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Optimal Policy Implications of Financial Uncertainty

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The last decades proved that policymaking without considering uncertainty is impracticable. We propose a robust optimal policy under uncertainty in response to financial and inflation shocks by acknowledging financial stability as an explicit monetary policy objective. To do so, we augment a financial DSGE model with model misspecification. We show that model ambiguity on the financial side requires a passive monetary policy stance. However, if the uncertainty originates from the supply side of the economy, an aggressive response of interest rate is required. We also show the impact of an additional macroprudential tool on the dynamics of the economy.

In addition to the stabilization of inflation and output gap, the central banks assume the responsibility to prevent financial crises and provide a stable financial system. In the aftermath of the Great Recession, the policymakers gave more prominence to financial stability in order to obliterate the financial market fluctuations preemptively. However, the standard New Keynesian model has been proven inadequate to account for the linkages between the financial sector and the real economy. Accordingly, new models with alternative policy tools have emerged

during this period to analyze the impact of financial shocks. However, it might not be possible for the policymaker to verify these models with existing data, because of the inaccurate specification of financial markets. This leads to a model uncertainty that may have profound effects on the conduct of monetary policy.

Quantifying the optimal response to economic developments under uncertainty requires knowledge of the type and degree of uncertainty. In this brief, based on Kantur & Özcan (2019), we consider the Knightian

uncertainty, which is handled by the robust control methodology of Hansen & Sargent (2008). In this approach, the policymaker seeks robust policies that can reasonably guard against catastrophic outcomes and perform well, even under the worst scenario. To do so, policymakers purposefully deviate from certainty equivalence. The interaction between robust policymaking and financial shocks leads to a significant welfare reduction in society.

Naturally, sound intervention to financial imbalances calls for a coherent understanding of the practice and tool(s) available to the policymaker, especially under uncertainty. Specifically, this paper aims to suggest a robust optimal monetary policy by evaluating the impact of financial shocks on the real economy under financial uncertainty. The response of monetary policy to financial shock is extensively studied by many authors such as Carlstrom et al. (2010), De Fiore et al. (2011), Huang & Davis (2013), and Angelini et al. (2014). Since responses to innovations are triggered by uncertainty, putting shocks and misspecification together gives more than the sum of the two. In Kantur & Özcan (2019), our contribution to the literature is two-fold. First, we examine the impact of financial shocks under financial uncertainty in a model with a detailed description of the financial market and financial frictions. Second, we extend the analysis to focus on robust optimal policy in the presence of inflation uncertainty. We use a dynamic general equilibrium model with a financial sector that is subject to the moral hazard problem of De Paoli & Paustian (2017). We extend the optimal policy solution by incorporating model uncertainty. The central bank targets the stability of inflation, output gap, and financial markets. This model

provides us the appropriate environment to study the interaction between uncertainty and concomitant shocks and propose necessary policy prescriptions to countervail any deviation from targets, leading to a reduction in society's welfare.

Our main findings are as follows: First, we show that interest rates should stay constant under financial uncertainty. Indeed, under financial uncertainty, a policymaker overestimates the strength of the moral hazard problem. A robust optimal policy calls for guarding against model misspecification by initially dampening the policy rate. Consequently, model ambiguity on the financial side requires a *passive* monetary policy stance. We also show that the first best solution is achieved even under uncertainty if the central bank uses a macroprudential tool. We also evaluate the impact of inflation uncertainty. Since the effect of the supply shock is more prolonged due to uncertainty, we observe an *aggressive* response in the policy rate. Moreover, as suggested by Tinbergen's principle, the introduction of a second tool reduces the trade-off between monetary and financial stability goals. Similar to the one-tool case, inflation uncertainty worsens the financial market conditions. Nevertheless, the macroprudential instrument suppresses the transmission of the credit distortions into the real economy. However, the interest rate response is still aggressive since the source of uncertainty is inflation dynamics.

Policy Implications

The source of uncertainty matters and has an imperative impact on monetary policymaking. According to our findings, the uncertainty associated with the supply side of the economy calls for an aggressive reaction of the policymaker. However, an ambiguity stemming from the financial side requires attenuation in monetary policy.

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