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Does easing monetary policy increase financial instability?

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ABSTRACT

This paper develops a model featuring both a macroeconomic and a financial friction that speaks to the interaction between monetary and macro-prudential policy and to the role of US monetary and regulatory policy in the run up to the Subprime mortgage crisis. There are two main results. First, interest rate rigidities in a monopolistic banking system increase the probability of a financial crisis (relative to the case of flexible interest rate) in response to contractionary shocks to the economy, while they act as automatic macro-prudential stabilizers in response to expansionary shocks. Second, when the interest rate is the only available instrument, monetary policy faces a trade-off between macroeconomic and financial stability. This trade off is both qualitative and quantitative in response to contractionary shocks, while it is only quantitative in response to positive shocks. We show that a second instrument, such as a Pigouvian tax on credit to households on the demand side of the market, is needed to restore efficiency in the economy when both frictions are at work.

1. Introduction

The notion that excessively loose monetary policy can sow the seeds of financial instability was famously put forward right after the bursting of the US "dot-com" bubble by Borio and White (2003) and Rajan (2005). The issue gained further prominence after the US Subprime mortgage crisis and the ensuing Great recession. Some macroeconomists pushed this argument as far as assigning to monetary policy a main role for causing the Subprime crisis (see, among others, Taylor, 2007, 2010). But others, like Svensson (2010) and Bernanke (2010), together with a sizable body of real estate literature (Keys et al., 2010; Coleman et al., 2008; Avery and Brevoort, 2015), argued forcefully against this idea blaming instead the crisis on an ineffective regulatory policy.

This paper speaks to this controversy by studying the interaction between a traditional macroeconomic stabilization role for monetary policy and a more novel financial stability objective. It develops a simple model of consumption and collateralized borrowing featuring both a macroeconomic and a financial friction—namely, an interest rate rigidity that gives rise to a traditional macroeconomic stabilization objective and a pecuniary externality that gives rise to a more novel financial stability objective—in which macro-prudential policies must complement monetary policy in responding to shocks.

The macroeconomic stabilization objective arises from the presence of monopolistic competition and interest rates rigidity in the banking sector.[1] Due to monopolistic power, banks apply a markup on their funding cost and curtail aggregate lending. When some banks cannot fully adjust their lending rates in response to shocks to their funding costs, the economy as a whole is distorted and reaches an equilibrium that is not efficient, in a manner similar to models with staggered price setting.

The financial stability objective stems from the fact that the model endogenously generates financial crises when a collateral or leverage constraint on borrowing occasionally binds. When this constraint binds, like for instance in the case of a binding loan-to-value limit in mortgage lending, a pecuniary externality arises. Individual borrowers do not internalize the effect of their decisions

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[1] It is a well established fact in the empirical banking literature that bank retail interest rates change only infrequently. See Hannan and Berger (1991) and Neumark and Sharpe (1992).

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on the market price of collateral, and hence borrow and consume more than socially efficient. This increases the likelihood to hit the constraint and the intensity with which the constraint binds, which in this set-up means increasing the frequency and the severity of financial crises (see, among many others, Lorenzoni, 2008; Mendoza, 2010; Bianchi, 2011; Benigno et al., 2013). We take a pecuniary externality perspective to introduce financial stability considerations because it defines clearly the scope for government intervention in public finance terms and also naturally leads to a model-consistent definition of financial crisis as the event in which borrowing is curtailed.

There are two main results. First, the paper finds that interest rate rigidities have a different impact on financial stability considerations depending on the sign of the shock hitting the economy. In response to expansionary shocks that increase the funding cost of banks (e.g., a positive shock to aggregate demand) the average bank lending rate rises too. However, because of interest rate stickiness, it increases less than in a flexible interest rate equilibrium. This affects next period net worth through two channels. On the one hand, relatively lower lending rates prompt consumers to borrow more than in the flexible-rate case, and thus lowers next period net worth; on the other hand, interest rate repayments are lower relative to the flexible case, thus increasing next period net worth. When the second effect dominates the first one, which happens in our model for a coefficient of relative risk aversion larger than 1, the probability of a crisis (our financial stability indicator in the model) is lower than in the flexible interest rate case. Thus, interest rate rigidity acts as a sort of automatic macro-prudential stabilizer in response to shocks that increase bank funding costs. In contrast, in the presence of a contractionary shock that lowers the funding cost of banks (e.g., a negative shock to aggregate demand), the average lending interest rate falls less than in the flexible-rate equilibrium. Because of the same mechanisms working in reverse, the interest rate rigidity leads to a higher probability of a financial crisis than in the flexible interest rate case. Thus, interest rate rigidity magnifies financial stability concerns (relative to the flexible-rate case) in response to shocks that push down bank funding costs such as a recession or the bursting of an asset price bubble. Note moreover that, while the implications of interest rate rigidity for the probability of a crisis are 'asymmetric' in the model with respect to the sign of the shock, the effects of a positive or a negative shock on the equilibrium allocations of the economy are perfectly symmetric.

Second, our analysis shows that, if the government has only one policy instrument (say the monetary policy interest rate) and faces both the financial and the macroeconomic friction, efficiency can never be achieved when a negative shocks hits the economy and may not be achieved in response to positive shocks. However, when the government has two instruments (such as for instance a tax on debt and the monetary policy interest rate), efficiency can be achieved in response to both negative and positive shocks. Intuitively, when both frictions are at work and there is only one instrument, a shock that lowers the funding cost of banks requires interventions of opposite direction on the same policy tool (in our case, the monetary policy interest rate). The same problem may arise with positive shocks if the increase in the interest rate needed to address the real rigidity is different than the level needed to address the pecuniary externality. In general, however, with positive shocks, the interest rate changes needed to address the two distortions go in the same direction. The model therefore entails a stark qualitative trade-off between macroeconomic and financial stability in response to negative shocks and a possibly quantitative one in the case of positive shocks that can be resolved only with a second policy instrument.

The paper also illustrates that not all macro-prudential policy tools are alike. In particular, in our model, capital and reserve requirements act on the same bank funding cost margin as the monetary policy rate, an hence on the same supply side of the credit market. To eliminate the pecuniary externality that stems from the demand side of the credit market, the government intervention needs to act on the households' intertemporal margin. In our model, therefore, the only policy tool that can get the job done and complements the policy interest rate (or the other monetary instruments) is a Pigouvian tax on bank credit. As we shall see, alternative monetary policy instruments could all address the pecuniary externality or the interest rate rigidity in isolation. However, once the interest rate is committed to address macroeconomic stability, additional monetary policy instruments act on the same bank funding margin and do not help to restore efficiency. This illustrates the merit of introducing in our analysis an explicit macroeconomic friction that justifies monetary policy intervention, as opposed to modeling the macroeconomic environment with a reduced form representation like a Taylor rule for the policy interest rate.

Finally, we use the lenses of our model to discuss the US Subprime mortgage crisis and its possible causes. Within the logic of our model, there are two ways to interpret it. On the one hand, one can take into account that regulatory responsibilities in the United States are shared among a multiplicity of institutions and that these institutions had the levers to tighten the regulatory environment before the crisis in a prudential manner. In this case, and noting that regulation did not start to tighten until about 2006, we could conclude that the crisis stemmed primarily from a regulatory failure, consistent with views prevailing in the real estate literature. However, one could also note that in the face of regulatory inaction, the Fed should have taken into account that the monetary policy interest rate was effectively the only policy instrument available to address both macroeconomic and financial stability. From this perspective, our model implies that, indeed, the policy rate should have been set higher than the level needed to address only the macroeconomic friction, consistent with the some of the views in the macroeconomics literature.

The paper is related to three strands of literature. The first is a branch of the New Keynesian literature that considered financial frictions and Taylor-type interest rate rules (see, for example, Christiano et al., 2007; Kannan et al., 2012).[2] These papers consider either interest rate rules augmented with macro-prudential arguments—such as credit growth, asset prices, loan-to-value limits—or a combination of interest and macro-prudential rules in order to allow monetary policy to "lean against financial winds". However, in these papers, policy does not target a second, explicit and microfunded market failure in a public finance sense, like in the pecuniary externality literature. In this sense, they do not have a clearly identified financial stability objective and scope for government intervention to address it. In our model, there is a well defined pecuniary externality that justify government intervention for financial stability purposes.

The second is a growing literature on pecuniary externalities that interprets financial crises as episodes of financial amplification in environments where credit constraints are only occasionally binding (see, among others, Lorenzoni, 2008; Korinek, 2010; Bianchi, 2011; Jeanne and Korinek, 2010b; Benigno et al., 2013). In this class of models, the need for macro-prudential policies (like capital or reserve requirements) stems from a well-defined market failure: a pecuniary externality originating from the presence of the price of collateral in the aggregate borrowing constraint of households. However, in all these models, the financial friction is the only distortion in the economy. The question of how the pursuit of

[2] This literature is large and fast-growing. See also Angelini et al. (2014), Beau et al. (2012), Angeloni and Faia (2009), Paoli and Paustian (2013), Lambertini et al. (2013), and Clerc et al. (2015).