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Determining global currency bloc equilibria: An empirical strategy based on estimates of anchor currency choice

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ABSTRACT

The study presents an empirical strategy for determining global currency bloc equilibria. The procedure includes, first, a nested logit estimation of the combined determinants of currency regime and anchor currency choice; second, a test for a welfare-maximizing regime decision, in which estimates of the relative welfare of alternative regimes are inferred from the results of the first step estimation; and third, taking the path dependency of regime choice into account, a currency bloc equilibrium is derived. In equilibrium, the dollar bloc is somewhat smaller and the euro bloc larger than at present. Counterfactual exercises assess among others the potential for a renminbi bloc.

1. Introduction

The current world economy is shaped by two major currency blocs, the US dollar bloc and the euro bloc, which coexist with numerous currencies that are left floating to various degrees. Optimum currency area (OCA) theories provide an economic rationale for a country's decision on being part of one of the blocs or of choosing a more flexible currency regime. If each country has taken this decision in a way that maximizes its welfare, the world could be characterized as a global currency bloc equilibrium. However, the empirical determination of such an equilibrium poses a challenge for research.

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This study proposes a formal empirical welfare-related strategy for determining an equilibrium country composition of the currency blocs of the world. Thus, it re-considers the objective of Alesina et al. (2002), who, in their study on "Optimal currency areas", investigate whether "natural currency areas emerge from an empirical investigation" (p. 303). They check for a large number of countries whether various country-specific OCA indicators suggest that the country in question may belong to the US dollar area or the euro area. Instead of using a formal econometric strategy, any formal benchmark or a test of the country assignment decision, however, Alesina et al. (2002) simply compare the values of theoretically plausible OCA indicators across countries in order to single out those that may belong to one currency area or the other.

A related strand of literature focuses solely on the cross-country co-movements of shocks in order to identify economies that may sensibly form a common currency area. According to several OCA theories, a highly positive shock correlation reduces the costs of a common currency. Empirical applications use various benchmarks to determine whether the estimated shock correlation is sufficient for a common currency, *inter alia* a comparison with the shock correlation among US regions (*cf* Bayoumi and Eichengreen, 1993), a test on the significance of the correlation coefficient (*cf* Eichler and Karmann, 2011), and a cointegration test for output series across countries (*cf* Cheung and Yuen, 2005). These benchmarks may be open to criticism, however, since they are unrelated to any welfare considerations and depend on the strategy for identifying the shocks. Moreover, these studies ignore the results of a second strand of literature, which investigates empirically the impact of various OCA criteria on currency regime choice, and which is surveyed by Klein and Shambaugh (2010) and von Hagen and Zhou (2007).[1]

In fact, if welfare considerations play a role in currency regime choice, the relative welfare of alternative regimes for a given country may be inferred from the relationship between observed currency regime choices and their OCA determinants. This is the basic idea that the present study exploits for the purpose of developing a strategy for the empirical determination of a global currency bloc equilibrium. In so doing, it addresses the critical issues mentioned above.

In a first step, the influence of OCA variables on exchange rate regime and anchor currency choice is estimated. This part of the analysis relates to the empirical literature on currency regime choice mentioned above.[2] Still, the present analysis needs to go beyond those earlier studies, because in focusing on currency regime choices, they usually do not distinguish between different anchor currencies, and therefore say nothing about the determinants of currency bloc affiliation. As an exception, Meissner and Oomes (2009) explicitly consider anchor currency choice but their sample ends in 1998, the year before the euro was introduced. Since then, the situation has changed fundamentally because, now, there are two major currency blocs instead of just one.

A further contribution made by this part of the paper is methodological: the anchor currency choice options are conditional on a decision on an exchange rate peg in the first place. This obvious nesting structure of the modelled decision suggests using a nested logit approach for estimation. The approach allows the isolation of factors that distinguish US dollar bloc from euro bloc countries. It is found that OCA criteria and related structural variables are significant determinants of countries' currency regime and anchor currency choices.

As a second step, the study is, to my knowledge, the first to propose an intuitive welfare-related empirical test on the relative desirability of a given country adhering to a given currency bloc or exchange rate regime. The testing procedure exploits the fact that the estimated model is found to be consistent with an additive random utility model (ARUM) interpretation. This implies that countries choose the regime that provides the greatest welfare, while the welfare functions depend additively on the explanatory variables. For a few countries, however, the estimated relative welfare of the prevailing regime is largely generated by an error term. In these cases, the structural explanatory variables

[1] Tellingly, the present study does not find any support for output co-movements playing a comprehensible role in anchor currency choice; for a related result, *cf* Meissner and Oomes (2009).

[2] Note that, in line with this literature, the present study deviates from Alesina et al. (2002) and related papers by considering currency blocs that are less strictly defined than being just currency unions. The difference simply concerns the intensity of the anchoring commitment.