Deep habits and the dynamic effects of monetary policy shocks

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\textbf{Article info}

\textbf{Article history:}
Received 2 January 2009
Revised 24 November 2009
Available online 23 December 2009

\textbf{JEL classification:}
E21
E31
E32
E52

\textbf{Keywords:}
Deep habits
Monetary policy
Price puzzle
Inflation persistence
Countercyclical markups

\textbf{Abstract}

Ravn, Morten O., Schmitt-Grohé, Stephanie, Uribe, Martín, and Uuskula, Lenno—Deep habits and the dynamic effects of monetary policy shocks

We introduce deep habits into a sticky-price sticky-wage economy and examine the resulting models ability to account for the impact of monetary policy shocks. The deep habits mechanism gives rise to countercyclical markup movements even when prices are flexible and interacts with nominal rigidities in interesting ways. Key parameters are estimated using a limited information approach. The deep habits model can account very precisely for the persistent impact of monetary policy shocks on aggregate consumption and for both the price puzzle and inflation persistence. A key insight is that the deep habits mechanism and nominal rigidities are complementary: the deep habits model can account for the dynamic effects of monetary policy shock at low to moderate levels of nominal rigidities. The results are shown to be stable over time and not caused by monetary policy changes. J. Japanese Int. Economies 24 (2) (2010) 236–258. Department of Economics, University College London, Drayton House, Gordon Street, London SW1E 6BT, UK; Department of Economics, Columbia University, 1109A International Affairs Building.

* This paper was prepared for the 2008 CEPR/NBER/TRIO conference in Tokyo. We are grateful for comments from the editor, an anonymous referee, Alexander Kriwoluzky, and from seminar participants at the TRIO conference and at the European University Institute.

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1. Introduction

A substantial body of research has studied the dynamic impact of monetary policy shocks using vector autoregression based methods. This literature has demonstrated that monetary policy shocks identified with timing assumptions give rise to persistent effects on output and its components but also that the dynamic effects on prices are associated with two puzzles: the “inflation persistence puzzle” (a slow and delayed rise in inflation in response to an expansionary monetary policy shock) and the “price puzzle” (a temporary drop in the price level after an expansionary monetary policy shock). These two findings are termed puzzles because they appear contrary to conventional monetary wisdom. This paper examines whether a model of countercyclical markups is helpful for understanding these and other features of the impact of monetary policy shocks. We extend a standard sticky-price sticky-wage model with goods-specific (“deep”) habits which gives rise to a theory of time-varying markups even in the absence of nominal rigidities. We demonstrate that this mechanism gives rise to a model that can provide a very precise account of the dynamic effects of monetary policy shocks and which can address both of price puzzle and the inflation persistence puzzle.

According to the standard “New Keynesian Phillips curve” inflation is determined by current marginal costs and by expected future inflation. The purely forward looking feature of this relationship implies a lack inflation persistence.1 A large number of papers have addressed this issue by studying mechanisms that either give rise to persistent movements in marginal costs or that introduce backward looking features into the New Keynesian Phillips curve. Gali and Gertler (1999) allow for the coexistence of forward looking and backward looking price setters. The presence of backward looking price setters introduces a lagged inflation term in the Phillips curve and therefore helps explaining the sluggish adjustment of inflation to monetary policy shocks. Fuhrer and Moore (1995) study a relative contracting model in which workers care about other workers’ past real wages and they show that this feature may help explain sluggish inflation adjustments to monetary policy shocks. Erceg et al. (2000) assume that nominal wages as well as prices adjust sluggishly. Christiano et al. (2005), Rabanal and Rubio-Ramirez (2003) and Smets and Wouters (2003) have shown that the combination of sticky prices and sticky wages is helpful for accounting for inflation persistence. There has been less theoretical work on the price puzzle an exception being Castelnovo and Surico (2006) who study a model in which passive policy gives rise to indeterminacy. When the equilibrium is indeterminate, inflation expectations become very persistent and this has the consequence that a structural VAR can erroneously lead one to conclude that expansionary monetary policy shocks give rise to a drop in the price level.

We focus instead upon goods market features. We study a monetary model in which it is costly for producers to change prices and for labor unions to change nominal wages. We introduce into this environment the deep habit mechanism proposed in Ravn et al. (2006). The deep habits model assumes that households are subject to keeping up with the Joneses effects at the level of individual goods varieties. This feature implies that the demand function facing individual producers depends not only on relative prices and on the level of aggregate demand but also on the firm’s past sales. The impact of past sales on current demand, often referred to as state dependence, captures empirically relevant aspects of goods demand functions. Houthakker and Taylor (1970) studied goods level demand functions and found that past sales are key for determining current consumption of goods.

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1 This result holds in Calvo style sticky price models and in models where there are costs of changing prices. Chari et al. (2000) show that it also holds in Taylor type staggered contracts models.

2 Holden and Driscoll (2003) challenge the results of Fuhrer and Moore (1995), on the grounds that the relative contracting model assumes that workers care about past not current relative real wages. They show that when workers care about other workers’ current real wages, the model has no inflation persistence in the sense that the Phillips curve is entirely forward looking.
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