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A Structural Analysis of Central Banks Final Objectives Prioritization. The Case of Central And Eastern European States

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Abstract

This paper aims to identify the actual objectives of monetary authorities in Central and Eastern Europe (CEE) that promote an independent monetary policy. In this sense we consider the study of central banks (CBs) behavior in the Czech Republic, Poland, Romania and Hungary in establishing short-term nominal interest rate by estimating a Taylor-type monetary policy rule, with new features in terms of elements aimed at exploring the interactions between the monetary policy and financial stability. We estimate the monetary policy rule based on a dynamic structural stochastic general equilibrium model (DSGE). The main results revealed the strong orientation of the monetary authorities subject to analysis towards their fundamental objective of price stability, but in parallel, to the stabilization of the exchange rate and real economic activity. Inserting into the Taylor-type rule of financial stability-related variables has allowed us to highlight the existence of specific items that indicate a ‘leaning against the wind’ orientation of monetary policy in CEE countries.

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1. Introduction

Identifying the behavior of central banks in setting interest rates may provide a conclusive picture on both their objectives and on their attached importance. A standard approach in this respect is the estimation of the CBs

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reaction function as a Taylor rule. Since the formulation of its original version, the Taylor-type monetary policy rule has undergone a number of changes and extensions designed to better reflect the central bank's monetary policy decisions. Given the current specific of CEE countries, all small and open economies, a first extension is to include the exchange rate in the Taylor-type monetary policy rule.

In addition, we introduce into the rule specific to these states additional variables financial stability-related in order to investigate how monetary authorities subject to analysis have approached the asset prices in the conduct of their monetary policy. All these appear as an objective necessity, due to the extensive discussions on the optimality of 'cleaning' or 'mopping-up' approach versus 'leaning against the wind' (cleaning effects after asset price bubble burst or intervention in an early stage to avoid their creation) amid the recent financial crisis consequences.

The estimation of the Taylor-type monetary policy rule including exchange rate changes, private credit and property prices fluctuations is supported by a Neo-Keynesian model for a small open economy in which the central bank reaction function is one of the model equations (along with those of aggregate demand, aggregate supply and exchange rate dynamics). The model is a dynamic stochastic general equilibrium-type (DSGE), following the general lines developed by Lubik and Schorfheide (2007). The mentioned model has been chosen as reference due to the fact that it has been previously used to estimate monetary policy rules with different specifications, including for the states subject to our analysis (Caraiani, 2011a, 2013), so that a comparative study is relevant.

The model estimation for CEE countries following a direct inflation targeting strategy (the Czech Republic, Poland, Romania and Hungary) is based on Bayesian techniques that offer the advantage of robust results in the context of small samples sizes. Estimation is performed using Matlab and Dynare, a widely used program both by central banks and academia arena to solve, simulate and estimate DSGE models. The remainder of the paper presents as follows. The first part consists of an overview of the literature, the second part describes the model, the third is focused on methodology and data sources, while the estimation results are summarized in the fourth part. The fifth section concludes.

2. Literature review

While existing evidence reveal that CBs monetary policy in the major developed countries can be described by a reaction function (Clarida et al., 1998), the studies for emerging countries, including Central and Eastern Europe members are much narrower. A number of estimates of Taylor-type monetary policy rules in different specifications and using different methods (usually GMM) can be found in the works of: María Dolores (2005), Angeloni et al. (2007), Frömmel and Schobert (2006, 2011) Vašíček (2008), Orlowski (2008, 2010).

As for exploring interactions between monetary policy and financial stability, a first representative paper that takes into account a number of emerging economies (the Czech Republic, Poland and Hungary) is the one of Munoz and Schmidt-Hebbel (2012). The authors analyze the monetary policy decisions on a group of 28 emerging and developed countries, between 1994 and 2011 by inserting into the Taylor rule alongside the exchange rate of two financial variables, namely the development of private credit and stock prices, following their actions towards the avoidance of asset prices bubbles formation. Munoz and Schmidt-Hebbel (2012) identified specific items that indicate a 'leaning against the wind' orientation of monetary policy in CEE countries.

From a structural perspective, of the dynamic stochastic general equilibrium models, existing evidence of Taylor-type monetary policy rules estimates in the case of CEE is even more limited. Of course, over time, central banks in the region have developed complex structural DSGE models including estimates of monetary authority's reaction function, as shown by a number of recent examples: Andrle et al. (2009) in the case of the Czech Republic; Grabek et al. (2011) for Poland; Copaciu (2013) on Romania and Szilágyi et al. (2013) for Hungary.

To compare, a common estimate of a Taylor-type monetary policy rule within a DSGE model is to be found in Caraiani (2013) for the Czech Republic, Poland, and Hungary and by using the same model in Caraiani (2011a) in the case of Romania. The author's model is close to Lubik and Schorfheide (2007) framework. The results returned by the Bayesian estimation have illustrated that central banks subject to analysis reacted to exchange rate changes, which have generally led to a similar monetary policy, characterized by a high level of conservatism and a moderate or low gradualism.

Eschenhof (2009) used a comparable model to determine the role of the exchange rate in monetary policy of the euro area. The Taylor-type monetary policy rule specifications in three different forms, taking into account the GDP,

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