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# Does money help predict inflation? An empirical assessment for Central Europe

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## ABSTRACT

This paper investigates the predictive ability of money for future inflation in the Czech Republic, Hungary, Poland and Slovakia. We construct monetary indicators similar to those the European Central Bank regularly uses for monetary analysis. We find in-sample evidence that money matters for future inflation at the policy horizons that central banks typically focus on, but our pseudo out-of-sample forecasting exercise shows that money does not in general improve the inflation forecasts vis-à-vis some benchmark models such as the autoregressive process. Since at least some models containing money improve the inflation forecasts in certain periods, we argue that money still serves as a useful cross-check for monetary policy analysis.

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## 1. Introduction

The role of money in monetary policy conduct has been greatly disputed in recent years. While some see little point in analyzing money developments (Woodford, 2008), others claim that money provides useful information for monetary policy (Nelson, 2008). We want to tackle this issue empirically using data from Central Europe.

Numerous research articles examine whether money matters for inflation (Assenmacher-Wesche et al., 2008; Fourcans and Vranceanu, 2008; among others). Nevertheless, from the policy perspective,

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the attendant question is not so much whether money matters, but rather *to what extent* it matters. Clearly, money may be found to be significant in many inflation forecast equations, but an important issue here is whether inflation forecasts become more accurate with money, as compared to other standard models. If they do, there is a strong argument to monitor money developments. Even if the forecasting accuracy remains largely the same, it might still be useful for monitoring money developments, as there is, of course, uncertainty about how forecasting exercises carried out on past data remain informative for the future.

Therefore, in this paper we want to contribute with empirical evidence on four Central European economies (the Czech Republic, Hungary, Poland and Slovakia) and evaluate whether money improves the forecasting accuracy of inflation. For this reason, we construct several standard money indicators, such as monetary overhang and the nominal and real money gap, and investigate their predictive ability via a comprehensive set of forecasting methods. Overall, our results show that money matters, although it does not improve the predictability of inflation. In other words, forecasting models to a large extent deliver comparable forecasting accuracy of inflation with or without money.

The paper is organized as follows. We briefly discuss the related literature in Section 2. Section 3 provides a brief introduction to actual policy making in the sample countries. Section 4 describes our empirical methodology. A data description is provided in Section 5. Section 6 presents the results. First, we report the money demand estimates and next we investigate the predictive ability of monetary indicators. Concluding remarks are available in Section 7. An appendix with additional results follows.

## 2. Related literature

The theoretical debate on the role of money in monetary policy is far from reaching a consensus. Modern macroeconomics, especially models based on the New Keynesian framework,<sup>1</sup> suggests that central banks should set interest rates without focusing on monetary aggregates (see, for example, Woodford, 2003). On the other hand, the fact that a model can be written without any direct reference to monetary aggregates does not mean that money should be left out of the central bank decision-making process. As, for example, McCallum (2001) argues, money should play a role as a structural or informative factor for inflation. Christiano et al. (2007) point out that money and credit may provide a useful role for anchoring private inflation expectations as well as contributing to lower fluctuations of real and financial variables. Berger et al. (2008) discuss in detail the arguments that money is a source of real-time information and a forward-looking indicator of economic activity.

Empirically, there has been a lot of effort to understand the role of money from the policy perspective in the European context (especially by researchers affiliated with the European Central Bank). Brand and Cassola (2000), Coenen and Vega (1999), and Masuch et al. (2001) estimate various cointegration models of demand for money in the euro area and derive various measures, such as money overhang or the money gap, to assess the role of money in future inflation. They argue that adopting a variety of approaches to explaining monetary (and credit) developments is helpful in achieving a well-founded and detailed picture of the monetary situation in the euro area. Gerlach and Svensson (2000) and Trecoci and Vega (2000) investigate the predictive performance of monetary aggregates by means of the real money gap obtained from a P-Star model of inflation. Both studies broadly support the idea that money (M3) has a significant predictive content for future price developments in the euro area. Less optimistic results are found in the study by Gottschalk et al. (2000) based on vector autoregression analysis. Their results suggest a minor role for money. Stracca (2004) takes a somewhat different approach and examines the forecasting properties on Divisia monetary aggregate for the euro area.

There is also a number of empirical papers applied to the United States. Their findings vary, too. On the one hand, Bachmaier and Swanson (2005) find that inflation forecasts can be marginally improved by including money, compared to simple AR models, for horizons exceeding one year. Berger et al. (2008), using Bayesian VARs, show that models including money consistently produce better inflation

<sup>1</sup> A more detailed discussion about the role of monetary aggregates, covering both general and partial equilibrium models, is available in Berger et al. (2008).

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