

Trade-offs between macroeconomic and financial stability objectives

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Policy Recommendations

The existence of trade-offs suggests that the main monetary policy instrument should be used to achieve what it does best: support economic growth and ensure price stability. Additional tools (especially macroprudential instruments) are needed to target and address specific financial stability risks.

Summary

The current global economic environment is putting central bankers in Europe and other advanced economies to the test. What should be the appropriate monetary policy stance when economic growth is sluggish, inflation is below the target, but at same time financial stability risks are on the rise? Should central banks be concerned about financial stability risks in addition to their macroeconomic stability objective? Trade-offs that central banks may face remain at the heart of policy discussions. Using a New Keynesian three-equation model upgraded to include an endogenous asset price bubble, we contribute to this discussion by assessing trade-offs between the objectives of price, output and financial stability, when the central bank attempts to actively respond to financial stability risks. We find that a “leaning against the wind” policy cannot simultaneously achieve macroeconomic and financial stability, in case of supply or assets price bubble shocks.

Introduction

To cope with the consequences of the 2007-2008 financial crisis, policymakers were forced to lower interest rates to near zero and this situation still goes on today in the Eurozone. However, several researches (Colletaz et al., 2018, Ioannidou et al., 2015, Jiménez et al. 2014, among others) show that maintaining interest rates too low for a long period of time can fuel financial stability and systemic risks. Given current economic conditions, central banks face new challenges as opposite action is needed from monetary policy. To deal with the low inflation environment, the central bank should keep rates at a low level. However, in order to avoid risk accumulation, interest rates should increase. Therefore, the question of whether or not central banks should react to financial imbalances arises.

Nowadays central banks face new challenges as opposite action is needed from monetary policy.

Although since the financial crisis macroprudential policies have been adopted to address systemic risk in the financial system, we can ask ourselves if central banks should internalize the negative externality arising from keeping interest rates low and for long. We answer this question by analyzing, in a simple theoretical framework, trade-offs that might emerge between policy objectives when the central bank “*leans against the wind*”, *i.e.* uses the policy rate as instrument to contain financial stability risks.

Context and related literature

Leaning against the wind has been seen, in the aftermath of the financial crisis, as one of the potential strategies to prevent accumulation of financial stability risks. However, as illustrated by the current global economic and financial conditions, such policies may give rise to trade-offs. Indeed, by using the same instrument to address several objectives the Tinbergen principle is violated. De Grauwe and Gros (2009) show that a trade-off between inflation and financial stability can emerge when the economy faces a technological shock or when investors' behavior is characterized by too optimistic beliefs in financial markets (“animal spirits”). It may be dangerous for central banks to pursue a financial stability objective because this may require a tighter monetary policy than what is

needed to tame inflation (Dell'ariccia, 2010; Mishkin, 2011, among others). King (2012) points out that adding financial shocks to the traditional Taylor curve moves the frontier upper and to the right, *i.e.* adding financial stability to the traditional macroeconomic stabilization objectives increases the volatility of both inflation and output. Although Issing (2003) suggests that the trade-off between price stability and financial stability is more likely to occur in the short-term, a more recent analysis by Fahr and Fell (2017) shows that even when considering financial cycles, monetary policy is always less effective than macroprudential policies in addressing financial stability risks.

In most cases, the literature discussed above does not resort formally to a theoretical model when discussing trade-offs between monetary policy objectives in the “leaning against the wind” setup. Notable exceptions are cases where trade-offs are assessed in the presence of macroprudential policies, for example in several DSGE models (Agenor et al., 2012; Beau et al., 2013 or Christensen et al., 2011). Shukayev and Ueberfeldt (2016) investigates trade-offs between policy objectives in a context where banks are exposed to runs on their short-term liabilities. They find that relying on the short-term interest rate, monetary policy can mitigate

Theoretical framework

Our analytical framework starts from the reduced form three-equation New Keynesian model consisting of a hybrid IS curve, a New Keynesian Phillips curve and a Taylor rule for the interest rate. We add several elements to this initial framework. First, we supplement it with a fourth equation reflecting an asset price bubble. We further assume that the policy interest rate can affect the probability that the bubble bursts (i.e. financial risk materializes), making the bubble endogenous to the macro-framework. Second, asset price deviations are intuitively assumed to affect the aggregate demand. While Filardo (2000) assumes that asset prices have a direct impact on general price inflation and thus includes the price bubble in the Phillips curve equation, we assume an indirect impact on inflation by introducing the bubble in the hybrid IS equation. This is justified by the fact that asset prices affect the aggregate demand through several well acknowledged transmission

In this framework, we define financial instability as the volatility of asset prices’ deviations from

this risk (and preserve investment) but at the cost of higher inflation and output volatility.

To the best of our knowledge, our paper is the first to investigate, by means of a theoretical model with an endogenous financial bubble, the existence of trade-offs when the central bank implements a “leaning against the wind” type of policy.

channels: the wealth effect, Tobin's Q or the financial accelerator mechanism. In addition, while Filardo (2001) and Filardo (2004) clearly distinguish the fundamental and the speculative part of asset prices, we simply define the bubble as the difference between these two components: deviations of asset prices from their fundamental value are the source of financial stability risks. Third, to model a leaning against the wind strategy, the Taylor rule is specified such that the interest rate responds to the asset price bubble.

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their fundamental values. Thus, the bubble process is assumed to capture risk accumulation

in the financial sector. Our analysis aims at exploring the changes in the volatilities of inflation, output and the bubble in response to various types of shocks (supply and/or asset price bubble shocks) and different responses of the central bank (in the spirit of the Taylor

curve). We estimate the model parameters based on euro area monthly data from 1999M09 to 2007M12.

Results

Our results can be summarized by the following table:

Reaction of the central bank	Supply shocks	Asset price bubble shocks
Increase in the reaction to inflation	$\sigma_{\pi} \searrow, \sigma_b \nearrow, \sigma_y \nearrow$	-
Increase in the reaction to the bubble	-	$\sigma_{\pi} \nearrow, \sigma_b \nearrow, \sigma_y \nearrow$
Increase in the reaction to output gap	-	$\sigma_{\pi} \nearrow, \sigma_b \searrow, \sigma_y \searrow$

Note: σ_{π} , σ_b , σ_y represent the volatilities of inflation, the bubble and output gap respectively. Arrows indicate an increase (\nearrow) or a decrease (\searrow) in the respective volatility.

When faced with supply shocks, central banks may respond in a more or less aggressive way to inflation. By adopting a hawkish behavior, the central bank manages to stabilize inflation. However, this comes at the expense of higher output and bubble volatility.

When confronted with asset price bubble shocks, central banks might either have a more aggressive response to the bubble or a more aggressive reaction to the output (as output depends on the bubble). In the former case, volatilities of the real economy and of the financial sector both increase. Responding more

aggressively to the output gap does not produce an optimal outcome either, as a trade-off once again emerges. This finding is in line with Gali (2014) who argues that increasing the interest rate in response to a growing bubble generates higher fluctuations in the latter, as the interest rate positively affects the bubble's growth. In a different framework with another definition for financial instability, Svensson (2013) also concludes to a counterproductive effect of tightening monetary policy to achieve financial stability.

The abovementioned results are confirmed by different robustness scenarios and by a loss function analysis. Overall, results seem all against the leaning against the wind strategy. Regardless of the type of shock, a trade-off between inflation stability and financial stability occurs. Moreover, reacting more aggressively to the bubble seems to be the worst-case scenario as all volatilities increase. The best outcome, although not ideal, is to increase the response of the policy rate to the output gap. This allows monetary authorities to reduce both financial and output gap instability, but at the cost higher inflation volatility. This strategy has attracted some sympathy from some researchers who suggest that such a policy might be viable in the short-term (De Grauwe and Gros, 2009; Woodford, 2012).

Conclusions and Policy Implications

While the leaning against the wind strategy may be required, we argue that such a policy can generate trade-offs between objectives or even reinforce macroeconomic and financial instability. Although the risk-taking channel of monetary policy highlights the potential impact of interest rates on the buildup financial bubbles, relying on the policy interest rate to respond to these imbalances can be harmful for the monetary policy objectives. We therefore argue that the interest rate should be used for

achieving traditional macroeconomic goals, and a second instrument should complement the policy rate to tackle financial stability risks. The progress made after the GFC in terms of prudential regulation, including the development of a macroprudential framework, is precisely meant to relieve monetary policy from this “two objectives - one instrument” dilemma. However, further analysis is needed to assess the optimal policy mix between monetary and macroprudential policies.

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