals.

As emphasized above, monetary policy and macroprudential policy are really very different policies, which different suitable goals and different suitable instruments. In particular, they work through very different mechanisms. The mechanisms to achieve price stability and real stability and the mechanisms to achieve sufficient resilience of the financial system are quite different. In contrast, Borio (2017, p. 41) has suggested that monetary policy and macroprudential policy may cause a tension by being employed in opposite directions: “it is a bit like driving by pressing on the accelerator and brake simultaneously – not exactly what is normally recommended.” This use of a driving metaphor presumes that monetary and macroprudential policies work through very similar mechanisms. But I find this metaphor quite misleading. Staying within driving metaphors, I would suggest that a more relevant metaphor is that monetary policy operates the accelerator and the brake to achieve a steady optimal speed of the car. This means monetary policy presses the accelerator when the road is uphill and the brake when it is downhill. Macroprudential policy makes sure that the safety belts and airbags are in good condition, that the safety belts are being used, and that the airbags are activated. The policies are more or less orthogonal.

Still, the overall policy framework is more robust if it can explicitly handle the rare occasion when there would be considerable interaction between the two policies and some explicit coordination is warranted. More precisely, I have in mind the rare situation when the monetary policy stance might provide a significant threat to financial stability that macroprudential policy could not contain with its available instruments. This issue is discussed in section 7.

The above refers to normal times and crisis prevention. In *crisis* times, when there is crisis management rather than crisis prevention, things are very different. Then full cooperation and coordinated policies by all the relevant authorities would be warranted. These authorities normally include the financial supervisory authority(ies), the central bank, the ministry of finance, and the bank-resolution authority. In particular, in a crisis, coordinated policy

precisely, a principle of comparative advantage of policies is being applied. Bean (2014) provides a good discussion of why and how monetary policy and macroprudential policy can achieve a good outcome by each policy focusing on its goals.

packages by several authorities may have strong effect on private-sector expectations and thereby help to stabilize the situation.

The central bank has a traditional role in crisis management, through its capacity to provide liquidity support, lending of a last resort. However, as mentioned, the central bank does not have a monopoly on liquidity support in a crisis. The ministry of finance or the national debt office (NDO) can also provide liquidity support, in a very short time. This was demonstrated by the Swedish NDO during the 2008 crisis (see footnote 7).

In Sweden, the fact that central banks have a role in crisis management and can provide liquidity support has been used by the Riksbank as an argument why it should be in charge of crisis prevention and macroprudential policy. However, the argument is hardly convincing. By the same logic, because foreign policy could result in a war, the defense department should be in charge of foreign policy. Furthermore, the central bank is not the only authority with a responsibility for crisis management and, as noted, is not even the only authority that can provide liquidity support in a crisis.

Instead, the role in crisis management implies that the central bank, like all other authorities with such a role, should make *preparations* for crisis management, including crisis-management games (table top exercises) together with other authorities. This is not the same as crisis prevention.

6 Should monetary and macroprudential policies be conducted by the same authority or by different authorities?

If monetary policy and macroprudential policy are conducted separately by separate decision-making bodies, each with their separate goals and separate instruments, and each accountable for achieving the goals, should they be conducted by the same authority or different authorities?

First, the efficiency of and accountability for macroprudential policy under crisis prevention is enhanced if one authority controls all macroprudential instruments. Splitting instruments across several authorities makes it difficult to hold authorities accountable, and the different authorities may apply the different instruments at cross purposes or at least inefficiently. Under crisis management, when all relevant authorities cooperate and coordinate their policies to reduce the magnitude of the crisis and restore financial stability, holding individual authorities accountable is obviously more difficult.

There are at least two clean models that are likely to work well. One model is that of the UK, where Bank of England has the responsibility for both monetary and macroprudential policy. There are two decision-making bodies, the MPC in charge of monetary policy and the FPC in charge of macroprudential policy. Each committee has its goals and its instruments, and each is accountable for achieving its goals. Furthermore, each policy is conducted in an open and transparent way, and there is overlap of members in the two committees. This makes each committee fully informed about the policy of the other committee.¹³

Another model is the Swedish one. In August 2013, the Swedish government announced a new strengthened framework for financial stability in Sweden and clarified the roles and responsibilities of the different authorities. Finansinspektionen, the Swedish FSA, was assigned the main responsibility for financial stability and received control of all macroprudential instruments, including the countercyclical capital buffer. The Riksbank thus has no macroprudential instruments (except communication) for crisis prevention, only lending of last resort for crisis management.

This assignment of goals and instruments enhances efficiency and accountability by assigning all the macroprudential instruments in one authority. Because the FSA already had control of all the microprudential instruments, it also puts both micro- and macroprudential instruments in one institution. In general, the boundary between micro- and macroprudential instruments can be somewhat unclear, and macroprudential policy is arguably much closer to microprudential policy than to monetary policy. Furthermore, in a financial sector similar to that in Sweden, where four major banks in an oligopoly dominate the financial sector, microprudential policy easily has macroprudential consequences and the distinction between micro- and macroprudential policy is even less clear. Altogether, there are thus arguably some additional efficiency and accountability gains in putting micro- and macroprudential policy together. Because the FSA is an authority under the government, the government has the ultimate responsibility and accountability for financial stability, including any intergenerational and other distributional consequences and tradeoffs.¹⁴

Monetary and macroprudential policies in Sweden are conducted in a transparent and open way, making it easy to for the Riksbank and the FSA to be fully informed about the conduct and effects of the other authority's policy. Furthermore, the government has created a new Financial Stability Council, with the minister of financial markets from the Ministry of Finance as chair and the director generals of the FSA and the Swedish National Debt Office

¹³ See Kohn (2015) for details on the UK model and the case for two committees.

¹⁴ In Sweden, the Riksbank is an authority under the Swedish Parliament, not under the government.

(which is the national bank-resolution authority in Sweden) and the governor of the Riksbank as members. The Council meets regularly and is a forum for exchange of information and discussion of financial-stability issues, including reports commissioned by the Council from workgroups formed by staff of the authorities represented in the Council. The Council has no decision power; this power rests with the authorities represented in the Council. The Council creates a forum where the authorities can exchange information about their respective views and policies relating to financial stability. In a crisis, the Council will lead and coordinate the crisis management.

In practice, history and political-economy aspects to a large extent explain the particular institutional arrangements in each country, for example in the US. There, macroprudential instruments, regulation, and supervision are split across several authorities with different mandates. This together with vested interests and extensive lobbying by the financial industry and related political influence over the authorities make effective macroprudential regulation quite difficult.

7 What if monetary policy would pose a threat to financial stability?

There could on rare occasions arise unforeseen situations in which monetary policy might pose a threat to financial stability even when it fulfills the monetary policy goals. In principle, the macroprudential authority should be able to contain such threats with its available instruments. But how should a situation be handled when such a threat cannot easily be contained?

The August 2013 forward guidance by the Bank of England's MPC provides a good example (Bank of England, 2013). At the time, the MPC agreed its intention not to raise the policy rate until the unemployment rate had fallen to a threshold of 7 percent, subject to three "knockouts" not being breached. The third knockout is the FPC judging that the stance of monetary policy poses a significant threat to financial stability that cannot be contained by the range of mitigating policy actions available to the FPC, the Financial Conduct Authority, and the Prudential Regulation Authority in a way consistent with their goals.

Thus, according to this example, the macroprudential authority should warn the monetary-policy authority if monetary policy poses a threat to financial stability that the macroprudential authority cannot contain with its available policy instruments. Then the monetary-policy authority may choose to adjust monetary policy, either tightening or loosening, depending on the situation, and thus temporarily deviate from the monetary policy goals. This clarifies the responsibility of each authority and makes it possible to hold them accountable. Effectively, the monetary-policy authority is put in a "comply or explain"

position. Because the final decision of adjusting monetary policy is left with the monetary-policy authority, its independence to conduct monetary policy is nevertheless maintained.

A natural principle in this context is that it is the authority accountable for achieving a goal, not any other authority, that is to decide whether its goal is threatened in such a way that help from other authorities is necessary. In order for authorities to be effectively held accountable for achieving their goals, they cannot be held accountable for achieving the goals of other authorities, and they cannot be allowed to, at their own initiative, deviate from their own goal in order to achieve a goal of another authority. From this principle it then follows, in this case, that it is the macroprudential authority, not the monetary-policy one, that is the one to decide whether monetary policy poses a threat to financial stability that the macroprudential authority cannot contain with its available instruments. Without a request for help by the macroprudential authority, the monetary-policy authority is then not allowed to deviate from the monetary policy goals.

Had such a principle been applied in Sweden in 2010, and the FSA had been the authority to judge whether monetary policy posed a threat to financial stability that could not be contained by FSA's available instruments, the much discussed and criticized aggressive LAW undertaken by the Riksbank in 2010-2011 is unlikely to have occurred. This leads naturally to a discussion of whether monetary policy should lean against the wind in an attempt to promote financial stability and what the costs and benefits of that are.

8 Should monetary policy “lean against the wind”?

In the ongoing discussion about monetary policy and financial policy, there has been considerable focus on the particular issue of whether monetary policy should lean against the wind (of asset prices and credit booms) (LAW), more precisely raise the policy rate somewhat higher than justified by stabilizing inflation around the inflation target and resource utilization around its long-run sustainable rate in order to promote financial stability. Such a policy has been strongly advocated by the BIS, for example in BIS (2014, 2016).

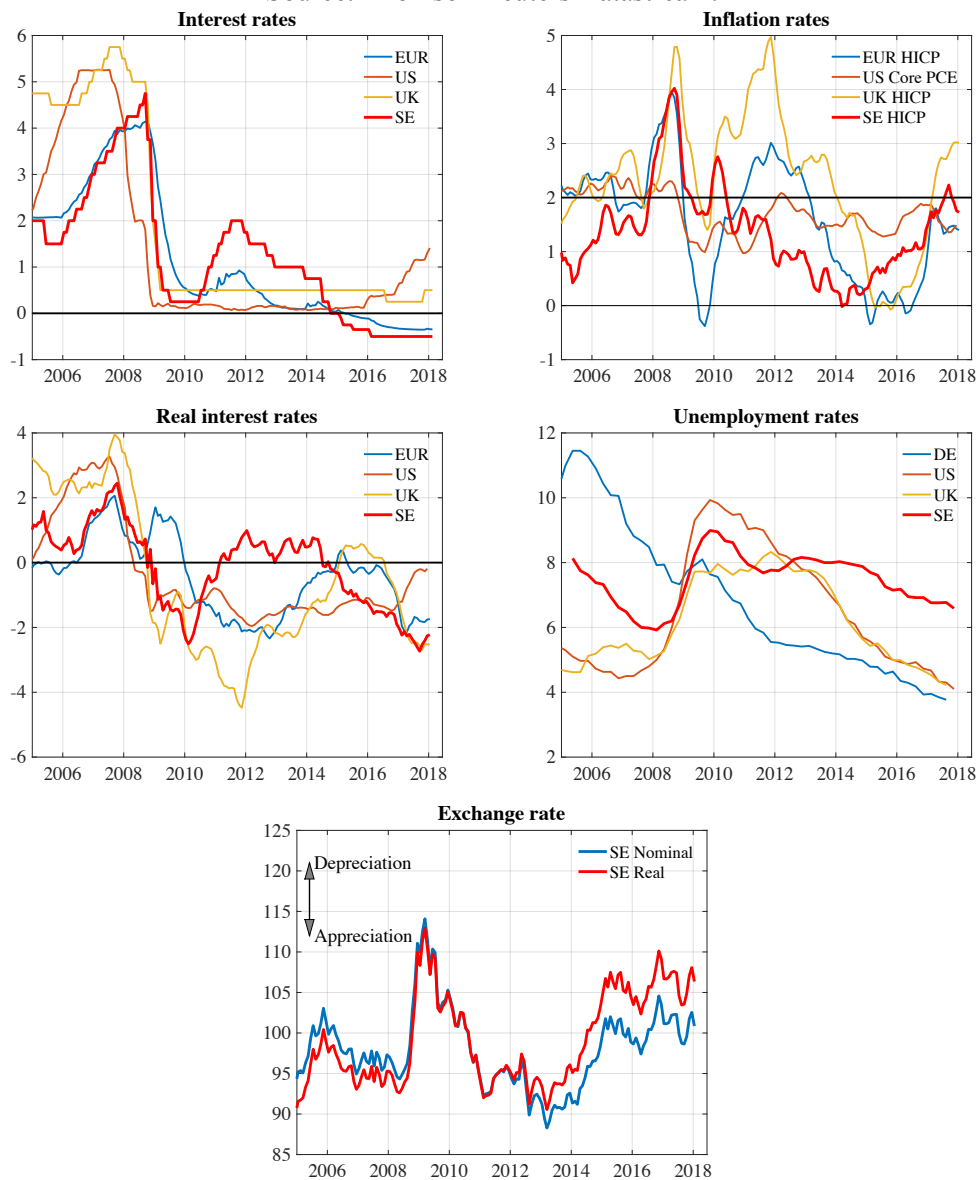
8.1 The Swedish experience

The recent experience in Sweden provides, first, a dramatic example of LAW and, second, an equally dramatic complete turnaround of policy.¹⁵ In June 2010, the forecast for inflation and unemployment by the Riksbank for Sweden and by the FOMC for the US looked very similar. The inflation forecast was below 2 percent and the unemployment forecast was far

¹⁵ Turner (2017) provides a broad discussion of LAW with examples from several countries.

above each central bank’s estimate of a long-run sustainable rate (Svensson, 2011, figures 1 and 2). With reference to those June 2010 FOMC forecasts, Bernanke (2010) concluded that “[g]iven the [FOMC’s] objectives, there would appear - all else being equal - to be a case for further action,” meaning a case for further easing of monetary policy. Indeed, at the time, the FOMC continued to keep the policy rate close to zero but started preparing QE2.

Figure 2. Interest rates, inflation rates, real interest rates, unemployment rates, and effective exchange rates in selected economies (SE Sweden, EUR euro area, US, UK, DE Germany).
Source: Thomson Reuters Datastream.



In contrast, in spite of the similar forecasts, the majority of the Riksbank’s executive board did not continue to keep the policy rate close to zero and did not prepare any QE. Instead it

raised the policy rate rapidly from 0.25 percent in July 2010 to 2 percent in July 2011, citing concerns about housing prices and household debt.¹⁶

In figure 2, the upper-left panel shows the policy rates in Sweden, the US, and the UK and the eonia rate in the euro area. We see the dramatic rise of the Riksbank's policy rate starting in mid 2010. The upper-right panel shows the inflation rates (measured as HICP inflation except, for the US, core PCE inflation). Swedish inflation fell and reached zero in the beginning of 2014. The middle-left panel shows the corresponding real interest rates (measured as interest rates less inflation). The real interest rate rose dramatically in Sweden, creating a large real interest differential to the other economies. The bottom panel shows the real and nominal effective Swedish exchange rate. The krona depreciated much during the fall of 2008, which mitigated the effect of the crisis, but then appreciated as much during the tightening 2010-2011. The middle-right panel shows that the Swedish unemployment rate, which was falling after having peaked in early 2010, stabilized at a high level after the policy tightening, and then even rose. In the other economies (Germany, the UK, and the US), the unemployment steadily fell.¹⁷

In early 2014, the majority of the executive board apparently realized that the situation was unsustainable, with unemployment very high and inflation close to zero. The Riksbank policy was dramatically reversed. The policy rate was lowered and reached zero in October. In February 2015, the policy rate was moved into the negative range. The Riksbank then also initiated a program of asset purchases. The policy rate was further lowered and eventually reached minus 0.5 percent in February 2016 (upper-left panel). Inflation rose back to close to the target of 2 percent (upper-right panel), the real interest rate fell to below minus 2 percent (middle-left panel), the krona depreciated much (bottom panel), and unemployment started to come down (middle-right panel).

Apparently, monetary policy works according to the textbook in Sweden. Tightening appreciates the krona, reduces inflation, and increases unemployment. Vice versa for easing.¹⁸

¹⁶ As a Deputy Governor and Member of the Riksbank's Executive Board at the time, I dissented against every single rate increase and thereafter in favor of larger rate decreases, for reasons explained in Svensson (2010) and in more detail in the Riksbank's attributed minutes from the policy meetings, for example, the June/July meeting 2010, Sveriges Riksbank (2010) (available in English at www.larseosvensson.se or www.riksbank.se). My lessons from six years of policymaking, ending in May 2013, are summarized in Svensson (2013).

¹⁷ Turner (2017, pp. 17–20) compares the policies of Bank of England and Bank of Canada and notes that Bank of England conducted a tighter policy during late 2001 to mid 2004 because of worries of financial imbalances, which lead to a substantial appreciation of sterling against the dollar.

¹⁸ A very open economy with large export and import implies a strong exchange-rate channel in the transmission mechanism of monetary policy. High household debt with adjustable mortgage rates also

The dramatic tightening 2010-2011 was done without any supporting analysis of the efficacy of the policy rate as an instrument to contain the growth in household debt and housing prices and, in particular, without any explicit cost-benefit analysis. As noted in Svensson (2010), the available empirical work at the time indicated very high costs in terms of output and unemployment and small effects on debt and housing prices.¹⁹

Furthermore, there was no work indicating that the level of housing prices and household debt posed any risks that the FSA could not manage on its own, for instance with its LTV cap of 85 percent for new mortgages that the FSA introduced in the fall of 2010. Also, the FSA could assess risks connected to housing prices and household debt with considerable precision in its commendable report *The Swedish Mortgage Market*, which among other things included stress tests on households with new mortgages using microdata collected from the lending banks. The stress tests showed that households had substantial debt-service capacity and substantial resilience against shocks in the form of higher mortgage rates, falling housing prices, and income losses due to unemployment.²⁰

8.2 Cost-benefit analysis of LAW

This Swedish experience certainly stimulated my own interest in a cost-benefit analysis of LAW. In Svensson (2017a), the marginal costs and benefits of LAW are assessed. LAW is specified as increasing the policy rate above what is justified by standard flexible inflation targeting that disregards the risk of a financial crisis. LAW has a first cost, in terms of a weaker economy with lower inflation and higher unemployment, if no crisis occurs. Importantly, LAW also has a *second* cost, a cost that arises *if* a crisis occurs. This is because the cost of a crisis of a given magnitude is larger if the economy initially is weaker due to LAW. This second cost turns out to be the main cost of LAW. It has been neglected by previous literature (including my own previous work).

LAW has possible benefits in the form of a lower probability or smaller magnitude of a crisis. However, for existing empirical estimates, the policy-rate effect on the probability and

implies a strong cash-flow channel that affects household consumption (Flodén, Kilström, Sigurdsson, and Vestman, 2016).

¹⁹ See, for example, Assenmacher-Wesche and Gerlach (2010), Bean, Paustian, Penalver and Taylor (2010), and Dokko, Doyle, Kiley, Kim, Sherlund, Sim and Van den Heuvel (2011) (working paper available in 2009). In particular, Riksbank staff members Claussen, Jonsson, and Lagerwall (2011) showed, using Swedish data, that preventing housing prices from increasing above trend 2004-2010 would have required policy-rate increases of up to 5 percentage points. Inflation would have fallen up to 6 percentage points below the inflation target, and the accumulated GDP loss would have been about 12 percent.

²⁰ The 2010 report is only available in Swedish; from 2011 the mortgage market report is also available in English. The most recent is Finansinspektionen (2017).

magnitude is much too small to prevent the marginal costs from exceeding the marginal benefits by a substantial margin. The result that the costs exceed the benefits is quite robust to alternative assumptions. To get to break-even, that is, equality between the marginal cost and the marginal benefit, the policy-rate effects need to be 5-40 standard errors larger than the benchmark empirical estimates.^{21 22}

Furthermore, somewhat surprisingly, a less effective macroprudential policy, to the extent that it increases the probability, severity, or duration of a crisis, increases the marginal costs more than it increases the marginal benefits, making the case against LAW even stronger. The reason is that the expected second cost of LAW mentioned above, the cost of a crisis due to an initially weaker economy, increases more than the benefits from an increased probability, magnitude, or duration of a crisis.

A recent IMF staff paper (IMF, 2015) presents a thorough analysis and survey of the pros and cons of LAW and finds that except in the most exceptional circumstances, costs outweigh benefits. It concludes that, “[b]ased on current knowledge, the case for leaning against the wind is limited, as in most circumstances costs outweigh benefits.” Former Federal Reserve Board Chair Ben Bernanke and Bank Presidents Charles Evans and John Williams have previously reached similar conclusions.²³ The FOMC has also reached a similar conclusion.²⁴ The Independent Review of BIS Research (Allen, Bean, and De Gregorio, 2016) has noted

²¹ As discussed in some detail in Svensson (2017a, section 5; 2017c), if the second cost of LAW is neglected, as in previous work and in recent papers by Filardo and Rungcharoenkitkul (2016) and Gourio, Kashyap, and Sim (2017), then for zero LAW, the marginal cost of LAW is zero. If the marginal benefit is positive, then *some* positive LAW is optimal. However, the marginal cost rises rather quickly, so the optimal LAW is quite small, corresponding to a small increase in the policy rate and, as in Gourio, Kashyap, and Sim (2017), a small reduction of only a few basis points of the annual probability of a crisis start. A similar result has previously been reported by Ajello, Laubach, Lopez-Salido, and Nakata (2016).

²² That the policy-rate effects need to be 5-40 standard errors larger than existing benchmark empirical estimates to get to break-even contradicts Adrian and Liang (2018), who have argued that reasonable alternative assumptions about the policy-rate effect on the probability or magnitude of a crisis would overturn the result (Svensson, 2017a, section 5).

²³ Bernanke (2015): “As academics (and former academics) like to say, more research on this issue is needed. But the early returns don't favor the idea that central banks should significantly change their rate-setting policies to mitigate risks to financial stability.”

Evans (2014): “Indeed, any decision to instead rely on more-restrictive interest rate policies to achieve financial stability at the expense of poorer macroeconomic outcomes must pass a cost-benefit test. And such a test would have to clearly illustrate that the adverse economic outcomes from more-restrictive interest rate policies would be better and more acceptable to society than the outcomes that can be achieved by using enhanced supervisory tools alone to address financial stability risks. I have yet to see this argued convincingly.”

Williams (2015): “[M]onetary policy is poorly suited for dealing with financial stability, even as a last resort.”

²⁴ FOMC (2016): “Most participants judged that the benefits of using monetary policy to address threats to financial stability would typically be outweighed by the costs ... ; some also noted that the benefits are highly uncertain.”

that the BIS argument for LAW seems to have had little effect on those actually responsible for setting monetary policy, that convincing evidence that the benefits outweigh the costs is lacking, and that BIS research has been somewhat one-eyed and excessively focused on building a case for LAW (including trying to disprove my conclusion about the costs and benefits of LAW).²⁵ The Riksbank does also now seem to conclude that the costs of LAW exceed the benefits.²⁶

8.3 LAW may result in lower average inflation and a lower average interest rate

In general, a LAW policy with a higher policy rate implies an equilibrium with a lower average inflation rate and a lower average policy rate (Svensson, 2017b). To see this, take the simplest possible LAW policy rule,

$$i_t = r + \pi_t + \gamma(\pi_t - \pi^*) + \alpha_t, \quad (1)$$

where i_t denotes the policy rate in quarter t , r denotes the average real interest rate, π_t denotes the inflation rate, π^* denotes a fixed inflation target, and $\gamma > 0$. Furthermore, α_t denotes the adjustment to the policy rate for financial-stability purposes, for instance, representing a policy-rate response to the debt-to-GDP ratio, some measure of a financial cycle, or some other indicator deemed related to financial stability. In particular, assume that LAW implies that the unconditional mean of α_t is positive,

$$E[\alpha_t] \equiv \alpha > 0. \quad (2)$$

Now take the unconditional mean of (1),

$$E[i_t] = r + E[\pi_t] + \gamma(E[\pi_t] - \pi^*) + \alpha. \quad (3)$$

Furthermore, assume that the Fisher equation holds on average, which implies

$$E[i_t] = r + E[\pi_{t+1}] = r + E[\pi_t]. \quad (4)$$

Using (4) in (3) and solving for the unconditional mean of inflation results in

$$E[\pi_t] = \pi^* - \alpha/\gamma \equiv \pi^{**} < \pi^*. \quad (5)$$

That is, average inflation is lower than the inflation target. Furthermore, using (5) in (3)

²⁵ Allen, Bean, and De Gregorio (2016): “so far the [BIS] argument for LAW seems to have cut relatively little ice with those actually responsible for setting monetary policy. In part, that is because of the lack of convincing evidence that the expected benefits outweigh the expected costs. ...in some cases the research programme appeared somewhat one-eyed. [Of 9 projects on financial stability and monetary policy] the first and (to some extent) the fifth seem motivated primarily by a desire to overturn Svensson’s [2017a] conclusion on the inadvisability of LAW. ...the research effort ... seems excessively focussed on building the case for LAW, rather than also investigating the scope for other policy actions to address financial stability risks.” [Reference updated.]

²⁶ Sveriges Riksbank (2017, p. 13): “It is not likely that small increases in the repo rate would have any tangible effects on household indebtedness. A large increase in the repo rate could certainly slow down the buildup of debts but would also lead to higher unemployment, a much stronger krona and lower inflation. Other measures more specifically aimed at reducing the risks associated with household debt have less negative effects on the economy as a whole.”

results in

$$E[i_t] = r + \pi^{**} < r + \pi^*. \quad (6)$$

That is, the average policy rate is also lower than when there is no LAW and $\alpha = 0$.

It follows that LAW represented by (1) and (2) implies that average inflation equals the “effective” lower inflation target π^{**} rather than the “official” inflation target π^* and that the average policy rate will be correspondingly lower.

If LAW thus implies lower average inflation and lower average policy rate, it is clear that the probability that the effective lower bound on the policy rate will bind will be higher.

Furthermore, with lower average inflation, the real value of any fixed nominal debt is falling more slowly over time. Together this seems to make the economy more sensitive to shocks.

9 Conclusions

The principle that economic policies shall only have goals that they can achieve implies that one should not ask too much from monetary policy. Monetary policy can really at best just stabilize inflation around a given inflation target and resource utilization around its estimated long-run sustainable rate and this way keep average inflation on target and average resource utilization equal to the its long-run sustainable rate. In particular, monetary policy cannot achieve financial stability; a separate macroprudential policy is needed for that. From the principle for economic-policy goals it then follows that financial stability is not a suitable goal for monetary policy.

Monetary policy and macroprudential policy are, at a closer look, quite different policies, with different suitable goals, different suitable instruments, and in many countries different responsible authorities. There is nevertheless some interaction between the policies. Monetary policy has a strong and systematic effect on price stability and real stability but a small, indirect, and unsystematic effect on financial stability. Macroprudential policy has a strong and systematic effect on financial stability but a small, indirect, and unsystematic effect on inflation and resource utilization. Given this, the conditions are fulfilled for the policies being successfully conducted separately, as in a Nash equilibrium, with each policy focused on achieving its goals while taking into account the conduct of the other policy. The interaction between monetary policy and macroprudential policy is arguably weaker and less systematic than the interaction between monetary policy and fiscal policy; this makes the argument for the separation of monetary policy and macroprudential policy stronger than that for the separation of monetary policy and fiscal policy.

Furthermore, conducting monetary policy and macroprudential policy separately has the considerable advantage that each policy, with its separate goals and instruments, becomes more distinct, more transparent, and easier to evaluate. This in turn makes it easier to hold the decision-making body for each policy accountable for achieving its goals. This creates stronger incentives for (and makes it more likely that) each policy achieves its goals. As is the case for monetary policy and fiscal policy, transparency and accountability provide strong additional arguments for the separation of monetary policy and macroprudential policy.

However, one cannot exclude that, on rare occasions, monetary policy might pose a threat to financial stability that cannot be contained by the instruments of the macroprudential authority and that therefore some explicit coordination of policies may be warranted. In such a situation, transparency and accountability can be maintained, if it is the macroprudential authority that is to judge whether such a situation has occurred and, if so, warn the monetary-policy authority, and it is the monetary-policy authority that then decides whether or not to adjust monetary policy. Then the independence of monetary policy is also respected.

The Swedish example of, first, a dramatic leaning against the wind and, second, an equally dramatic complete turnaround of monetary policy provides a strong warning to other central banks (and to the Riksbank itself). At the current state of knowledge, there is little or no theoretical and empirical support for monetary policy leaning against the wind for financial-stability purposes, that is, a monetary-policy that is somewhat tighter than a policy justified by the monetary policy goals without financial-stability considerations. The estimated costs are much larger than estimated possible benefits. Policy mistakes can be avoided by requiring that any leaning against the wind be preceded and supported by a thorough and convincing cost-benefit analysis. Given the currently available evidence, it may be appropriate that the burden of proof now is on the proponents of leaning against the wind.

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