Discussion of "The Risk Channel of Monetary Policy"

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The term "risk channel of monetary policy" refers to the link between monetary policy and risk-taking behavior (Borio and Zhu 2012). According to this channel, changes in current or future central bank policies can cause changes in the perception of risk, which could lead to changes in economic activity through rebalancing of portfolio composition. For example, a central bank reaction function that is more accommodative to a recession ex post can lead households, firms, and financial institutions to take larger leverage positions ex ante, as they perceive the recession to be less severe. In turn, the endogenous adjustment in balance sheet positions can affect the transmission of monetary policy.

The key goal of this paper is to quantitatively assess the risk channel of monetary policy. To do so, it constructs a DSGE model with a banking sector with debt and equity financing and nominal rigidities, building on the work of Gertler and Karadi (2011) and Gertler, Kiyotaki, and Queralto (2012). The model is used to analyze how changes in the volatility of fundamental and monetary shocks affect the composition of the balance sheet as well as the volatility in the business cycle. Moreover, the author also investigates the effects of different interest rate rules on the riskiness of the financial sector.

There are three ways in which the risk channel operates in the model. First, due to nominal rigidities, lowering the nominal interest rate reduces the real rate and reduces the cost of bank borrowing. Second, lowering the real interest rate increases the present value of cash flows of banks' assets, increasing their equity value and allowing them to borrow more. Third, even keeping current or future rates

constant, a policy that tends to lower interest rates in the future in case of financial distress would encourage more risk taking today via a precautionary motive. These three channels interact with each other, shaping banks' portfolio decisions and the macroeconomic adjustment in response to different shocks.

1. Policy Relevance

The paper addresses a topic of very important policy relevance. If the risk channel is indeed quantitatively important, this may lead us to reconsider the analysis of optimal monetary policy incorporating the risk channel. Once we factor in the risk channel, how does this affect our understanding of important questions: Is a policy that stabilizes inflation and output efficient? Is there a trade-off between price stability and financial stability? Should policies also target movements in asset prices or risk premium? How does this affect the transmission mechanism?

The risk channel of monetary policy may also be relevant for studying the interaction between monetary and macroprudential policies. In particular, it is often argued that the combination of the sense of tranquility provided by the Great Moderation together with the perception that the Federal Reserve would keep interest rates low during a recession encouraged substantial risk taking in financial markets and sowed the seeds of the financial crisis. How should monetary policy be designed to address the trade-off between the benefits from accommodative monetary policy ex post with the potential costs that arise from more risk taking ex ante?[1]

Empirically, the risk channel remains a controversial issue, and more research is needed to tease out the different channels working in the data (Bruno and Shin 2013, Gambacorta 2009). Significant progress can be made by developing quantitative models, as in de Groot (this issue), to conduct counterfactual analysis that can shed light on the importance of the risk channel.

[1]In the context of debt relief—i.e., bailout policies—Bianchi (2012) finds that when bailouts are conditional on a systemic crisis, they deliver gains that offset the costs from excessive borrowing.

2. Technical Challenges

A meaningful analysis of the risk channel of monetary policy requires a model with incomplete markets, as in the current paper. With complete markets, allocations are independent of prices of asset securities, and hence they do not constitute a starting point to think about how disruptions in financial markets can affect the macroeconomy and how it interacts with monetary policy. Standard log-linearized New Keynesian DSGE models display certainty equivalence and hence are not suitable to analyze the risk channel of monetary policy.

The approach pursued in the paper builds on Coeurdacier, Rey, and Winant (2011) and Devereux and Sutherland (2008) to construct a local approximation around the so-called risk-adjusted steady state, assuming the leverage constraint is always binding. While the paper notes that the presence of a portfolio choice is critical in order to consider the risk channel, this should be qualified. It is only in the context of an always binding leverage constraint that a portfolio choice is needed to address the risk channel. In general, in an economy with incomplete markets and an occasionally binding credit constraint, there is a risk-taking decision involving the amount of investment in capital and the amount of retained earnings. Hence, the risk channel operates regardless of whether the bank has access only to non-state-contingent debt or whether it has also the ability to issue preferred equity. The results by Tsyrennikov, Stepanchuk, and Rabitsch (2013) are particularly relevant for this paper since they show that in the presence of asymmetry in agents engaging in financial (e.g., borrowers and lenders), portfolio choice models based on perturbation present significant inaccuracies—in particular, with conducting long-run simulations. De Groot, Durdu, and Mendoza (2012) also show the inaccuracies obtained when solution methods based on perturbation methods are approximated around a steady state, which differs from the true long-run averages implied by a global solution method. Moreover, these results are especially relevant when turning into welfare issues.[2]

[2]The assumptions on the transition to the new steady state, which is important to avoid spurious welfare results driven by steady-state values, may also be important when conducting local approximations.

3. Is the Risk Channel Small?

For most plausible parameterizations, results in the paper suggest that the risk channel may not be quantitatively relevant. I would like to offer three qualifications before rushing to conclude that the risk channel may be neglected. First, there are a number of issues related to the fact that financial friction is modeled as an always binding leverage constraint and the economy fluctuates symmetrically around the so-called risky steady state. In fact, as the paper looks only at how exogenous sources of volatility affect *unconditional* moments, it leaves out of the analysis potential important changes in *conditional* moments that would require a higher-order approximation. For example, Bianchi and Mendoza (2013) find that the conditional risk premium in a "high-systemic-risk state," i.e., a state where the probability of a systemic financial crisis is large, can be an order of magnitude larger than in a low-systemic-risk state. This occurs because precautionary motives introduce large non-linearities close to the leverage constraint. Moreover, because financial crises are naturally rare events, it is the change in the support of distribution of key state variables (firm/household debt, net worth of financial intermediaries, etc.), rather than a change in the average, that is most critical.

Modeling the leverage constraint as an always binding leverage constraint rules out a sudden breakdown in financial markets, which can potentially lead to more severe disruptions in the real economy. To the extent that policymakers are more concerned about full-blown financial crises than about fluctuations in general, this suggests that conducting a global analysis, not confined to perturbations around the steady state with an always binding leverage constraint, would be particularly important. Moreover, another key source of non-linearity that is particularly relevant to the analysis of monetary policy, which is not analyzed in the paper, is the zero lower bound. In the current model, if the central bank hits the zero lower bound, this would impair the adjustment of the economy and produce a large output gap. Again this would affect the risk channel.[3]

[3]Fernández-Villaverde et al. (2012) and Nakata (2013) are two recent papers studying the implications of uncertainty at the zero lower bound using a global solution method.

Based on this, the results in the paper should probably be seen as a lower bound of the importance of the risk channel.

The second issue has to do with the assumptions of the sources of risks that banks face in the model. Following a vast recent literature, banks are modeling as investing directly in equity of firms and suffer only from credit risk, which in the model is captured by potential losses in the corporate sector. But one of banks' essential roles is maturity transformation. When banks grant loans, they create liabilities that are claimed on demand. This exposes them to liquidity risk, as in the classic framework of Diamond and Dybvig (1983). In Bianchi and Bigio (2013), there is a risk channel of monetary policy that works through an endogenous liquidity premium. For example, if the central bank lowers the discount window rate, this reduces the need for precautionary reserves and encourages higher credit creation by banks. Liquidity risk, which also plays an important role in the framework of Gertler and Kiyotaki (2013), can potentially introduce a larger role for the risk channel of monetary policy.

Finally, the paper would benefit from an empirical validation. To gain more confidence on the quantitative importance of the risk channel, it is important to have a model that is indeed a good laboratory in terms of being able to replicate a set of empirical facts. Is de Groot able to account for co-movement of financial and business-cycle variables? Does monetary policy affect the financial structure of banks in the same way we see in the data?

4. Risk Channel of Monetary Policy in Open Economies

There is a related literature that has recently studied how monetary policy affects risk-taking decisions in open-economy models with financial frictions. Fornaro (2012) studies alternative monetary policy regimes in a model featuring a fire-sale amplification mechanism, as in Bianchi and Mendoza (2010), as well as sticky wages. He finds that a flexible exchange rate regime induces significantly larger debt accumulation—i.e., more risk taking—than a fixed exchange rate regime or a wage-targeting regime. This occurs because in his model a flexible exchange rate regime provides larger macroeconomic and financial stability, and this reduces the need for precautionary

savings.[4,5] Ottonello (2013) also considers exchange rate policy but in a model with liability dollarization and balance sheet constraints, as in Bianchi (2011) and Mendoza (2002). In contrast to Fornaro (2012), he finds that containing the nominal exchange rate depreciation leads to more borrowing, as this contributes to relax financial constraints, consistent with the "fear of floating" view (see Calvo and Reinhart 2002).

5. Conclusions

A growing literature has emerged seeking to incorporate systemic risk in quantitative general equilibrium models and analyzing the normative implications. While the paper falls short of incorporating the kind of non-linear dynamics that are at the core of policy discussions on financial stability, it is a clear and valuable step forward.

I believe that future work along the lines of this paper would be able to obtain important insights from the conduct of optimal monetary policy. In particular, how exactly does the risk channel change conventional policy prescriptions? How does the conduct of monetary policy that responds optimally to the risk channel affect the need for macroprudential policy and credit policy?

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[4]The desirability of a flexible exchange rate is in line with the traditional view that flexible exchange rate regimes provide more effective stabilization in the presence of nominal rigidities.

[5]Schmitt-Grohé and Uribe (2011) also show that with a flexible exchange rate regime in an economy with downward wage rigidity, there is larger debt accumulation. Technically, this occurs when tradables and non-tradables are Hicksian complements so that the reduction in the non-tradable consumption in a recession increases the marginal utility of tradable consumption, and hence raises the shadow value of wealth. Another relevant paper is Benigno et al. (2012), who study interactions between monetary and macroprudential policy.

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