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A multinomial logit approach to exchange rate policy classification with an application to growth[☆]

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We model a country's *de jure* exchange rate policy as the choice from a multinomial logit response conditioned on the volatility of its bilateral exchange rate, the volatility of its international reserves, and the volatility of its effective exchange rate. The category with the highest predictive probability implied by the logit regressions serves as our *de facto* exchange rate policy. An empirical investigation into the relationship between the *de facto* classifications and GDP growth finds that growth is higher under stable currency-value policies. For non-industrialized countries, a more nuanced characterization of exchange rate policy finds that those who exhibit 'fear of floating' experience significantly higher growth.

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1. Introduction

Accurate, rigorous, and scientific classifications of exchange rate policy are an important ingredient for assessing the merits between fixed and floating exchange rates. Until relatively recently, empirical research employed the *de jure* classification, which largely reflects the self-reported policy submitted by a country's central bank to the International Monetary Fund. However, many observers

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have noted that the *de facto* currency management for some countries seemed at odds with their *de jure* management.¹ As a result of such discrepancies, the *de jure* classification has been viewed as unsatisfactory for assessing the role of exchange rate stability in economic performance and has motivated researchers to propose *de facto* exchange rate classifications that are based on observed properties of the foreign exchange market data. Influential contributions include the pioneering work of Reinhart and Rogoff (2004) (hereafter RR) and Levy-Yeyati and Sturzenegger (2003) (hereafter LYS). RR argue that a natural classification of exchange rate policies should be based on the behavior of the parallel market exchange rates on the grounds that they better reflect underlying market and monetary conditions than do the country's official exchange rates whereas LYS advocate the use of a k-means cluster algorithm to sort and assign countries to the various exchange rate policies.²

In this paper, we propose using a familiar econometric technique to obtain *de facto* classifications of a nation's exchange rate policy. The procedure uses tools that are familiar to economists, produces sensible results that are easily replicated, modified and updated. Specifically, we see three attractive features in the approach. First, classifier judgment is required primarily in selecting the variables to be included in the exchange rate regime classification model. Modifying and updating the classifications is therefore straightforward since one only needs to adjust the variables or update the data employed in estimation of the response problem. Second, the optimization criteria of our approach is familiar as it is based on the likelihood principle and has well-known properties. Difficulties associated with 'inconclusive' regimes often observed in RR and LYS methods are much less problematic. Third, it is feasible with our method to include a potentially large number of policy determinants.³

The idea that underlies our methodology goes like this. It must be the case that for many countries, the *de jure* exchange rate policy (regime) reported matches the *de facto* execution of that policy. We assume that these *de jure* policies would seem to be thoughtful assessments of the degree of perceived and economically relevant exchange rate stability experienced by that country. This is our motivation for modeling the *de jure* classifications as the outcome of a multinomial logit response conditioned on measures of the volatility of the country's bilateral exchange rate against an anchor currency, the volatility in the country's international reserves, and the volatility in the country's effective exchange rate. The unsystematic component—the error term in the model—captures unobservable factors that cause some countries to deviate from the announced exchange rate policy. The classification that has the highest predictive probability implied by the model serves as the *de facto* policy. For ease of reference, we refer to them as the LP (logit policy) classifications.

Two explanatory variables that we employ, the volatility of a bilateral nominal exchange rate against an anchor currency and the volatility of international reserves, follow directly from the literature. This paper is the first to also use the volatility of the *effective* exchange rate. We give four reasons

¹ Reference to potential inconsistencies between *de jure* and *de facto* regimes dates back at least to Frankel and Wei (1995). While some *de jure* exchange rate fixers may appear to be *de facto* floaters due to frequent changes in their peg, others that are *de jure* floaters appear to be *de facto* fixers since they maintain very stable exchange rates – a phenomenon that Calvo and Reinhart (2002) refer to as 'fear of floating.'

² Assessing the role of a country's exchange rate regime in economic performance is an active area of research. The LYS classifications have been used by Juhn and Mauro (2002), who explore the long-run determinants of exchange rate regimes, Bordo and Flandreau (2001), who examine the link between financial depth and exchange rate regimes, Frankel et al. (2002) who use it to examine the link between regime choice and local interest rate sensitivity, Edwards and Levy-Yeyati (2003) and Broda (2004), who analyze the impact of terms of trade on economic performance under different regimes. Both the LYS and RR regime classifications are used by Alesina and Wagner (2003) to find the politico-economic institutional qualities of countries with different exchange rate regimes. RR is employed by Reinhart et al. (2003), who attempt to correlate the degree of exchange rate flexibility and degree and type of financial dollarization and Rogoff et al. (2004), who explore economic performance under alternative regimes.

³ Limiting the role of the classifier's judgment can be an advantage over RR's methodology: Because it is heavily dependent on their judgment, future research with their classifications may require RR to provide updates. The econometrics of our approach has some advantages over LYS's cluster analysis. LYS's method attempts to sort countries into exchange rate regimes by minimizing the unweighted average of within group sum of squared deviations from the group mean over each country characteristic yielded 698 inconclusive country-year observations and is feasible only when the set of regime determinants is small. Moreover, the optimality properties of their method are not well understood.

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