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Monetary policy and capital regulation in the US and Europe

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ABSTRACT

The Federal Reserve and the European Central Bank aggressively lowered interest rates during the recent crisis. Both actions were at odds with an anti-inflationary policy stance: in August 2007, inflation expectations were high, particularly in the United States. To explain these actions, we model an economy with a leveraged and regulated financial sector. We find optional Taylor rules using simulated GMM, and find rules consistent with a pro-inflationary reaction during financial crises and a standard output-inflation mandate for the central bank. Our results support procyclical regulation not because of adequacy concerns, but instead due to the impact on monetary policy.

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1. Introduction

Our paper makes two contributions to the literature. One, we construct a model economy with a leveraged and regulated financial sector. It shows financial accelerator characteristics in normal times, that is, in the state of the world in which banks do not face regulatory capital constraints, there is a significant amplification of monetary policy. More importantly, the model shows the absence of an accelerator when the economy is capital constrained. The two-state set-up highlights an important feature of the model; we impose, via capital constraints, that lending and borrowing can be rationed. Two, we illustrate, via simulation, that optimal policy can become precautionary in a world that

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contains even a small probability of a constrained state. The monetary authority may have to include the presence of a constrained state as a factor when choosing policy during “unconstrained” times. We show the utility of this approach by calibrating the model to the US and Europe. Using separate calibrations to find rules appropriate to each environment, we find results consistent with (1) a stronger anti-inflationary stance for the ECB in normal times, and (2) a much stronger willingness by the Federal Reserve to sacrifice inflation risk for output in times of crisis.

We have three stylized interpretations of our results. One, the Federal Reserve has partial control over bank regulation as well as full control over monetary policy. This permits it to exercise regulatory lenience as a part of monetary policy. It can thus set an initially higher capital threshold and lower it in the face of a crisis. This permits some flexibility in times of moderate stress, but also requires the willingness to face inflation risk in times of crisis. Once banks hit the capital threshold, the situation is truly dire. Two, a stronger output orientation by the Fed means that it will potentially respond more quickly when faced with constrained banks and the lack of an accelerator. Three, our results are consistent with procyclical capital regulation. However, we reach this conclusion not due to the need to support a stressed financial sector in times of crisis, but rather because the interaction between monetary policy and bank regulation necessitates it.

Our approach is to incorporate a very simple financial friction into a new-Keynesian synthesis model. The constraint is a regulatory capital minimum for the banking sector.¹ This implies two states of the world: well-capitalized (unconstrained) and under-capitalized (constrained).² We mesh this with a standard formulation of monetary policy in which the central bank maintains a mandate on inflation and growth (Fed) or inflation alone (ECB).

Our motivation for this is to assess the implications for monetary policy and bank regulation using only relatively small deviations from a synthesis model.³ We wish to explain patterns of monetary policy from a positive perspective without needing to adjust classic, or legislated, views of the role of monetary policy or resort to other types of financial frictions. We impose only a single friction: the inability of banks to write new loans when undercapitalized. Of course, in the presence of a bank lending channel, this implies that monetary policy necessarily changes at the point of capital (in)adequacy. This single friction will generate the stylized patterns of monetary policy for both economies.

Our conclusion is, then, that it makes little sense to estimate a single policy rule across both constrained and unconstrained regimes. Thus, we construct empirical estimates of optimal policy in a model with two regimes. We illustrate the motivation for this using a simple diagram (see Fig. 1). Notice that the regulatory threshold produces the nonlinear effect of an increasingly strong monetary policy as banks approach the constraint, due to the fact that leverage is rising in this region. However, once the constraint is reached, monetary policy *cannot* impact lending, as banks are legally prevented from expanding lending.

Broadly, the recent crisis has highlighted the fact that first-generation new-Keynesian models are not well-equipped to interpret the role of monetary policy under financial stress. They were based on a couple of classic imperfections, such as nominal rigidities and monopolistic competition, to allow for nontrivial market power and price setting. The goal, of course, was to illustrate how demand shifts could impact output, and thus how monetary policy shifting the demand could have real effects. These constructs permitted an extensive literature that could study the basic role of policy. The models, however, omitted details of market imperfections that are central to the study of macroeconomics. This omission is in part responsible for the fact that consensus Taylor rules cannot describe the path of monetary policy (Rudebusch, 2006). A new round of (second-generation) new-Keynesian models focuses on the implications of other frictions. Because of the current financial crisis,

¹ Borio and Zhu (2007) argue that regulatory constraints lead to effective lending limits even if they are not fully eclipsed. The argument is that as banks near the capital limits, the combination of the risk of crossing the threshold and the possibility of government intervention has a similar dampening effect on lending. In our model, lending becomes constrained only at the point of inadequacy.

² Cecchetti and Li (2008) take an important first step in this direction by looking at two isolated regimes.

³ Our paper is similar in goals to Ioannidou (2005); however, we attempt to stay closer to the synthesis model in our analysis.

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