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Evaluating monetary policy of the euro area with cross-country heterogeneity: Evidence from a New Keynesian model

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ABSTRACT

This paper empirically investigates the optimal monetary policy conduct for the euro area in the presence of heterogeneous economic conditions across member states. Based on the New Keynesian monetary framework, we compare welfare losses under the assumption that the central bank conducts monetary policy using area-wide aggregate data against the alternative assumption that the central bank exploits country-specific as opposed to area-wide data. Empirical results reveal a sizable gain in stabilization performance if the European Central Bank formulates monetary policy by explicitly taking into account cross-country heterogeneity within the euro area. The estimated gain is more pronounced in a hybrid variant than in the purely forward-looking version of the New Keynesian model.

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1. Introduction

In 1999, the third stage of the Economic and Monetary Union (EMU) process began and its eleven members transferred their power of monetary policy to the European Central Bank (ECB). The official policy stance of the ECB has been that policy decisions are reflective of changing economic conditions of the monetary union as a whole rather than its individual constituent countries (Duisenberg, 2001). This effectively “one size fits all” monetary policy has faced criticism on many fronts. One particular issue is whether the joint monetary policy is effective in managing diverse national economies within the union.

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A growing body of literature has evaluated the performance of a single monetary policy for all EMU members relative to other hypothetical alternatives. The majority of studies in this area (e.g., Faust et al., 2001; Aguiar and Martins, 2005; Carstensen, 2006; Arestis and Chortareas, 2006; Hayo and Hofmann, 2006; Sturm and Wollmershäuser, 2008; Lee and Crowley, 2009) compare the actual ECB policy behavior against the preferences of individual EMU member states given the historical behavior of their central banks before 1999. Most of these studies reveal sizable discrepancies between the actual monetary policy behavior of the ECB and what would have occurred if those national central banks were to make their independent policy decisions. These findings corroborate recent findings (Camacho et al., 2006; De Haan et al., 2008; Jondeau and Sahuc, 2008b) that highlight the extent of cross-country heterogeneity as well as studies (e.g., Huchet, 2000) that find asymmetries in ECB policy effects across euro-area members.

A few studies have followed an alternative direction in evaluating the effectiveness of ECB policy. From the perspective that the national central banks of the euro area have no longer pursued independent monetary policies after 1999, these studies focus on the way a single monetary policy is conducted by the ECB instead of comparing it against the hypothetical scenario that involves monetary policies of EMU members. Notably, De Grauwe and Piskorski (2001), Angelini et al. (2002), Brissimis and Skotida (2008), and Jondeau and Sahuc (2008a) compare the performance of a monetary policy rule based on *aggregate* data of the euro area as a whole against an alternative policy rule that relies explicitly on *national* data and so takes into account country-specific idiosyncrasies. The former policy rule resembles the practice of the ECB, but these studies report welfare gains of varying sizes if monetary policy also accommodates cross-country heterogeneity. However, the empirical evidence in these studies is limited only to “core” EMU members (France, Germany and Italy) and data prior to the formation of the ECB. Even though the three “core” countries together account for nearly 70 percent of the euro area’s GDP, their economies are quite similar, so that estimates based solely on these countries best represent the lower bound of the inferences (Brissimis and Skotida, 2008). By comparison, a complete model that includes all euro-area members would more fully reveal the implication of heterogeneity across countries on the common monetary policy.

The short history of the central bank has also hampered earlier empirical work on ECB policy. Most studies have drawn inferences from pre-1999 data. These results are particularly subject to the Lucas critique in the sense that the economic structure, policy conduct and policy transmission mechanism might have changed under the new monetary policy regime. In particular, the monetary policy instrument has been perfectly synchronized across member countries since 1999.

The objective of the present paper is to evaluate the implication of cross-country heterogeneity in the euro area for the design of a single monetary policy. Our work contributes to the existing literature by considering members beyond the “core” and by covering a sample period more empirically relevant to monetary policy in practice. More specifically, we evaluate the performance of a monetary policy rule that responds to macroeconomic developments of the euro area as a whole against the performance of a corresponding policy rule under the assumption that the central bank’s loss function is essentially a weighted average of the national loss functions. We estimate the central bank’s loss function as the gauge for evaluating policy performance of the optimal policy rules under alternative assumptions.

The rest of this paper proceeds as follows. Section 2 discusses the two alternative monetary policy rules given the baseline (purely forward-looking) New Keynesian framework. Section 3 presents empirical findings on the performance of the policy rules. As a robustness check, the fourth section presents estimation results with a hybrid variant of the New Keynesian monetary model. Section 4 concludes the paper.

2. The model and empirical methodology

2.1. The baseline model

In this section, we outline the general framework for our empirical work. Following recent studies (e.g., Svensson, 1999, 2003; Clarida et al., 1999; Rudebusch, 2005), an optimal monetary policy rule is characterized as the outcome of a dynamic optimization problem, in which policymakers minimize a

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