Optimal discretionary monetary and fiscal policies in a country-size heterogeneous monetary union

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ABSTRACT

This paper develops a New Keynesian model of a monetary union where atomistic-small economies coexist with a large economy. It explores how the level of public debt shapes non-cooperative discretionary policies. It evaluates welfare losses for small and large member countries.

The paper demonstrates that higher public debt levels hamper business cycle stabilization for the union as a whole and, in particular, penalize the stabilization performance of small country-members. While cooperation and monetary leadership is preferable to fiscal leadership for the union as whole and for the small countries, the big country prefers fiscal leadership, where it explores a larger strategic power vis-a-vis the common monetary policy authority. Political support for cooperation may be hard to achieve. Under low debt levels, cooperative stabilization outcomes are relatively similar to the non-cooperative ones.

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1. Introduction

In the course of the latest financial and economic crisis, public debt has increased considerably in many European and Monetary Union (EMU) countries. A higher level of government indebtedness may constrain fiscal policy in business cycle stabilization. Moreover, discretionary policies may further constrain short-run stabilization, creating debt stabilization bias.[1] However, a higher level of government indebtedness may also bring stabilization gains, as it increases the power of monetary policy towards debt-stabilization and lends more effectiveness to fiscal policy on short-run stabilization (Leith and Wren-Lewis, 2013). Therefore, the optimal policy-mix is likely to depend crucially on the level of government indebtedness and welfare stabilization costs may evolve non-monotonically with debt (Blake and Kirsanova, 2011).

Additionally, since in the EMU institution framework a common monetary policy coexists with decentralized fiscal policies, strategic interactions between non-coordinated policies may seriously hamper the business cycle stabilization. Relying on the literature, we conjecture that these strategic interactions and the resulting stabilization costs may be shaped by the

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[1] Benigno and Woodford (2003) and Schmitt-Grohé and Uribe (2004) show that, when policymakers can commit to time-inconsistent policies, government debt follows a random walk behavior, in response to shocks. In turn, Leith and Wren-Lewis (2013) show that, when policymakers are constrained to follow discretionary time-consistent policies, debt no longer follows a random walk and, instead, returns to its steady-state level following shocks. This overzealous behavior towards debt-stabilization (also called "debt stabilization bias") produces significant welfare stabilization costs.

leadership structure of monetary and fiscal policy decisions, the extent of government indebtedness and by the country-size asymmetry of the monetary union.

The EMU is a very country-size heterogeneous union. Germany's GDP represents approximately 28.5% of the union's GDP; the three major economies (France, Germany and Italy) represent approximately 66.2% of the Euro area's GDP.[2] It is likely that large and small countries in a monetary union face different stabilization costs. A larger, rather closed, economy is likely to stabilize country-specific shocks better, because the changes in the terms-of-trade have lower effect on its inflation. Such country may also rely more on the common monetary policy for stabilization purposes, due to its larger union-wide effects. Moreover, since its fiscal policy cross-border and union-wide externalities are larger, its fiscal authority realizes that it holds a larger strategic power than a smaller open economy.

In this paper, we assess how the level of public debt shapes discretionary policies in a country-size heterogeneous monetary union and affects macroeconomic stabilization performance in cooperative and non-cooperative regimes (simultaneous-moves, monetary and fiscal leadership). We also evaluate welfare losses for small and big member countries.

To address these issues, we develop a multi-country DSGE model of a monetary union, with monopolistic competition and sticky prices, where national fiscal authorities are allowed to borrow, and where their policy actions have demand and supply-side effects. We assume that monetary and fiscal authorities engage in optimal discretionary policies.[3]

We fill a gap in the literature by developing a multi-country model that allows the analysis of monetary and fiscal policy interactions in a more realistic monetary union environment, where fiscal authorities of large and very small countries coexist. The model includes two blocks, one large country and many atomistic-small countries, where the relative size of the large country can vary. It nests both two-country (e.g., Beetsma and Jensen, 2005, 2004; Ferrero, 2009) and a continuum of small economies (e.g., Galí and Monacelli, 2008; Leith and Wren-Lewis, 2011) monetary union models. Among others, Canzoneri et al. (2005) and Mykhaylova (2011) also consider country-size asymmetry in a monetary union, although only in the two-country setting.[4]

Although many commentators advocate the desirability of policy cooperation in the EMU, this is still a virtual scenario.[5] Indeed, fiscal decentralization in the EMU requires, realistically, to model non-cooperative interactions. Early literature on non-cooperative interactions within a monetary union relies on ad hoc and static models (e.g., Dixit and Lambertini, 2003a, 2003b). More recent, although scarce, literature uses dynamic monetary union models, which are more appropriate to analyze the role of public debt in policy interactions. This literature covers mostly simultaneous-move fiscal and monetary policymaking (e.g., Beetsma and Jensen, 2005; Forlati, 2009; van Aarle et al., 2002). Studies using dynamic models to analyze implications of intra-period leadership are rare, e.g., Blueschke and Neck (2011) and Orjasniemi (2014). The economic framework developed in this paper is general as it encompasses all these cases and further extends to the case of multiple players in a monetary union.

Our results show that government debt levels crucially shape the need for adopting policy cooperation in a monetary union. While, under low debt levels, cooperative outcomes are relatively similar to the non-cooperative ones; in a high debt environment, union-wide welfare costs of non-cooperation are substantially higher than those of cooperation. In this case, mechanisms to enforce cooperation are recommended, because as we show a large country may strongly oppose to cooperation. While intra-period fiscal leadership is likely to be the best among possible leadership arrangements in a single country (e.g., Blake and Kirsanova, 2011), we find that this regime only favors the large country in a monetary union. A highly indebted big country clearly prefers fiscal leadership, where it can exploit a larger strategic power vis-à-vis the common monetary policy authority; this regime, however, imposes substantial welfare costs on the small countries and on the union as a whole.

In turn, our results are in accordance with those of Chari and Kehoe (2007) who argue on the advantage of the intra-period monetary leadership (with precommitment) in a monetary union, albeit using a very different model. In this paper we use a more standard and policy-relevant DSGE model in contrast to the simple two-period model of Chari and Kehoe (2007).

The paper is organized as follows. Section 2 outlines the model. Section 3 describes the policy setup, Section 4 presents the baseline calibration of the model. Section 5 discusses the performance of optimal discretionary policies across different public debt levels and policy regimes, and the implications of country-size asymmetry. It also includes a sensitivity analysis. Section 6 concludes.

2. A currency union model

We model the currency union as a closed system, consisting of two blocks of countries, populated by a continuum of agents $\in [0, 1]$. The first block is a big country, indexed by **B**, with a relative size of $(1-n)$, $n \in [0, 1]$. The second block,

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