



Contents lists available at ScienceDirect

Journal of Economic Dynamics & Control

journal homepage: www.elsevier.com/locate/jedcMonetary policy shocks: We got news! [☆]Sandra Gomes ^{a,b}, Nikolay Iskrev ^{a,d}, Caterina Mendicino ^{a,c,d,*}^a Bank of Portugal, Economics and Research Department, Av. Almirante Reis 71, 1150-012 Lisbon, Portugal^b UECE, Research Unit on Complexity and Economics of ISEG (School of Economics and Management), University of Lisbon, Portugal^c European Central Bank – Directorate General Research – Monetary Policy Research, Sonnemannstrasse 22, D-60314 Frankfurt am Main, Germany^d UECE, Research Unit on Complexity and Economics of ISEG, School of Economics and Management of the Technical University of Lisbon, Portugal

ARTICLE INFO

Article history:

Received 8 September 2015

Received in revised form

26 September 2016

Accepted 24 October 2016

Available online 6 November 2016

JEL classification:

C50

E32

E44

Keywords:

DSGE models

Bayesian estimation

News shocks

Local identification

Business cycles

Forward guidance

ABSTRACT

We assess the role of monetary policy news shocks in the context of a medium scale DSGE model estimated on US data. We estimate several versions of the model and find decisive evidence in favour of the inclusion of monetary policy news shocks over a two-quarter horizon. According to our results, monetary policy news shocks account for a non-negligible fraction of the variance of real variables, especially at shorter forecast horizons. Further, we document that the importance of monetary policy news shocks goes beyond what was observed in recent years. The historical importance of monetary policy news shocks dates back to the 1999–2006 period when the official FOMC statements provided information about both the current policy setting and the expected future policy path. We also show that adding monetary policy news shocks to the model does not lead to identification problems.

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1. Introduction

The role of changes in expectations as drivers of macroeconomic fluctuations has long been discussed in macroeconomics. Notable earlier work that emphasise the importance of expectation-driven cycles include [Pigou \(1927\)](#) and [Keynes \(1936\)](#). In recent years, there has been a considerable effort to understand and quantify the macroeconomic effects of changes in expectations that anticipate future shifts in fundamentals as captured by news shocks. Using a vector autoregressive (VAR) model and data on total factor productivity and stock prices, [Beaudry and Portier \(2006\)](#) show that stock price fluctuations reflect future permanent improvements in total factor productivity (TFP). They argue that “...business cycles may be driven to a large extent by TFP growth that is heavily anticipated by economic agents thereby leading to what might be called expectation-driven booms. Hence, our

[☆] We would like to thank Luís Costa, Kevin Lansing, Michele Lenza, Bartosz Mackowiak, Fabio Milani, Ricardo Nunes, Juan Rubio-Ramírez, Francesco Ravazzolo and seminar participants at the European Central Banks, Norges Bank, ISEG, 7th Annual Meeting of the Portuguese Economic Journal and the Royal Economic Society 2013 Conference for useful comments and suggestions. The usual disclaimer applies.

* Corresponding author.

E-mail addresses: sandra.cristina.gomes@bportugal.pt (S. Gomes), nikolay.iskrev@bportugal.pt (N. Iskrev), caterina.mendicino@gmail.com (C. Mendicino).

empirical results suggest that an important fraction of business cycle fluctuations may be driven by changes in expectations—as is often suggested in the macro literature—but these changes in expectations may well be based on fundamentals since they anticipate future changes in productivity.” Since [Beaudry and Portier \(2006\)](#), several authors have investigated how news about future productivity may drive current production in real and monetary models of the business cycle. More recently, an increasing number of papers also quantifies the importance of news on a variety of shocks for business cycle fluctuations.

We contribute to the news-shocks literature by quantitatively evaluating the role of news on monetary policy shocks in a medium-sized estimated dynamic stochastic general equilibrium (DSGE) model that features a rich set of shocks and frictions proposed by [Smets and Wouters \(2007\)](#). We quantify the importance of such news shocks with respect to both unanticipated monetary policy shocks and other anticipated sources of macroeconomic fluctuations. Monetary policy news shocks, i.e. anticipated components of the monetary policy shock, capture deviations from a given policy interest rate rule describing the usual behaviour of the monetary policy authority that are anticipated by agents.

While the literature has extensively investigated the impact of unanticipated monetary policy shocks, evidence on the macroeconomic effects of anticipated monetary policy shocks is still limited. One of the reasons for this lack of evidence is the difficulty in identifying anticipated shocks in VAR models, a traditional tool for monetary policy analysis. However, as we show in this paper, it is possible to disentangle the effects of unanticipated and anticipated shocks to a given interest rate rule in the context of a full-fledged DSGE model.

We estimate different versions of the model using Bayesian methods and quarterly US data from 1960 I to 2010 IV. Following the DSGE literature, we conduct Bayesian inference and use posterior probabilities to assess the adequacy of the alternative modelling frameworks. We argue that monetary policy news shocks are important to improve the empirical performance of the model. We develop this argument by comparing in several dimensions the quantitative performance of nested models: a model that only features standard unanticipated shocks and various versions of the same model that also allow for anticipated monetary policy shocks over various alternative horizon specifications. We address the question of how many quarters in advance monetary policy shocks are anticipated and find that among all alternative horizon specifications, including the model without news shocks, the data strongly favour the inclusion of news shocks two quarters in advance.

According to our estimates, the overall contribution of monetary policy shocks to the variance of real variables is non-negligible, especially at shorter forecast horizons. The anticipated component of this shock is generally as important as the unanticipated component in accounting for macroeconomic fluctuations. In particular, monetary policy news shocks explain a non-negligible fraction of fluctuations in GDP and other macroeconomic variables. Further, news shocks account for about the same percentage of fluctuations in the policy interest rate as the unanticipated component of the same shock.

The analysis presented in this paper also relates to the discussion on forward guidance. Indeed, selected sequences of anticipated shocks can be used to deliver any desired anticipated policy interest rate path. See [Laséen and Svensson \(2011\)](#). Forward guidance, i.e. information provided by the Federal Open Market Committee (FOMC) about the future path for policy instruments, has been extensively used by the Federal Reserve since December 2008. However, FOMC’s statements anticipating the maintenance of policy accommodation were also present in the minutes of the early 2000s. We document that the historical importance of announced monetary policy shocks is not confined to the use of forward guidance in the more recent years. Indeed, based on the results of the historical decomposition, we argue that monetary policy news shocks were as important as unanticipated shocks already during the years 1999–2006 when the official FOMC statements offered explicit information regarding the policy rate in future periods.

Robustness analysis also highlights some interesting results. First, on the basis of identification analysis, we document that introducing monetary policy news shocks does not lead to identification problems. The effects of the standard deviation of this shock on the likelihood are non-negligible and are distinct from the effects of the other parameters of the model, including the standard deviations of the unanticipated component of the same shock and of other shocks. In terms of sources of information, we find that the interest rate is by far the most informative variable for the standard deviation of the monetary policy news shock.

Second, despite the larger implied variance share of the unanticipated shocks, we find that neglecting monetary policy news substantially reduces the ability of the model to match the moments of the observables. In particular, the model without monetary policy news shocks displays substantially larger gaps between the theoretical and empirical covariances of consumption growth and the interest rate.

Further, we investigate if news on monetary policy shocks capture the impact of other types of news shocks. Using the same set of observables, we re-estimate the model allowing for news on a variety of other shocks. We find that, in the specification with news on all shocks, the estimated standard deviation of monetary policy news shock is significantly different from zero and similar to that of the model with only news on monetary policy shocks. In contrast, the 95 per cent probability interval of the standard deviation of all other news shocks is bounded below by zero. This suggests that news on shocks other than monetary policy are not important in the model conditional of the set of observables used. Indeed, adding news on all shocks reduces the ability of the model to match the moments of most variables. The largest discrepancies are found in terms of the moments of hours worked, investment growth and the nominal interest rate. The specification with only monetary policy news shocks outperforms all other specifications in terms of overall goodness of fit.

Related literature: Following the seminal work by [Beaudry and Portier \(2006\)](#), several papers investigated the role of news about future productivity in driving business cycles.¹ A few papers also focused on other anticipated sources of

¹ See, e.g., [Beaudry and Portier \(2007\)](#), [Flodén \(2007\)](#), [Christiano et al. \(2008\)](#), [Jaimovich and Rebelo \(2009\)](#), [Den Haan and Kaltenbrunner \(2009\)](#), [Auray et al. \(2013\)](#), and [Walentin \(2014\)](#).

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