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Monetarism rides again? US monetary policy in a world of Quantitative Easing

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ABSTRACT

In a model of banking we give money a role in providing cheap collateral; i.e. besides the Taylor Rule, monetary policy can affect the risk-premium by varying the supply of M0 in open market operations, so that even at the zero bound monetary policy is still effective, and fiscal policy still crowds out investment. A simple rule for making M0 respond to credit conditions can substantially enhance the economy's stability. This, in combination with Price-level or nominal GDP targeting rules for interest rates, stabilises the economy further, making aggressive and distortionary regulation of banks' balance sheets redundant.

The financial crisis of 2007–2011 has challenged our previous understanding of the monetary system, with its assumptions that asset markets are complete and that money injections work solely through the setting of interest rates on safe short-term government bonds. Instead it now seems more promising to assume that financial assets, and specifically bonds and credit, are imperfect substitutes and that money substitutes with a wide variety of financial and real assets in rather different ways; in such a world we can find a role for Quantitative Easing (QE) — Open Market Operations — that has now become a major instrument of monetary policy. This world harks back to that of Friedman's Quantity Theory restatement (Friedman, 1956) and Brunner and Meltzer's papers on the banking system (e.g. Brunner and Meltzer, 1963) as a transmission mechanism for money.

In this paper our aim is to construct a DSGE model in which this imperfect substitution occurs between financial assets and in which therefore money has a role beyond merely setting the interest rate on short-term government bonds, 'bank rate' for short. To do this we borrow from available models of the economy, banking and collateral to create out of them what

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could be called a 'neo-monetarist' model. Another element we inject is the possibility of hitting the zero bound on the bank rate; we do this quite simply by suspending the Taylor Rule when bank rate solves for this level or below and replacing it with this exogenous lower bound; this does not undermine inflation determinacy because this situation cannot continue indefinitely since the shocks to interest rates must die out in time. We test this model against the key features of US macroeconomic data and compare its performance with other models that do not have these new elements; we find that our augmented model gets somewhat closer to the data's behaviour.

The model has clear welfare and policy implications. In the economy there are two main interest rates, the safe rate on short-term bonds and the risky rate on bank credit. The first regulates consumption, while the second regulates investment. From a welfare viewpoint one may consider the first as designed to smooth consumption, while the credit premium should be smoothed at its friction-minimising level and the instrument that can do this is the monetary base (QE) which provides (monetary) collateral for banked investment projects.

There is also a role for regulation in this model, that is parallel with QE: it too may be used to stabilise the credit-premium, by loosening regulation when credit is expensive and vice versa. However, it can only have such a role if in steady state regulation is pitched at a distorting level, to raise the credit premium above its optimal, no-friction, rate; in this case, regulation can be lowered when the credit premium is high (in a downturn) and raised when it is low (in an upturn). This cannot however be optimal because the steady state intervention is distorting. If the steady state level is pitched at a non-distorting level, then regulation can only be raised to offset a falling credit premium; it cannot be lowered any further with any effect since it is having no effect already.

Plainly, this would not be a problem if there was some other reason to set regulation at some high level — e.g. to prevent future banking crises. Yet we show later in this paper that banking alone cannot create crises according to this model; crises require non-banking shocks and banking shocks merely contribute to some worsening of crises when they happen. This points to the need for stabilising policies that are non-distortive, in the face of all such shocks; it does not justify distortive regulation unless such policies cannot do the job. Yet we also show later that monetary policy is a powerful stabiliser when augmented to include the use of the monetary base.

Finally, once money is introduced in the way we have done here, fiscal policy no longer has a strong effect with a fixed money supply even when the zero bound knocks out the Taylor Rule. The fiscal multiplier is the same whether interest rates are at the zero bound or not. The reason is that fiscal policy crowds out investment via the credit premium even though the safe interest rate does not move.

Thus our aim in this paper is to bring data to bear on the important policy issues identified here through the means of an estimated and tested DSGE model of the US economy. We are aware that there are other ways to bring data to bear on these issues: thus generalised VAR estimation may show the effects of different sorts of factors — as Stock and Watson (2012) — and the narratives of the economic history of the Great Recession may also shed light. Nevertheless these ways have their own drawbacks; the difficulties of identifying structural shocks in VARs and the possibilities of subjective bias in narrative both put limits on these methods; it is not easy to refute or confirm any causal processes they suggest. If we turn to alternative ways of estimating and testing this model structurally, we could have used Bayesian methods with strong priors which then dominate the results but the difficulty here lies in the selection of such priors when controversy surrounds most elements in our model; we could have chosen flat priors and thus moved to pure Maximum Likelihood estimation but here the problem is rather flat likelihood surfaces under small samples with these models (Canova and Sala, 2009), small-sample estimation bias, and rather weak power in the resulting Likelihood Ratio tests (Le et al., 2016). The strength of the Indirect Inference method we will be using is that we can identify a particular model, and, even though this model is highly nonlinear because of the zero bound switch, estimate it with only minor bias and perform a test that has substantial power. Thus we can be challenged by the normal methods of science in future work. Meanwhile our model has clear implications which we can use for policy analysis; these include a clear way to calculate the necessary robustness tests for policy results.

Thus the contribution of this paper is first to extend the New Keynesian model to include sectoral competition, banking and money, so that it can deal with the zero bound and the role of money while also fitting the facts of our sample period from the early 1980s to the present; second to use an estimation and testing technique (based on Indirect Inference) that is powerful enough to give policymakers a set of reformed rules with a clear robustness metric.

The paper is organised as follows: Section 1 describes the new model; in Section 2 we explain our testing procedure; in Section 3 we test the model against the key data features; in Section 4 we analyse the recent banking crisis; in Section 5 we look at policy and other implications along the lines just discussed; and Section 6 concludes.

1. The model

Our starting point in this paper is the work of Le et al. (2011) in finding a version of the Smets and Wouters (2007, SW) model of the US that could fit key US data features from the early 1980s. This New Keynesian model, which largely follows the specification of Christiano et al. (2005), is widely considered to get reasonably close to US data; as is familiar, it embodies habit-persistence for consumers, adjustment costs in capital, variable capacity utilisation, price/wage setting via Calvo contracts plus indexation and a Taylor Rule setting interest rates. Le et al. nevertheless found that further modifications were necessary to get it to replicate US data features. They showed that the original New Keynesian (NK) model was rejected. A 'New Classical (NC)' version with fully flexible prices and wages and a simple one-period information delay for labour sup-