



Towards a financial stability-oriented monetary policy framework?¹

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It is a great pleasure and honour for me to be at this conference celebrating the 200th anniversary of the Central Bank of the Republic of Austria, the Oesterreichische Nationalbank (OeNB). Two centuries is no mean feat! It is testimony to the success of central banking as an institution – an institution that has become indispensable for the well-being of our societies.

But as the title of the conference indicates, continued success requires change. Any cursory look at the history of central banking will indicate that the institution has evolved dramatically since its inception, constantly adjusting to evolving economic, political and intellectual cross-currents. The history of the OeNB is no exception, from its creation to tackle serious monetary instability, through the serious banking instability in the interwar period, marked by the famous failure of Credit-Anstalt, to the present day as part of the Eurosystem.

So, an obvious question arises: what next for central banking?

Today I shall argue that the next step is to seek to incorporate financial stability considerations more systematically into monetary policy frameworks. I will also sketch out how this might be done.

There has been intense debate during the last decade or so over whether monetary policy should take financial stability into account rather than focus exclusively on price stability.² The question has gained further prominence recently because of the economic backdrop and new research.

The economic backdrop has highlighted tensions between price stability and financial stability (BIS (2016)). Many countries have been struggling with strong credit and asset price booms and possibly solid growth combined with very low, or even negative, inflation. Think of Sweden, Switzerland and China, just to name a few. These symptoms are eerily familiar: low and stable inflation prevailed in the run-up to the Great Financial Crisis (GFC) and many previous crises too.

By contrast, other countries have been facing the legacy of the financial bust, ie anaemic credit and GDP growth combined with the side effects of exceptionally and persistently low interest rates, notably on the profitability and soundness of financial institutions. These symptoms are less common, the closest equivalent being the experience of Japan in the 1990s.

Meanwhile, new research has concluded that a “leaning-against-the-wind” (LAW) strategy – tightening monetary policy to head off financial stability risks – provides little or no benefits in terms of output and inflation. This analysis has been taken to support a sort of “separation principle”, according to

¹ I would like to thank Piti Disyatat, Dietrich Domanski, Mathias Drehmann, Andrew Filardo, Mikael Juselius, Luiz Pereira da Silva, Phurichai Rungcharoenkitkul and Hyun Song Shin for helpful comments and Magdalena Erdem and Alan Villegas for their excellent assistance with the graphs. Any remaining errors are my sole responsibility.

² For a recent survey, see Smets (2013).



which monetary policy should deal exclusively with near-term output and inflation (the business cycle, for short) while macroprudential policy should deal on its own with financial instability (the longer-duration financial cycle).

There is no way I could do full justice, in the time available, to the complex issues involved. Many of you will know that at the BIS we have been arguing for many years that monetary policy needs to take a more proactive role. What I can do is to take a thin slice of this question and present some new evidence from recent BIS research, itself part of a longer-term effort.

I will suggest that a financial stability-oriented monetary policy can yield net benefits. But for this to be the case, it would need to keep an eye on financial stability, broadly defined, all the time, during both booms and busts, ie during the whole financial cycle. The objective would be to ensure that the economy never strays too far away from “financial equilibrium”. In other words, I shall argue that it would be unwise to interpret a LAW policy narrowly as one whereby the central bank pursues its standard policy 90–95% of the time and then deviates from it only when the signs of the build-up of financial imbalances become evident. This prevailing interpretation would fall short of the mark.

I will first explain the key reasons for the conflicting conclusions by comparing the similarities and differences in the analytical approaches to the question. I will then zoom in and summarise the main results of ongoing BIS work in more detail. Finally, I will zoom out again and draw some broader implications of the analysis, combining it with further reflections on the inflation process and monetary policy frameworks.

I – The two basic approaches: similarities and differences

What is the standard way of evaluating empirically the costs and benefits of a financial stability-oriented monetary policy?³ The basic idea is to trade off the output costs of leaning today with the possible output benefits that would arise tomorrow if leaning helps reduce the likelihood and/or the costs of future banking crises.

Implementing this thought experiment involves a number of steps (Graph 1). First, you take a traditional model embedding relationships between the policy rate, output and inflation. Then you augment it with a “crisis module”. The module describes the relationship between a financial variable and banking crises, links this variable to the policy rate and assumes something about the costs of banking crises. The variable most commonly used is the growth rate of (private sector) credit, which some work has found to be a reliable leading indicator of banking crises. Finally, you estimate the resulting net benefits in terms of output and (possibly) inflation by adjusting policy, either as a one-off deviation from traditional policy rules or as the optimal response given the model.

The conclusion of much of this analysis is that, for typical parameter values, a LAW strategy does not generate significant net benefits and may be counterproductive.⁴ In general, the work that derives optimal policy finds some small benefits. But the conclusion that has been taken for policy is that the benefits are too small.

This type of analysis is clearly sound and the findings plausible, but there are a number of reasons why it might underestimate the potential net benefits. These have to do with the assumptions and with the calibration (Table 1). Let me elaborate.

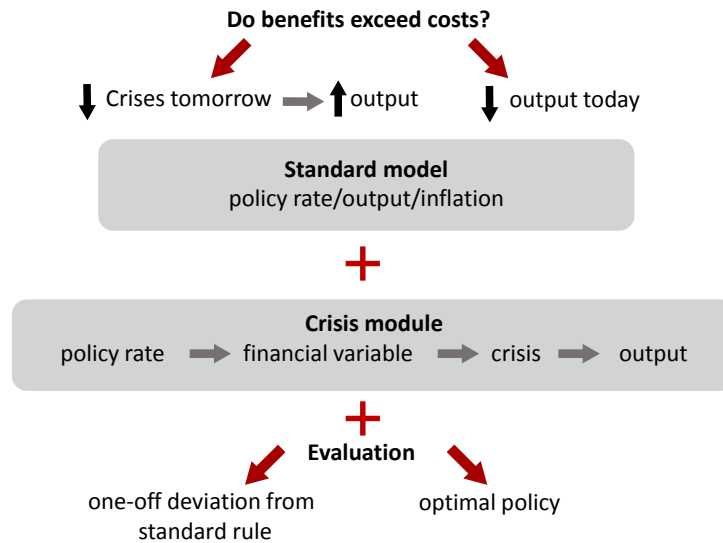
³ The focus here is on the empirical work, as opposed to the theoretical studies that typically find that there may be a role for monetary policy; for two examples among many, see Woodford (2012) and Gambacorta and Signoretto (2014). See also Smets (2013), Borio (2014a) or IMF (2015) for references.

⁴ See, in particular, Ajello et al (2015), Svensson (2014, 2016) and IMF (2015).



Costs and benefits of LAW: standard approach

Graph 1



LAW = leaning against the wind.

Costs and benefits of LAW: assumptions

Table 1

	Standard	BIS
Permanent output losses	NO	NO/YES
Cleaning is costly	NO/YES	YES
LAW reduces crisis costs	NO	YES
Benefits possible without crises	NO	YES
Risks build up	NO	YES

LAW = leaning against the wind.

The crises do not result in permanent output losses, so that eventually output returns to its pre-crisis trend. But empirical evidence suggests that this is typically not the case.⁵ Output may indeed regain its previous long-term growth rate, but it typically ends up following a parallel and lower path. Thus, if we assume that actual and potential output converge, this also means that potential output is also permanently lower.

In some cases, monetary policy can even “clean up” at no cost, in the sense that the central bank can cut rates and make up for any demand shortfall as it would with any other normal recession. But the GFC experience clearly suggests otherwise: monetary policy has a harder time dealing with balance sheet recessions, as agents are overindebted and balance sheets impaired. There is indeed a consensus that this is a lesson to be drawn from the crisis.

Leaning may affect the probability of a crisis but does not affect its cost. But one might expect that the bigger the initial imbalance, the larger the costs will be. So, if policy can help to restrain the build-up, it would also limit the damage of any strains that might arise.

⁵ See the BCBS (2010) survey and, in particular, Cerra and Saxena (2008) and, more recently, Ball (2014). Blanchard et al (2015) find that other recessions too may have a similar effect.



Financial variables have no or limited impact on output other than through crises. And even if they do, this is not considered part of the analysis. But this means that benefits can only arise if crises occur, which is very restrictive. It couches the problem exclusively in terms of rare events rather than of the potential for financial fluctuations to do damage to the economy more generally.

Finally, another underappreciated key assumption concerns the evolution of financial risks. In prevailing approaches, risks do not grow over time. By that I mean that if no action is taken, then any “shocks” that may occur in normal times will die away. This implies that there is little or no cost to waiting. Importantly, this encourages the view that a financial stability-oriented monetary policy is one that follows a traditional policy most of the time and then deviates from it only once the signs of financial imbalances become evident. But the risk of this strategy is obvious: it could end up doing too little too late or, worse, it could be seen as precipitating the very crisis it is intended to prevent.

Our work relaxes some of the more restrictive assumptions in the standard approach, thereby finding higher potential benefits.⁶ While the specifics differ, the common elements of this research are that it allows risks to build up over time as the economy evolves – and here the notion of the financial cycle is key – and monetary policy to play a bigger role in influencing both the probability and costs of financial busts, even without crises. In other words, crises are not necessary for net benefits to be possible.

II – Two complementary studies

Let me now turn to the two BIS studies in more detail.

Study 1

The first study follows the standard approach most closely (Filardo and Rungcharoenkitkul (2016)). It takes as its starting point a traditional and intentionally very stylised model of the economy, but it makes a key change in the “crisis module”. Specifically, it allows the economy to exhibit realistic recurrent financial cycles or booms and busts. The cycles are measured by a combination of the behaviour of credit, property prices and the credit-to-GDP ratio (Drehmann et al (2012), Borio (2014b)). This follows previous work done at the BIS, which has been part of a broader and rapidly growing literature seeking to characterise the financial cycle, especially within central banks.⁷ Crucially, this is the variable that causes banking crises or, more generally, financial busts with serious output costs.

The difference with prevailing approaches is illustrated most starkly in Graph 2, based on US data as one example. The graph shows the difference between the financial cycle (blue line) and credit growth (red line). The financial cycle exhibits clearly defined booms and busts, whereas credit growth shows no such pattern. Taking this boom-bust pattern into account provides the key to capturing the benefits of leaning.

This simple model does exactly that. Once the model is estimated and an optimal policy is derived, the results suggest that it is desirable to lean against financial booms; that the larger the size of the imbalance, the higher the benefit from leaning (as the bust will be larger); and, critically, that it is important to lean early, even when the probability of a crisis is still negligible.

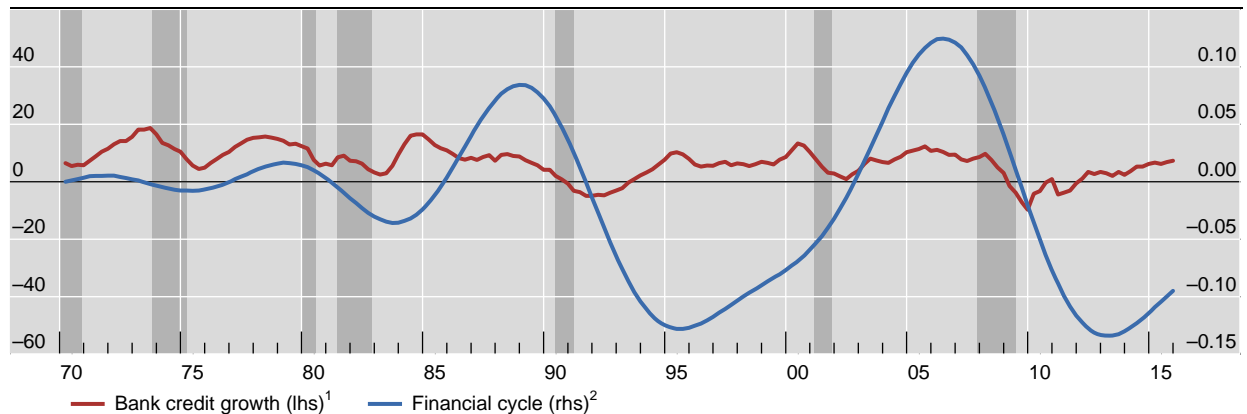
⁶ For a recent analysis that relaxes some of these assumptions and also finds higher benefits from a leaning strategy, see Adrian and Liang (2016).

⁷ For examples, see Aikman et al (2014), Claessens et al (2011), De Bonis and Silvestrini (2014), Hiebert et al (2015), Einarsson et al (2016) and Rünstler and Vlekke (2016).



Two different processes: the financial cycle and credit growth

Graph 2



¹ Bank credit to the private non-financial sector; year-on-year changes, in per cent. ² Measured by frequency-based (bandpass) filters capturing medium-term cycles in real credit, credit-to-GDP ratio and real house prices.

Sources: BIS calculations; based on US data.

Understanding the intuition for this third point is essential. If the authorities wait, the problems become bigger as the boom gathers momentum. You may not know when the bust will come, but *if* the process is such that risks build up over time, then it is not desirable to wait before adjusting your policy. This result would even be strengthened if one also assumed, say, costs to making large adjustments to the instruments: policymakers would have to smooth out the adjustment and hence start earlier.

Importantly, this result does not hinge on the specific measure of the financial cycle. The one chosen in the study is especially useful to highlight the point. But the result would also hold for the more familiar credit gap leading indicator used, for example, in the Basel III framework to set the countercyclical capital buffer (Drehmann et al (2011), Borio and Drehmann (2009), Borio and Lowe (2002)).⁸ As you may recall, this variable measures the deviation of private sector credit from its long-run trend. All that is needed is that the process has sufficient inertia. Stock variables, such as the ratio of credit to GDP, typically do; flow variables, such as the change in credit, typically do not. The question, therefore, is essentially empirical: what kind of process matters for financial instability- or financial sector-induced output costs?

Study 2

The second study delves further into this question (Juselius et al (2016)). Compared with the first, it is based on a much more granular estimated econometric description of the economy, again drawing on data for the United States as an example. The analysis proceeds in three steps (Graph 3).

The first step is to decompose the financial cycle into two sets of variables that in the data are found to have very stable long-run relationships (Juselius and Drehmann (2015)).⁹ One is a proxy for the private sector (households and firms) debt service burden, ie the ratio of the sum of interest payments and amortisation to income (or GDP); the other is a proxy for “leverage”, linking the debt-to-income ratio to property and equity prices. Deviations of these variables from their long-run relationships (“gaps”)

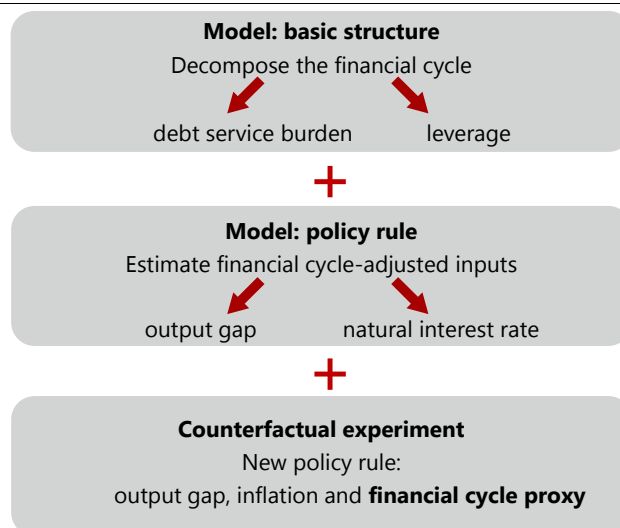
⁸ For instance, Borio and Lowe (2002), Drehmann et al (2011), Detken et al (2014) and Drehmann and Juselius (2014), among others, also find that the credit gap outperforms credit growth as a leading indicator of banking crises. For their impact of credit booms on subsequent recessions, see Borio and Lowe (2004), Jordà et al (2013) and, for household debt in particular, Mian et al (2015).

⁹ In technical terms, these are known as “co-integration” relationships.

interact and, when embedded in a richer econometric system, are found to have a sizeable impact on private sector expenditure and output fluctuations. This is intuitive. Heavier debt service burdens depress spending, not least as they squeeze cash flows. And higher asset prices in relation to credit can boost both spending and credit growth. There are many stories and simple models that capture these mechanisms, although none that as yet fully explains their interaction.¹⁰

Costs and benefits: an alternative approach

Graph 3



The system has a couple of interesting properties, which set it apart from the previous studies. For one, it can result in financial busts with permanent output losses. In fact, the interaction between the two financial gaps can help trace the Great Recession quite well out of sample, though not quite its depth – the financial crisis clearly has an additional effect. But the possibility of permanent losses does not depend on the GFC: it is a more general property.¹¹ In addition, the system does not rely on a separate crisis module: the financial cycle is fully integrated in the dynamics of the economy. The system gives rise to “endogenous” fluctuations in which the financial and real sectors interact, but not to crises as such.

The second step is to use the two financial gaps to derive estimates of the typical unobservable variables in any policy rule. These are economic slack (or the output gap) and the natural rate of interest. In traditional models, the natural rate of interest (or “neutral rate”) is the rate that would prevail when output is at potential and inflation is on target – the time-varying intercept in a Taylor rule.

Estimates of the output gap and natural interest rate are derived by adding the two financial gaps to a very standard macroeconomic setup.¹² Thus, the natural rate now requires not just output at potential and inflation on target, but also closing of the financial gaps – the concrete definition of “financial equilibrium” in this approach.

¹⁰ See Juselius and Drehmann (2015) for references to this work.

¹¹ That said, Drehmann and Juselius (2014) also find that, over horizons of around one year, the debt service ratio outperforms also the credit gap as a leading indicator of banking crises; the credit gap performs better over longer horizons.

¹² The standard model follows Laubach and Williams (2003, 2015).



Note that the financial gaps are *allowed* to have an impact on the output gap and the natural rate, but it is the *data* that decide. This richer system nests the standard model, and the data are allowed to tell us which one is a better characterisation of the evolution of the economy.

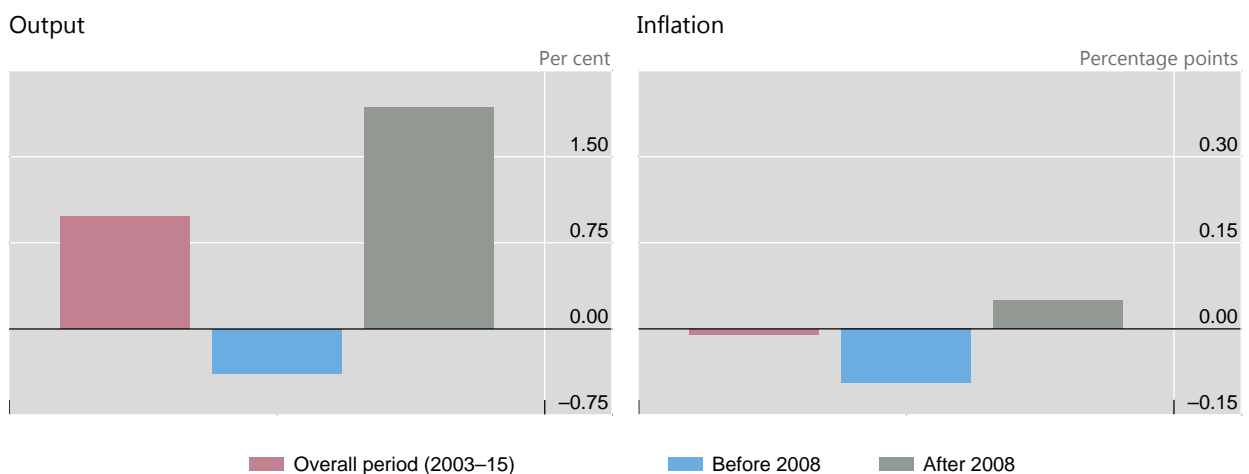
The third step is to carry out a counterfactual experiment – moving to a parallel universe, so to speak. This is done by adding the financial gaps¹³ to a traditional Taylor rule, in which the interest rate is adjusted in response to the output gap and the deviation of inflation from target (Taylor (1993)), and then seeing how the economy would evolve under this different rule. Thus, the aim is not to respond only once the signs of an impending crisis emerge, but to steer the economy throughout the financial cycle. The financial gaps simply *complement* the variables traditionally included in the policy rules, which retain their role.

A number of findings emerge from the exercise.

First, responding systematically to the financial cycle proxies in addition to output and inflation can result in significant output gains (Graph 4). Taking the results at face value, if the counterfactual experiment starts in 2003, the economy would grow roughly 1% more per year, or 12% cumulatively. This exceeds the near-term cost when leaning (0.35 % per year).

An illustrative experiment: higher output and similar inflation

Graph 4



Source: Juselius et al (2016); based on US data.

Second, there need not be much cost in terms of inflation. In fact, on average, inflation is effectively unchanged: it is a bit lower pre-crisis, reflecting the tightening phase, and higher post-crisis, as economic slack is smaller then.

Third, and consistent with the previous study, leaning early is key, and this can gain considerable room for manoeuvre in the bust. The point is illustrated in Graph 5, which shows the difference between the counterfactual and actual policy rate (blue line) and, for background information, the corresponding difference for output (red line). The policy rate is some 1 percentage point higher until mid-2005; it can then afford to decline earlier, starting roughly when asset prices peak (not shown) and is normalised more quickly after the recession, as output recovers faster.

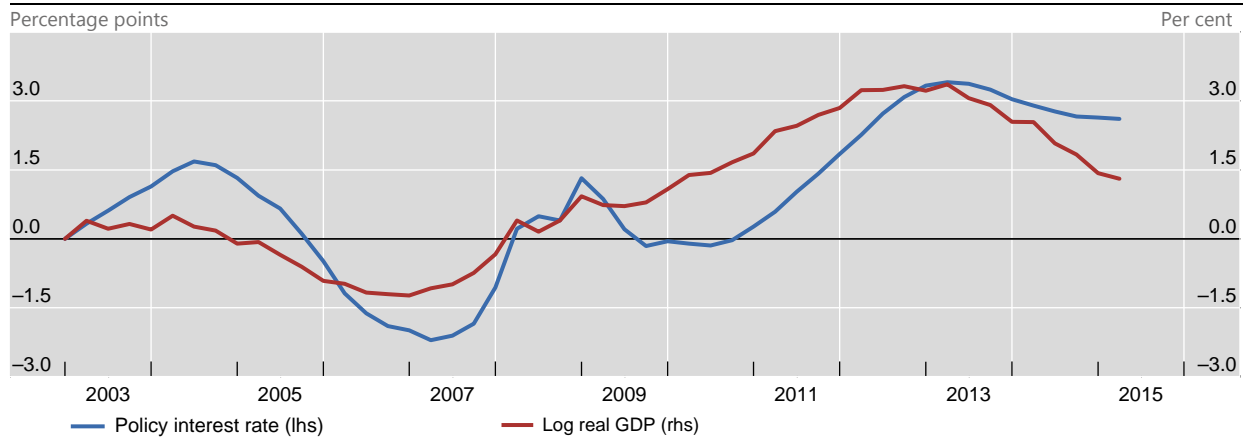
¹³ The specific rule in the study includes explicitly only the debt service gap, but the leverage gap conveys crucial information about the output gap and, as noted, is in turn closely influenced by the debt service gap.



An illustrative experiment: output and interest rate paths

Difference between counterfactual and actual outcomes

Graph 5

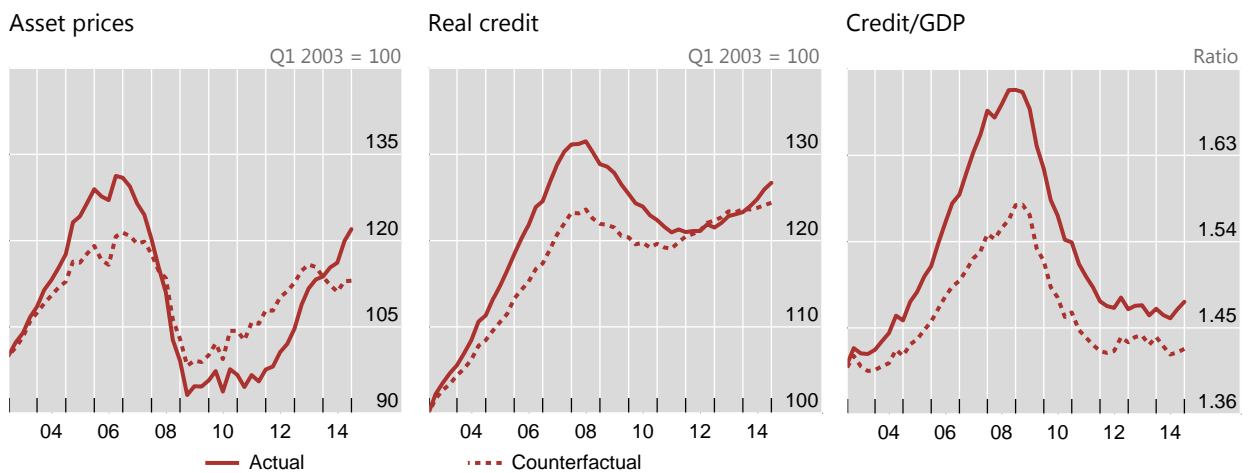


Sources: Juselius et al (2016); based on US data.

The source of the gains is that the policy helps to smooth out the financial cycle. This is shown in Graph 6, with the dotted line indicating the counterfactual and the continuous line the historical behaviour of various variables. One can easily see the smaller amplitude in the cycle in asset prices, real credit and the credit-to-GDP ratio in the counterfactual.

An illustrative experiment: smoothing the financial cycle

Graph 6



Sources: Juselius et al (2016); based on US data.

Naturally, the performance of the economy improves further if the counterfactual experiment begins earlier (not shown). The reason is that the policy has more time to work and hence gets more traction.

The results also shed light on the natural rate of interest (Graph 7). They suggest that the natural rate is higher than suggested by the standard estimate, which does not take into account the financial cycle. Here we are back in our universe, as the estimate of the natural rate is based on the actual history of events, not the counterfactual. The real policy rate (yellow line) is generally below a standard natural rate estimate (blue line), which falls to zero towards the end of the sample; by contrast, the financial cycle-adjusted natural rate (red line) is generally higher. The intuition is that, as it turns out, it is the financial cycle proxies, rather than inflation, that provide most of the information about the behaviour of output

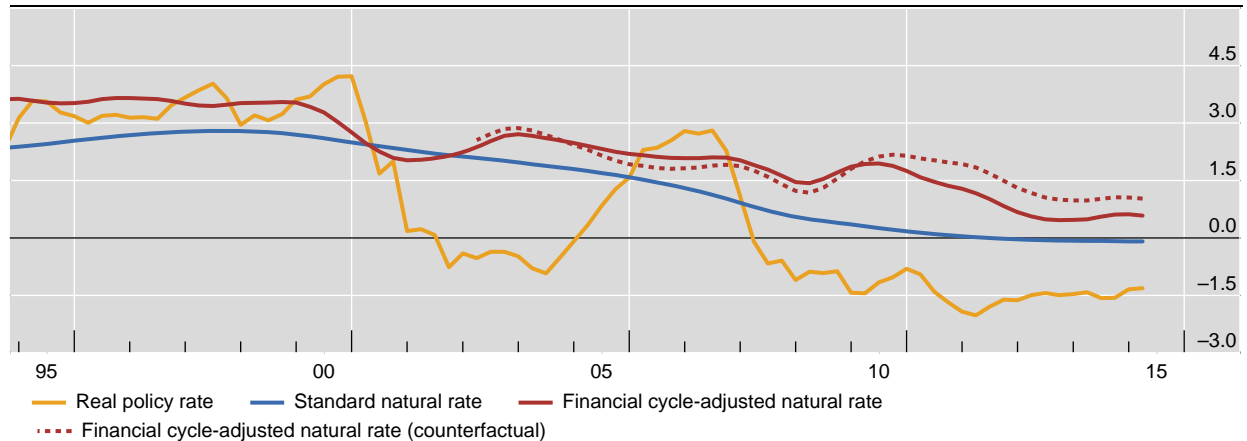


and its potential. This confirms previous work,¹⁴ and is the mirror image of the well known empirical finding that for a long time inflation has proved quite insensitive to measures of domestic economic slack.¹⁵ If it is insensitive, its evolution cannot tell us much about how much slack there is in the economy.

Comparing interest rates: standard and financial cycle-adjusted

In per cent

Graph 7



Sources: Juselius et al (2016); based on US data.

In fact, taking the financial cycle systematically into account can actually help mitigate the decline in the natural rate (dashed purple line). The rate is, on average, some 40 basis points higher after the 2009 recession, pointing to greater resilience in potential output growth. As standard models imply, the higher the estimated growth rate of potential output over the relevant period, the higher the natural rate of interest.

Moreover, once financial factors are allowed to play a big role, stabilising the economy sometimes requires sizeable deviations of the policy rate from the natural rate in response to the financial gaps. This is necessary so as to keep the economy close to financial equilibrium. The deviations tend to be larger than those in a standard Taylor rule.

III – Policy considerations

What conclusions could one draw from this analysis, all things considered? Let me first highlight a few caveats before turning to some broader reflections concerning policy.

Clearly, *all* exercises of this kind face serious analytical and econometric challenges.¹⁶ The findings need to be taken with more than a pinch of salt – more like a spoonful, in fact. Moreover, they are partial in nature. They simply take existing empirical work as benchmark. They simplify the uncertainty facing policymakers and the mechanisms at work in the economy. For instance, neither BIS study, just as the most recent ones described earlier, explicitly includes the exchange rate and the complications that this may

¹⁴ See Borio et al (2013, 2014), Arseneau and Kiley (2014), Blagrove et al (2015) and Melolinna and Tóth (2016).

¹⁵ See, among others, Stock and Watson (2007), Ball and Mazumder (2011) and Faust and Leeper (2015).

¹⁶ See, in particular, Juselius et al (2016) for a discussion of the econometric issues involved in the study.

create when implementing a more financial stability-oriented monetary policy.¹⁷ They also omit the role of alternative policies, first and foremost prudential policy, but also fiscal and even structural policies.

Forming a judgment on these key issues requires going well beyond the specific findings. As argued extensively elsewhere, to my mind monetary policy should be an integral part of a macro-financial stability framework designed to tackle financial booms and busts systematically (Borio (2014a,b, 2016)). The information challenges it faces are not qualitatively different from those of macroprudential measures, which have been extensively adopted internationally. And the complications that result from exchange rates and capital flows are best regarded as affecting the relative reliance on different policies rather than justifying either/or-type solutions (BIS (2016)). Financial cycles have proved too powerful historically. Not surprisingly, the extensive deployment of macroprudential tools in emerging market economies since the GFC has not prevented the re-emergence of the typical signs of financial imbalances.

If this argument is correct, what does it imply for the trade-off between price stability and financial stability and hence for the features of monetary policy frameworks?

The second study suggests that the trade-off may partly reflect the monetary policy in place. To the extent that monetary policy can help avoid the large losses linked to balance sheet recessions, it may also help stabilise inflation over the longer run. The horizon here is key: what may appear as a trade-off in the short run disappears in the longer run. From this perspective, price and financial stability are best seen as two sides of the same coin.

Even so, it is quite possible that a financial stability-oriented monetary policy may require greater tolerance for persistent deviations of inflation from target. This is especially the case for small open economies, as a tightening to keep the financial side of the economy on an even keel could easily induce a currency appreciation. This is especially likely during financial booms, when capital inflows may be in full swing.

Hence it is important to understand the sources of downward pressure on inflation. They are likely to be benign when reflecting a currency appreciation during a financial boom and sustained economic expansion. And the same holds if they reflect positive supply side forces, such as globalisation or technological advances. Not all disinflations, or indeed periods of falling prices (deflation), are born equal and hence amenable to the same treatment. Indeed, there is a risk that by fighting too hard against benign disinflation, or even deflation, a central bank may be sowing the seeds of malign disinflation in the future. This would occur if in the process it fuelled the build-up of financial imbalances.

The historical record is consistent with this view. It suggests that the link between deflation and output growth is weak, that it stems largely from the Great Depression, and that, even then, it is overshadowed by the debilitating effect of asset price declines. Moreover, the record also indicates that the more damaging nexus is not between deflation and debt but between property price declines and debt (Borio et al (2015)).¹⁸ The GFC has confirmed this once more. All this would suggest that the balance of current monetary policy frameworks has shifted too far towards focusing on near-term price stability at the expense of longer-term macroeconomic stability.

These considerations acquire greater force in light of another key finding of the studies – the need not to stray too far away from financial equilibrium. If the finding is correct, then there is a risk that policymakers may be lulled into a false sense of security when they see no signs of unsustainable financial

¹⁷ See Bruno and Shin (2015) and Hofmann et al (2016) for the link between currency appreciation and risk-taking; Rey (2013), Obstfeld (2015) and BIS (2016) for the constraints on monetary policy; and Borio (2014c), Rajan (2014) and BIS (2015) for the implications for the global stance of monetary policy and the international monetary and financial system.

¹⁸ For previous evidence on this, see Atkinson and Kehoe (2004), Bordo and Redish (2004) and Borio and Filardo (2004). For a recent study reaching different conclusions, see Eichengreen et al (2016).



booms and, as a result, press freely on the accelerator in order to bring inflation back to near-term targets. As debt stocks accumulate, by the time they start tightening policy, they may end up being well behind the curve. This is even more problematic if they become the main support for asset prices and are highly sensitive to the inevitable tensions that normalising policy would induce.

It is worth pausing and exploring a possible hypothetical scenario resulting from the interaction between changes in the inflation process and a traditional monetary policy response. Imagine, for the sake of the argument, that globalisation and technology exert downward pressure on inflation and, together with a history of price stability, inhibit second-round effects.¹⁹ The bargaining power of labour and the pricing power of corporations are no longer what they used to be in a much more fragmented world. If so, easing policy would tend to have mainly a one-off impact on the price level and hence boost inflation only temporarily. As the effect wanes, inflation will be back where it started, but the real interest rate will be lower. The central bank, then, would be encouraged to try again, and so on.

It is easy to see what this process would yield: a progressive reduction in inflation-adjusted (real) interest rates and, if large-scale asset purchases are also used, a trend expansion in central bank balance sheets.²⁰ In the meantime, the economy would drift further away from financial equilibrium and the debt-to-GDP ratio would keep rising or fail to adjust. A debt trap would threaten and make it hard to raise interest rates without causing damage to the economy (Borio and Disyatat (2014), Borio (2016)). The mix of balance sheet recessions and a stubborn disinflation process can be toxic. Now, I am not saying this is what is happening, although the passing resemblance to the conditions several economies have been facing is noteworthy. I am saying, however, that this hypothesis deserves further examination.

This analysis suggests that, at a minimum, it would be important to exploit the available flexibility in current frameworks to the full, tolerating persistent deviations of inflation below targets as needed to keep the financial side of the economy on an even keel. This would call for close attention to the factors driving disinflation and for a more critical evaluation of the likelihood of downward spirals and the costs of negative inflation.²¹ The term “deflation” appears to instil angst and to raise emotions that a more detached look at the historical record does not seem to justify. This also calls for a consistent communication policy, which argues against fine-tuning inflation and emphasises that the costs of falling prices depend on the prevailing circumstances.

Such a policy does not require changing mandates. A close reading suggests that the room for interpretation is often considerable. But it may require at least refinements in how the mandates are put into practice, including the horizon for achieving inflation objectives²², the width of target bands and the role that financial factors play (eg through novel standard reaction functions and explicit escape clauses). Revising mandates, especially if enshrined in legislation, should not be taboo: they are a means to an end (BIS (2015)). But that is a delicate and unpredictable process. The outcome may be quite different from the initial intention. And, at the end of the day, for good policy the analytical framework used to interpret the workings of the economy is more important than the mandate.

¹⁹ On the role of globalisation in driving inflation, see Borio and Filardo (2007), BIS (2014) and Auer et al (2016). That said, there is no consensus on this point. While some empirical studies have reached similar conclusions (eg Bianchi and Civelli (2013), Ciccarelli and Mojon (2010) and Eickmeier and Moll (2009)), others have not (eg Ihrig et al (2010) and Martínez-García and Wynne (2012)).

²⁰ Together with the asymmetrical response to financial booms and busts, this provides a different explanation of the decline in real interest rates that emphasises the role of saving-investment imbalances: see eg Bernanke (2015) and Bean et al (2015).

²¹ On this, see also Rajan (2015).

²² This point has been stressed for a long time; see eg Borio and Lowe (2002) and Bean (2003).



Conclusion

In this presentation, I have argued that recent empirical work sceptical of the merits of a financial stability-oriented monetary policy tends to underestimate its potential benefits. This is because of specific assumptions and calibration. Analysis at the BIS that weakens some of the restrictions used in the empirical models finds considerably larger benefits. In essence, this work allows monetary policy to play a bigger role in influencing both the probability and the costs of financial busts, even without crises. Importantly, it also stresses the idea that risks build up over time as the financial cycle evolves, so that waiting has a cost.

Clearly, given the complexity of the issues involved and inevitable limitations of any such type of analysis, this work represents just one contribution to the bigger debate. Personally, though, I would conjecture that two conclusions will survive further scrutiny: there are likely to be potential gains from a more financial stability-oriented monetary policy; and any such policy, if it is to produce gains, would need to take financial developments into account systematically, in both good and bad times. A policy of "selective attention", whereby monetary policy reacts only when the signs of financial imbalances become all too evident, would fall short of the mark.

Operationally, shifting towards a more financial stability-oriented monetary policy would call for adjustments to current frameworks. These would include rules of thumb that add financial variables to benchmark policy responses (our work points to some possibilities), strengthening the medium-term orientation of policies, and making the most of the existing flexibility in tolerating possibly persistent deviations of inflation from target. This would need to be complemented by a more critical assessment of the costs of falling prices, depending on the factors that drive them, and of the likelihood of downward spirals. Changing mandates is not taboo, but should be a last resort.

Is it possible to change? If the history of central banking tells us anything, it is that change is inevitable. The real questions are under what circumstances and to what. It typically takes a major event for change to happen: for all sorts of reasons – intellectual, behavioural and political – institutions have a lot of inertia. The bar is set very high. But the changes proposed here are an evolution, not a revolution. They are comparatively small steps along a familiar path, not a jump into untrodden territory. In many ways, they would move central banking closer to its historical origins. We should not lose sight of that.

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