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Direct effects of base money on aggregate demand: theory and evidence[☆]

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Abstract

Meltzer (The transmission process. In Deutsche Bundesbank (ed.), The Monetary Transmission Process, 2001) shows that real monetary base growth is a significant determinant of consumption growth in the US, controlling for the short-term real interest rate. In this paper, I show that the same property of base money holds for total output (relative to trend or potential) in both the US and the UK. The standard optimizing IS-LM model cannot account for this result, but I show that it can once the long-term nominal interest rate is included in the money demand function. Because the long-term real rate matters for aggregate demand, the presence of the long-term nominal rate in the money demand function increases the effect of nominal money stock changes on real aggregate demand when prices are sticky. © 2002 Elsevier Science B.V. All rights reserved.

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1. Introduction

Much recent research on monetary policy rules uses small-scale macroeconomic models which include an “IS function,” analogous to the IS segment of a traditional IS-LM model. These IS functions range from the purely backward-looking specifications in Fuhrer and Moore (1995) and Rudebusch and Svensson (1999, 2002), to the forward-looking, theory-based “optimizing IS equations” in Kerr and King (1996), Rotemberg and Woodford (1997), and McCallum and Nelson (1999a). A common feature of these equations is that they specify the demand for output as a function of the real interest rate. The real money stock (or its growth rate) does not appear in the IS equation. These models therefore limit the influence of monetary policy on output and inflation to its effect via the real interest rate.¹

In a recent paper, Meltzer (2001) has challenged these specifications, arguing that they neglect important channels of monetary effects. Open market operations by a central bank affect both the nominal interest rate and the central bank’s balance sheet (the liabilities side of which includes the monetary base). If prices are sufficiently sticky in the short run, these operations also affect both the short-term real interest rate and the real monetary base. Meltzer argues that the short-term real interest rate fails to summarize fully the effect of monetary policy actions on the economy, and that the changes in real monetary base exert separate, or direct, effects on aggregate demand. He presents empirical evidence for this proposition using quarterly US data.

This paper examines the theoretical and empirical grounds for these direct effects of base money on aggregate demand. Throughout this paper, “direct” or “separate” effects of money will refer to the explanatory power for aggregate demand contained in the real money stock (or its growth rate) that is not captured by the short-term real interest rate. This definition of “direct effects” allows for the possibility that money is serving as an index or proxy for yields or relative prices that are relevant for aggregate demand, which is contemplated in the discussions by Meltzer (2001) and Friedman and Schwartz (1963, 1982).

The paper proceeds as follows. In Section 2, I estimate backward-looking IS specifications for both the US and the UK. The results provide evidence similar to the type presented by Meltzer for the US—namely, statistically significant and economically sizeable positive coefficients on real money base growth, even after conditioning on the short-term real interest rate. Section 3 discusses some alternative explanations for these results that a theoretically rigorous macroeconomic model could provide, and settles on one possibility, namely the inclusion of the long-term interest rate in the money demand function. Section 4 examines this extension in more detail, using a calibrated small-scale macroeconomic model with the short-term

¹In the backward-looking specification of Rudebusch and Svensson, the short-term real interest rate typically enters the equation with a lag, while in forward-looking models, it is typically current and expected future short-term real rates that matter for current aggregate demand. In open-economy versions, the real exchange rate typically also appears in the IS equation. Smets (1995) reports that larger models used by policy institutions have the same limited role for money.

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