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Endogenous money or sticky prices?—comment on monetary non-neutrality and inflation dynamics

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Abstract

We show that the highly persistent inflation dynamics and its lead-lag relationship with output can be explained by a standard flexible price RBC model augmented with endogenous monetary policy. Endogenous monetary policy acting upon the illusion that prices are sticky and money is effective can create price movements that appear to indicate price stickiness, although there is none in the economy.

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1. Introduction

Is the business cycle a real or a monetary phenomenon? The answer seemed clear after the seminal work of [Kydland and Prescott \(1982\)](#) and [Long and Plosser \(1983\)](#), but only for a while. Along with some well known criticisms of standard RBC models, such as the lack of strong propagation mechanisms, a serious challenge to

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the RBC paradigm is to explain fluctuations in nominal variables, such as the highly persistent inflation dynamics and its correlations with output. A large literature has therefore recently emerged in general equilibrium modeling of the business cycle with a renewed focus on sticky prices and money.¹ At stake, among other things, is the issue of monetary non-neutrality and what should be the appropriate conduct of monetary policy (see, e.g., [Goodfriend and King, 1997](#), for a comprehensive survey).

A defining feature of this recent literature is a more sophisticated way of modeling sticky prices. Based on the early work of [Taylor \(1980\)](#), [Calvo \(1983\)](#) and others, this new literature attempts to explain the business cycle from a monetary point of view by casting firms' price setting decisions within an explicit individual optimization framework. A chief success of this literature is the theoretical derivation of the so-called "new Keynesian Phillips curve" that links inflation to expected future inflation and some measure of overall real activity, such as the marginal cost of production. The empirical evidence so far appears to support the new Keynesian Phillips curve (see, e.g., [Roberts, 1995](#); [Gali and Gertler, 1999](#)). Hence, progress has been made towards understanding the nature of the business cycle beyond the real-business-cycle theory. Namely, the business cycle may be better understood in models where monetary shocks and price setting behavior play a central role. Or is it so?

Recently, [Ireland \(2003\)](#) estimates a sticky-price business cycle model with endogenous monetary policy that nests the flexible-price DSGE model as a special case (in this paper, "RBC" model and "flexible price DSGE" model are used interchangeably). Important findings include that monetary shocks seem to have not played a significant role in explaining the real side of economic fluctuations, and that the flexible-price model does quite well in explaining some important features of the nominal business cycle. For example, Ireland finds that the flexible price model performs better than the sticky price model in explaining the volatility of inflation and the degree of inflation persistence for the pre-1979 sample period. But Ireland also finds clear evidence in support of the sticky price model, especially with respect to the lead-lag relationship among output, inflation and interest rate.

This paper attempts to provide a theoretical analysis and explanation for [Ireland's \(2003\)](#) empirical findings. We show that sticky prices are not the only way to derive the new Keynesian Phillips curve; the new Keynesian Phillips curve can also be a consequence of endogenous monetary policy. In other words, the new Keynesian Phillips curve can also be derived from standard, flexible-price DSGE models where money is a veil but is endogenously determined by other economic variables. In this type of models, it is the conduct of monetary policy—e.g., the Taylor rule—that gives rise to a relationship linking current inflation to expected and lagged inflation as well as some measure of real activity. We calibrate such a DSGE model and we show that with standard parameter values the model can perform very well in explaining some important features of the nominal business cycle, which includes not only the volatility of inflation relative to output and the degree of inflation persistence, but also the lead-lag relationships among output, inflation and interest rate.

¹See e.g., [Rotemberg and Woodford \(1992\)](#), [King and Waston \(1996\)](#), [King and Wolman \(1996\)](#), and [Yun \(1996\)](#), among others.

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