



# Estimated general equilibrium models for the evaluation of monetary policy in the US and Europe

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## Abstract

In this paper we derive a general equilibrium model based on optimising behaviour, which also implies a data consistent framework for monetary policy analysis. Specifically, our model accounts for nominal inertia in both price and wage setting as well for habits in consumption. Using US and European data from 1970 to 1998 our parameter estimates reveal that (i) price contracts last for 8 months and 13 months in the US and Euro-area, respectively; (ii) wage contracts have a length of 7 months and 1.75 years in the US and Europe, respectively; (iii) the extent of backward-looking behaviour in price setting is statistically significant in both economies with 41% of price contracts in the US and 28% in the Euro-area set according to a simple rule-of-thumb; (iv) backward-looking wage setting is only present in Europe with 17% of contracts set in a backward-looking manner; and (v) similar habits effects are present in both European and US consumption. Finally, we simulate the effects of monetary policy by considering the impact of a 1 point increase in nominal interest rates for one quarter. Our parameter estimates imply that there is a relatively muted inflationary response to interest rate increases in Europe (price inflation falls by  $-0.08\%$  in Europe and

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0.11% in the US) and there is a correspondingly large output response ( $-0.2\%$  in the US and  $-0.6\%$  in Europe).

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## 1. Introduction

Despite the reputation of macroeconomics as a subject plagued by numerous ideological disputes, some authors are now arguing that the field is developing a new consensus (see, for example, [Woodford, 2003](#), p. 6; [Goodfriend and King, 1997](#)). The latter authors have gone as far as dubbing this emerging view, ‘the New Neo-Classical Synthesis’ (NNCS). Essentially, the NNCS extends the optimising behaviour underlying the real-business cycle (RBC) literature to include the frictions considered by New Keynesian economists in the 1980s (see [Mankiw and Romer \(1991\)](#) for a collection of influential papers). As a result the NNCS can use the insights of RBC theory to explain equilibrium output, while, at the same time, explaining deviations of actual output from equilibrium as a result of stickiness in the adjustment of prices and wages. The NNCS paradigm has been employed in numerous academic studies of monetary policy (see, for example, [Rotemberg and Woodford, 1997](#); [Clarida et al., 1999](#); [Taylor, 1999](#); [Erceg et al., 2000](#)). Moreover, the NNCS has come to dominate policy evaluation in central banks throughout the world (see [Taylor, 1999](#)) and has even been suggested as the most relevant macroeconomic framework to teach to undergraduate students (see [Taylor, 2000](#); [Romer, 2000](#)).

However, despite the emergence of a dominant theoretical framework for the analysis of monetary policy, it is still crucial in designing an optimal monetary policy to identify the quantitative importance of the economic mechanisms underpinning this benchmark framework. The optimal response to shocks will be dependent upon the implicit trade-off between output and inflation variability as well as the responses of economic agents to interest rate changes. In VAR-based studies of the monetary policy transmission mechanism it is difficult to identify the economic mechanisms underpinning any observed responses to monetary policy shocks. Indeed [McCallum \(2001\)](#) argues that in the VAR literature there has been an overemphasis of the unsystematic component of interest rate movements and that structural models which are invariant to policy changes are the only means of analysing the quantitatively more important systematic element of policy. While in cross country comparisons of the transmission mechanism based on the VAR approach, it is also difficult to assess the extent to which any differences in the macroeconomic responses to policy shocks are statistically significant and which structural differences account for any observed differences. Additionally, while larger scale macroeconomic models do offer the opportunity to examine systematic policy and structural

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