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CHOOSING AN EXCHANGE RATE REGIME

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Resumen

La elección del régimen cambiario es una de las decisiones más importantes de política macroeconómica. Algunos países fijan el precio de su moneda para ganar credibilidad y controlar la inflación, mientras otros prefieren la flotación debido a la mayor incidencia de shocks reales. Aunque existe abundante literatura sobre los determinantes de la elección del régimen cambiario, la literatura empírica ha sido incapaz de producir resultados robustos sobre la forma en que los países escogen sus esquemas cambiarios. Algunos argumentan que los problemas de la literatura empírica pueden deberse a: (a) la incapacidad de las medidas tradicionales de los regímenes cambiarios para capturar información del sistema vigente (hecho) frente al régimen anunciado que es autorreportado por los países (dicho). (b) La modelación de la variable dependiente: Si se trata de modelar la adopción de tipo de cambio fijo (vis à vis la flotación) o escoger de una amplia lista de regímenes. (c) El uso de un conjunto integral de determinantes del régimen cambiario escogido, que contempla factores asociados a las teorías de determinación de elección (teoría de la zona óptima de moneda y de enfoque financiero, entre otras). Este documento intenta abordar los temas mencionados utilizando una muestra de 110 países con información anual para el período 1975-2005, usando clasificaciones de hecho de esquemas cambiarios y un conjunto exhaustivo de variables explicativas. Encontramos los siguientes hechos estilizados: Primero, los factores asociados con el enfoque de zona óptima de moneda son buenos predictores de la adopción de tipo de cambio fijo: Los países de menor tamaño y con lazos comerciales más fuertes tienen más probabilidad de fijar el precio de su moneda. Segundo, los factores relacionados con el enfoque financiero son coherentes con la trinidad imposible: los países con mayor apertura y mayor desarrollo financiero tienen más probabilidad de adoptar esquemas flotantes. Por último, encontramos que los países con inflación más alta y mayor desequilibrio externo y fiscal son más propensos a adoptar un tipo de cambio fijo.

Abstract

Choosing an exchange rate regime is one of the most important decisions in macroeconomic policymaking. Some countries may peg their currency to gain credibility and control domestic inflation, while others may be more prone to float due to the larger incidence of real shocks. In spite of the abundant literature on the determinants of the exchange rate regime choice, the empirical literature has been unable to produce robust results on how countries select their exchange rate arrangements. Some argue that the problems of the empirical literature may rely on: (a) the failure of traditional measures of exchange rate regimes in capturing information of the regime in force (deeds) rather than the announced regime that is self-reported by countries (words). (b) The modeling of the dependent variable: whether the issue is to model the adoption of pegs (vis-à-vis floating) or choose within a wider array of regimes. (c) The use of a comprehensive set of determinants of exchange rate regime choice that takes into account factors associated to theories of choice determination (optimum currency area theory, financial approach, among others). This paper attempts to address the issues mentioned above using a sample of 110 countries with annual information over the period 1975-2005 using de facto exchange rate regime classifications and a comprehensive set of explanatory variables. We find the following stylized facts. First, factors associated with the optimum currency area approach are good predictors of adopting pegs: countries that are smaller in size and with stronger trade linkages are more likely to peg their currencies. Second, factors related to the financial approach are consistent with the impossible trinity: countries with higher openness and higher financial development are more likely to adopt floating regimes. Finally, we find that countries with high inflation and larger external and fiscal imbalances are more prone to adopt pegs.

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1. Introduction

Choosing an exchange rate regime is one of the most important decisions in macroeconomic policy for developing countries. For instance, countries may select an exchange rate regime that allows them to gain credibility and stabilize monetary aggregates in order to control domestic inflation. On the other hand, primary-commodity exporters may want to implement an exchange rate regime that shields them from volatile external shocks. In any case, adopting a particular exchange rate regime may respond to domestic conditions and to some extent to global conditions faced by the country.

The theoretical and empirical literature on the determinants of the exchange rate regime choice is abundant. However, recent reviews of the empirical literature point out that the lack of robustness of the evidence prevents us from making general statements on how countries choose their exchange rate regime (Edison and Melvin, 1990, Juhn and Mauro, 2002; Beker, 2006). Why? It has been argued that the lack sensitivity of the results of the literature to changes in the sample of countries, period analyzed, econometric technique, and other determinants could be attributed to several difficulties that the current research on the topic is trying to overcome.

First, the *classification of exchange rate regimes* is one of the measurement problems that the literature has faced for a long time. Up to the late 1990s, the only comprehensive and systematic database on exchange rate regimes was the one published by the International Monetary Fund's *Annual Report on Exchange Arrangements and Exchange Restrictions*, which is based on the country's announced *de jure* exchange rate regime. However, as pointed out by Calvo and Reinhart (2002), there were significant differences between the reported regimes in the countries and the actual regimes in force. For instance, several countries reported to be floaters while intervening heavily in foreign exchange markets to reduce exchange rate volatility —the so-called "*fear of floating*" (Calvo and Reinhart, 2002).[1] Levy-Yeyati and Sturzenegger (2001, 2003) built a *de facto* classification of exchange rate regimes by looking at the behavior of exchange rates and reserves. Using statistical techniques (i.e. cluster analysis) on the volatility of exchange rate and reserves, they identify the exchange rate regime that a country follows.[2] Finally, Reinhart and Rogoff (2004) developed a de facto

[1] Since 1999, the IMF moved to a new de facto classification that combined information on the exchange rate and monetary policy framework as well as policy intentions with data based on actual exchange rate and reserves movements.

[2] Reinhart and Rogoff (2004) point out that one-third (1/3) of the Levy-Yeyati and Sturzenegger sample cannot be classified by their algorithm due to missing data or due to the fact that the exchange rate was pegged to an undisclosed basket of currencies.

"*natural*" classification of exchange rate regimes that not only accounts for the behavior of exchange rates and reserves but also addresses the following issues: (a) misclassification of exchange rate regimes by isolating episodes of macroeconomic instability associated to very high inflation episodes into a *freely falling* category, (b) the use of parallel exchange rates as a measure to assess exchange rate flexibility (specially, when the parallel market rate deviates considerably from the official rate), (c) use of a rolling 5-year horizon to measure the true flexibility of the exchange rate regime and avoid recording large numbers of regime shifts following exchange rate and reserve movements that are associated to transient economic or political shocks and do not involve changes in the underlying regime.

Second, there is still a debate on the *appropriate method* to evaluate how countries choose their exchange rate regime. It is common in the literature to find cross-section studies that consider the dependent variable in these studies as the binary choice between peg and float. The limited empirical support for theoretical model of exchange rate regime determination using binary models (fixed vs. flexible regimes) may arise from the skepticism about the specification of the dependent variable as a dichotomy (Bleaney and Francisco, 2005). The misspecification of the dependent variable led to the adoption of multinomial probit and/or logit models where we can take advantage of the wider variety of exchange rate arrangements (say, include intermediate regimes). However, there are also discrepancies here. Some argue that non-ordered multinomial approaches are preferable than binary or ordered choice structures (von Hagen and Zhou, 2004).

Third, there is the need to control for a comprehensive set of potential determinants of exchange rate regime choice in order to avoid problems of omitted variable bias. Several theories of exchange rate regime choice have been developed over time and these theories have suggested potential determinants, which can be broadly grouped in three approaches (Levy-Yeyati, Sturzenegger, and Reggio, 2006): (i) the optimum currency area (OCA) approach, (ii) the financial approach, and (iii) the political economy approach.[3]

The *OCA approach* basically links the exchange rate regime decision to trade, policy convergence, and geographic characteristics of the country. Traditional OCA literature focuses aims at establishing the conditions under which fixed exchange rates would outweigh its costs. Hence OCA suggests that adopting pegs is more likely in countries that are smaller, more open and whose trade is more concentrated with the peg currency countries (so trade and welfare gains are maximized thanks to lower exchange rate

[3] The current version of the paper does not undertake the analysis of institutional variables on the exchange rate regime choice. However, a revised version will focus on the impact on this decision of political strength and stability of governments (Edwards, 1996; Frieden and Stein, 2001; Frieden, Ghezzi, and Stein, 2001).

volatility). On the other hand, the Mundell-Fleming approach suggests that countries with higher incidence of real shocks (say, terms of trade, disasters) may be better off adopting floating exchange rates, and recent evidence tend to support this notion (Broda, 2004; Ramcharan, 2007).

The *financial approach*, on the other hand, relates the exchange rate regime choice to the evolution of financial globalization based on the "*impossible trinity*" hypothesis (*i.e.* capital mobility, monetary policy and fixed exchange rates). Fischer (2001) has argued that the increasing international financial integration elevated the cost of defending intermediate regimes and that the only sustainable regimes were hard pegs and free floats (*bipolar* view). Another strand of this approach emphasizes on the role of currency mismatches in choosing exchange rate regimes in financially dollarized economies. Note that while the *impossible trinity* suggests countries with higher financial openness may adopt floating regimes, countries highly dollarized economies are more likely to adopt fixed regimes due to the adverse impact of sharp depreciation (or highly volatile exchange rates) on their balance sheets.

The empirical approach taken in this paper complements and extends the already existing literature in at least four dimensions. First, we assemble a unique data set with long time coverage (1975-2005) and many countries (about 110) reflecting the great variability across regions and levels of development in the world. Second, we use econometric techniques specially devised to discrete choice panel data frameworks, never used in the related literature, which allow us to exploit efficiently both dimensions of our data set. Third, several specifications are explored in order to look for robust results —a weak feature in previous works.[4] Finally, we confront our sample to different control country groups.

The remainder of this paper is as follows. In the next section, we present the general specification of the regression which links the relative probability of adopting a fixed regime and key macroeconomic determinants. The choice of the estimation techniques also are discussed here. Section 3 is devoted to the explanation of the variables used in the estimations and to the discussion our *a priori* beliefs of possible results. Such results are shown in section 4. Finally, section 5 concludes.

[4] See Juhn and Mauro (2002) and von Hagen and Zhou (2004) for a review in the issue of robustness.

2. 2. Specification and Estimation Technique

2.1 Model Specification

Our general specification for the choice of exchange rate regime broadens the set of determinants identified in the empirical literature. Our set of determinants includes variables related to the optimum currency area (OCA) conditions, the financial approach, and we also control for other macroeconomic conditions.[5] We start with a wide set of pre-conditions, which have been partly identified in the abundant exchange rate regime literature. Table 1 list the full set of explanatory variables used in this paper, identifying expected and estimated coefficient signs.

Our general specification includes variables related to the optimum currency area (OCA) conditions, the financial approach, and we also control for other macroeconomic conditions. For a detailed review on the classification of the variables, see Juhn and Mauro (2002), Levy-Yeyati, Sturzenegger and Reggio (2006), and Beker (2006).

Among the OCA determinants, we include: trade openness, country size (as proxied by the log of GDP), economic development (as proxied by the log of income per capita), output correlation, inflation correlation, money growth volatility, and terms of trade volatility. To test for the financial approach, we include the ratio of foreign assets plus liabilities from Lane and Milesi-Ferretti (2001, 2007) and measures of financial development (here the ratio of domestic credit to the private sector to GDP). In addition, we control for other macroeconomic fundamentals such as the current account and fiscal balance, the ratio of reserves to GDP, the degree of misalignment of the real effective exchange rate, and the inflation rate

Traditional optimum currency area arguments. According to the traditional OCA literature (Mundell, 1961; McKinnon, 1963), trade integration reduces transaction costs associated with fixing exchange rates to a strong currency and will have large impact if the size of trade and investment flows is larger. Symmetric business cycles and policy convergence also plays a key role in reducing the cost of sacrificing an independent monetary policy. Hence small open economies are prone to adopting fixed regimes. Also, countries with high output correlation and inflation correlation may adopt fixed regimes.

On the other hand, Friedman argued that, in a world of sticky prices, nominal exchange rates could be used to insulate the economy against real shocks —that is, the short-run

[5] For a detailed review on the classification of the variables, see Juhn and Mauro (2002), Levy-Yeyati, Sturzenegger and Reggio (2006), and Beker (2006).

response of output and the real exchange rate could differ across exchange rate regimes in the event of real shocks. In particular, Friedman made his case that more flexible exchange arrangements should allow a smoother adjustment of output to real shocks.[6] Evidence for developing countries shows that the short-run response of real output to terms of trade shocks is significantly smaller in countries with floating regimes than in those with fixed regimes (Broda, 2004), and that the different behavior of output across exchange rate regimes was mostly explain by the deterioration in the terms of trade (negative shocks) than by surges in terms of trade (positive shocks). Hence, we expect that countries with higher terms of trade volatility are more likely to adopt floating regimes.

The financial approach. Open economy models *a la* Mundell-Fleming usually assume perfect capital mobility (through uncovered interest parity) and predict that monetary policies cannot simultaneously maintain stable exchange rates and mitigate output fluctuations in the event of real shocks —that is, the *impossible trinity*. At most, policymakers may choose 2 of these options —say, capital mobility, independent monetary policy and fixed exchange rates. Fischer (2001) argues that monetary policy has become increasingly incompatible with fixed exchange rates as financial globalization increased in the last decades. Hence intermediate regimes have become more costly to defend and less sustainable in financially open economies. Also, rising financial deepening and innovation —which has come along with integration to world capital markets— has reduced the effectiveness of capital controls with similar consequences for the monetary policy-exchange rate stability dilemma (Levy-Yeyati et al. 2006). Hence, according to the impossible trinity, countries that are more integrated to world capital markets and with deeper domestic financial markets are more likely to adopt floating rates.

On the other hand, recent literature has emphasized the importance of currency mismatches in financially dollarized economies in determining the exchange rate regime choice. Countries with high (public or private) liability dollarization are more likely to adopt fixed exchange rate regimes due to the adverse effects of sharp nominal depreciations on their balance sheets. Note that the currency mismatch effect could offset the effects of financial openness on exchange rate regime adoption predicted by the impossible trinity.

Financial mechanisms also supposed to amplify the impact of external shocks on the real economy, with the *financial accelerator* hypothesis constituting one of the leading

[6] However, it has recently been argued that flexible regimes may amplify the effects of real shocks in countries where private and public sectors have large currency-denominated liabilities.

explanations.[7] According to this hypothesis, negative shocks to terms of trade or world interest rates may have not only an adverse direct effect on the real economy but also an indirect effect through the reduction of the country's net worth. Hence, the tightening of the *collateral constraint* due to the decline in the country's net worth exacerbates the impact of the external shock on the real economy. Other factors that may explain the amplification of external shocks through financial mechanisms are credit crunches (Broner, Lorenzoni and Schmukler, 2005), the degree of liability dollarization (Céspedes, Chang and Velasco, 2004) and the maturity and structure of external liabilities (Chang and Velasco, 2001).

Other control variables. In addition to variables associated to OCA and financial approaches, we consider other macroeconomic conditions that may affect the choice of exchange rate regimes. Although it is likely that the causality may also go from exchange rate regime to inflation, we expect that countries with high inflation may adopt fixed regimes (especially hard pegs) to gain credibility in stabilizing inflation (Rizzo, 1998; Poirson, 2001; Juhn and Mauro, 2002).

The current account, real exchange rate misalignments and fiscal budget are usually included in these regressions as proxies of macroeconomic imbalances. If countries are accumulating deficits and the exchange rate becomes more overvalued, it is likely that the government may devaluate and then float, or fixed the exchange at a new higher level (Rizzo, 1998; von Hagen and Zhou, 2004). Finally, countries trying to manage the exchange rate require reserves to do so (Berger et al. 2000). Thus, high reserves to GDP may be associated to adopting fixed regimes.

2.2 Estimation Method

We exploit the time and cross-section dimensions of our sample by constructing a panel dataset of 110 countries with annual information over the period 1975-2005. The general structure of the model we estimate is as follows:

$$Y_{i,t} = \mu_i + \delta' X_{i,t} + \varepsilon_{i,t} \quad (1)$$

where the subscripts i and t stand for the country and time indices, respectively. Y is the dummy variable of exchange rate regimes that takes the value of 1 whenever the country i in time t has a fixed exchange rate regime in place, and 0 for flexible regimes. Hence we implement a binary choice discrete model. Un-observed country heterogeneity is captured by μ_i, δ is the vector of coefficient estimates (which is common for all countries), X is the

[7] This hypothesis follows from the work of Bernanke and Gertler (1989) and Kiyotaki and Moore (1997) and more recent contributions include Céspedes, Chang and Velasco (2003, 2004), Gertler, Gilchrist and Natalucci (2003), Cook (2004), Choi and Cook (2004), among others.

vector of determinants of the exchange rate regime choice, and $\varepsilon_{i,t}$ is the stochastic error term for country i in period t. This probabilistic model is estimated assuming both logistic and normal distributions for the error, which renders the estimation of *logit* and *probit* discrete choice panel data models. Note that any source of unobservable heterogeneity that may explain the decision of whether to adopt, or not, the fixed exchange rate regime is captured by the individual effects. This is a feature that is dismissed in the literature given the abundance of pure cross-sectional studies.

The first step to estimate equation (1) would be estimating the individual effects along with the matrix δ of parameters. However, the joint estimation of the individual effects and the other parameters may produce inconsistent estimates of the matrix δ in an asymptotic plan with large N and finite T (which is our case) —which is the so-called *incidental parameters* problem (Neyman and Scott, 1948). In this case, the incidental parameters are the fixed effects because they compromise the large sample properties of the δ matrix.

In contrast to its linear model counterpart, the removal of the fixed effects is not an easy task in discrete choice panel data models and the strategy for doing so hinges upon the specification of the model.[8] The basic structure of the fixed effects panel estimator is known as the Conditional Logit Estimator (CLE) due to Andersen (1970) and further studied by Chamberlain (1980).[9]

The CLE procedure evaluates the likelihood function conditional on sufficient statistics that restrict the estimation to those individuals whose choice varies over time. This means that the CLE only considers *movers* in the likelihood function.[10] The disadvantage is that the sample could be dramatically reduced if the proportion of *stayers* (those whose choice remains invariant over time) is very high.

The panel-data literature distinguishes between fixed and random-effects estimators. In the case of discrete-choice models, selection between the two latter estimators is determined by different aspects than those found for linear models. CLE, the only feasible fixed-effects estimator for discrete-choice panel data, eliminates individual effects. The random effects estimator does not remove individual country effects; it assumes a typically

[8] See Honoré and Kyriazidou (2000) for a review of the the conditions for removing the fixed effects for the case of dynamic discrete choice models.

[9] It is worth emphasizing that the extension of this method to the case in which one assumes normally distributed errors is unfeasible in practice since the evaluation of many integrals deemed the procedure computer-demanding.

[10] In order to clarify the notion of a sufficient statistic consider the case of a binary choice panel-data set with two periods (T=2). A sufficient statistic is given by a sum with results that is 1 since only in this case we know that the possible pairs are (0,1) and (0,1). Therefore the conditional fixed-effects estimator only considers individuals with choices that sum unity for all (two) periods

normal distribution between individual effects and the variables of the model, using for the latter purpose semi non-parametric simulation techniques. Discrete-choice random effects for panel data is feasible available for both logit and normal distributions of the error term.

Hence the trade-off between the fixed-effects CLE and the random-effects estimator for discrete-choice panel-data is the benefit of robustness of the former (as it is not restricted by any assumption on the joint distribution of individual effects and explanatory variables) and the benefit of larger sample size of the latter.

Finally our estimation model is subject to potential endogeneity bias. For example, adoption of IT may strengthen the fiscal position and reduce inflation – two key potential determinants of having IT in place. Recent theoretical contributions by Honoré and Kyriazidou (2000) and Arellano and Carrasco (2003) deal with this issue in the context of discrete-choice panel-data models, proposing proper identification strategies in a non-parametric framework and using instrumental variables techniques, respectively. Yet the stringent assumptions on which the latter solutions rely are not very attractive. Therefore we follow an alternative approach by using first lags of most independent variables.

3. Data and Stylized Facts

Before turning to the regression results in the next section, we describe briefly our sample data, focusing on their distribution and pair-wise simple correlations.[11] Table 2 lists 110 countries that comprise our full sample by income groups.

Figure 1 depicts the evolution of the share of countries in our sample adopting flexible and non-flexible exchange rate arrangements. Note that the remaining regimes not depicted here correspond to the freely falling category. With the exception of the final 4 years of the data, we observe that the share of countries with flexible regime remains constant around 15-20%. Another interesting feature is that the share of countries with exchange rate regimes in the freely falling category has declined significantly thanks to the lower incidence of episodes of very high inflation and macroeconomic instability.

Figure 2 plots the country distributions of thirteen explanatory variables for the full sample of countries while Figure 3 depicts the country distribution of these variables for the flexible and non-flexible exchange rate regime sub-samples by box plots. Each box accounts for the observations included between the 25th and 75th percentiles of the

[11] Data sources and definitions are discussed in the Appendix and summarized in Table 1.

variable's distribution.[12] Specifically, the boxes in each box plot account for all the observations within the 25-50 and 50-75 percentile range of variable distribution. The medians are reported as thin white lines inside each box. Outliers – observations falling outside the 25-75 percentile ranges – are depicted as dots.

The following set of stylized facts emerges from Figure 2. The median of the current account position (as % of GDP) remains in balance throughout the sample period. The increasing dispersion of trade openness might be attributed to the sustained increase in foreign trade by East Asian tigers and China in the last two decades. The government budget balance ratio to GDP shows a trend increase in its median and reduction in its dispersion, consistent with fiscal strengthening observed in industrial and developing countries alike since the 1980s. The annual world distribution of normalized inflation rates reflects the substantial incidence of high and hyperinflation rates that peaked in the late 1980s to early 1990s. The panel also reveals the reduction in inflation median, variance (the boxes' heights), and high inflation outliers since the 1990s, termed as the "great deflation" (Summers 2005, Boivin and Giannoni 2007, IMF 20b07). Financial development reflects trend increases in medians and major increases in dispersion toward countries with exceptionally high levels of financial depth. Finally, both terms-of-trade and monetary volatility exhibit declining world trends over the last two decades.

Now let's turn to a comparison of medians and dispersions observed by the explanatory variables in the flexible (0) and non-flexible groups (1) of country-year observations (Figure 3).[13] From an statistical point of view, we cannot infer whether the median levels of the explanatory variables are different across exchange rate regimes. However, there are marked differences in dispersion for some variables. For instance, financial integration shows larger dispersion among country-year observations with non-flexible regimes, while the opposite holds true for local financial development. The inflation rate is also more volatile for pegs (non-flexible observations). In addition, real shocks and nominal shocks are found to be more volatile among countries with pegs.

Finally, we turn to the evidence shown by our cross-country and panel-data pair-wise correlations between our model variables reported in the upper and lower diagonal matrices in Table 3, respectively. Three results emerge. First, there is not much difference between cross-country and panel-data correlation coefficients. Second, we find that

[12] Typically, this tool is used for the detection of outliers, represented by the outside circles shown above and below the box. In our case, given the heterogeneity of our sample it is hard to think that these observations lying outside the box could be treated as outliers, and therefore, removed. We use this technique for reporting the data distribution across the whole time sample and across the choice of exchange rate regime.

[13] Pre-IT annual observations of subsequent IT adopters are included in the non-IT control group.

countries with pegs are associated to the following characteristics: small open economies with high external and fiscal imbalances, high financial openness and shallow domestic financial markets. Finally, likely problems of co-linearity among regressions may not prevent us from identifying coefficient estimates since the correlation coefficients among the regressors are not large (i.e. correlations are lower than 0.7).

4. Empirical results

We report estimation results for the choice of fixed exchange rate regimes (the likelihood of having fixed rates in place), based on equation (1). Our empirical strategy starts with reporting full-sample results for different specifications based on fixed and random-effects logit models (Table 4). Then we test for robustness by broadening our use of estimation techniques, reporting results based on pooled logit and probit models (which do not account for country heterogeneity), and on the random-effects probit model (Table 5). Subsequently we test our model for different sub-samples comprised by country groups according to income levels (Table 6) and a shorter time period (Table 7). Finally we test for the robustness by reporting results for other measures of our dependent variables, based on alternative definitions of exchange rate regimes (Table 8). We discuss the results subsequently.

Table 4 reports estimation results for 3 fixed-effect and 3 random-effect specifications, based on logit estimations. The trade-off between fixed-effect and random-effect results – robustness of the former versus larger sample size of the latter – is reflected by the large sample size difference in our results (some 500-800 country-year observations for fixed-effects and 800-1400 observations for random-effect estimations). The treatment group is the same under fixed and random effects – it is comprised by all country-year observations of countries with fixed exchange rates since the starting dates of their regimes. Under fixed effects, the full sample is comprised only by countries with fixed rates – hence the control group is comprised only by countries with fixed rates before they started the regime. In contrast, under random effects, the control group is broadened to include all country-year observations of countries with flexible rates. Hence one should exercise care in comparing results across estimations based on such large differences in control groups and overall sample size.[14]

[14] The fixed effects estimator has the disadvantage of dropping out many observation (the proportion of stayers is pretty high). However, it is a more robust method among the available techniques because it does not rest on any assumption regarding the distribution of the individual effects. Given the sample restrictions imposed by the fixed effects estimator, we still consider as important the results coming from the random

We find significant evidence for the influence of OCA traditional determinants on the likelihood of having fixed exchange rate regimes in place. This evidence is generally robust across fixed-effects and random-effects estimations in spite of their substantial sample differences. Trade openness and country size enter all the regression with the expected sign (positive and negative, respectively) and are significantly in almost all cases —except when controlling for output correlation in regression [1] of Table 4. This suggests that small open economies are more likely to adopt fixed exchange rate regimes. Higher business cycle synchronization and policy convergence are also statistically significant across specifications. This finding implies that countries with more synchronized business cycles and faster degrees of policy convergence may find less costly to sacrifice independent monetary policy and, hence, adopt fixed exchange rates. The level of development and money growth volatility does not seem to have a robust effect. Finally, traditional OCA channels suggest that the incidence of real shocks in the economy —as proxied by higher terms-of-trade volatility— would lead to the adoption of flexible rates in order to stabilize output fluctuations. However, we fail to obtain the desired effect.

Next we analyze the impact of the variables suggested by the financial approach; financial openness and financial development. As we said before, the impact of these variables on the adoption of fixed regimes depends on whether the currency mismatches argument prevails of the impossible trinity hypothesis. According to the former, countries with higher financial openness and financial development would be more likely to adopt fixed rates so that they can prevent the adverse balance-sheet effects of depreciations. The latter hypothesis predicts the opposite: countries should be more likely to adopt flexible rates. Our results yield a negative and robust coefficient estimate for financial openness and financial development which is consistent with the impossible trinity arguments.

Now we turn to our control set of macroeconomic conditions that determine the choice of the exchange rate regime. Healthy external and fiscal positions —as proxied by the current account and budget surplus, respectively— show some degree of robustness: the sign of their coefficient is negative and significant in most cases. Thus, countries with healthier external and fiscal balances are more likely to adopt flexible regimes. Other robust results show that countries are more likely to adopt fixed exchange rate regimes when inflation is higher and then real exchange rate misalignment is lower. Finally, the ratio of reserves to GDP plays no significant role throughout the different specifications.

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effects estimator, where we assume a random distribution between individual effects and the variables. Moreover, since the assumption on the distribution of errors virtually does not change the results, we report in the majority of the tables only the logit discrete choice estimators.

Table 5 broadens our search for robustness by running several specifications with alternative estimation techniques. To a selective sub-set of our estimations in Table 4, we add results for pooled data (without controlling for country heterogeneity), using both logit and probit models, and for random effects using a probit model. For robustness analysis, we also report results for a logit-model random-effects estimation using the same (small) sample to which the comparable logit-model fixed-effects estimation is restricted.

We derive three conclusions from these results. First, financial openness, GDP per capita and inflation are not significant under pooled-data estimations, in contrast to their significance in our preferred fixed- and random-effects estimations. We can argue that the absence of country heterogeneity under pooled-data estimation is a severe limitation of this technique, which leads us to abandon it subsequently. Second, the probit model results for the random effects confirm the robustness of the explanatory variables found to be significant under logit estimation, while the non-significance of trade openness is also confirmed. Finally, we report logit-model random-effect results in column 4 of Table 5 that are comparable to the logit-model fixed-effect results in column 2, using the same sample of 832 observations imposed by the latter estimation technique. The results are very similar. However, two of the OCA variables —trade openness and country size— become non-significant.

Next we extend our search for robustness using different control groups. We reduce our full-sample control-group comprised by all non-fixed countries (results re-stated for comparison in column 1 of Table 6) by focusing sequentially on results based on non-fixed countries by income levels (results reported in columns 4-6 in table 6). [15] Most results remain largely unchanged, supporting robustness to different control groups. There are two exceptions: (a) country size loses significance when the control group is restricted to high-income countries but remains significant when controlling for either middle-income or low-income economies. (b) Trade openness becomes significant only when we control for middle-income countries.

Table 7 focuses on estimating our exchange rate regime choice regressions on a shorter time period, 1990-2005, when global capital flows increased substantially. The estimation is based on the full country sample available under fixed and random effects. The results are reported in columns [3] and [4] of Table 8. Our regression results confirm the significance of real exchange rate misalignment, inflation, financial openness, and inflation correlation. The random effects estimator for a smaller sample rejects the significant contribution of

[15] We report only random-effects estimation results because fixed-effects estimation excludes all non-fixed countries, as discussed above.

OCA variables such as trade openness and size, and financial development. The latter result may indicate that rising trade openness, financial depth and GDP was widespread among countries with fixed and flexible exchange rate regimes during the 1990s and 2000s, and therefore does not raise the propensity to peg. However it is important to recall that when considering the full time span covering the last three decades (1975-2005), the three latter variables are robust determinants of having fixed exchange rate regimes in place.

Finally, Table 8 uses an alternative classification of the exchange rate regime considering only flexible and fixed regimes (and, thus, eliminating the intermediate regime observations from our sample). The estimation of our general specification reports some disappointing results. Some key determinants of the exchange rate regime choice that were significant in our preferred estimations become not statistically significant and, in some cases, have the opposite sign. Trade openness becomes insignificant in almost all specifications and the same happens with financial openness, financial development, and inflation. This result could reflect the fact that by dropping the category of intermediate we are reducing the variability of the explanatory variables associated with intermediate regimes, thus yielding non-significant coefficient estimates.

5. Conclusions

Choosing an exchange rate regime is one of the most important macroeconomic policy decisions and is the subject of an extensive theoretical and empirical research in the literature. In spite of that, the empirical literature has been unable to find a robust set of stylized facts on the factors that may determine the choice of a particular exchange rate regime. In this context, this paper tries to complement and improve the literature in two dimensions. First, when choosing an exchange rate regime what really matters is not the announced regime but the regime in place (deeds vs. words). We use a *de facto* classification of exchange rate regimes, following the *natural* classification developed by Reinhart and Rogoff (2004), to model the decision to peg vis-à-vis floating. Second, unlike most efforts in the literature, we are able to exploit efficiently both the cross-section and time dimensions of our panel data set.

Among our main findings, we have the following: First, traditional OCA variables are good predictors of the adoption of fixed exchange rates: countries that are smaller in size and have deeper trade linkages are more likely to adopt pegs. Second, factors associated to the financial approach are consistent with the impossible trinity: countries with higher

financial openness and deeper financial markets are less likely to peg their currencies. Finally, countries with high inflation and large external and fiscal imbalances are more likely to adopt pegs.

Finally, there are some further avenues on this line of research that we will like to pursue in the future. First, trade and financial mechanisms might amplify the impact of real shocks in the economy —especially in primary commodity exporters and/or countries with high rates of liability dollarization. We would like to assess whether these mechanism increase the likelihood of adopting a particular exchange rate regime. Second, choosing an exchange rate regime can also be thought of a political economy problem. For instance, countries with poor institutional quality and low credibility are usually more likely to adopt pegs in order to stabilize inflation. In this respect, issues such as political strength and stability become important determinants of the exchange rate regime choice and its sustainability.

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Data Appendix

We construct an annual panel data set comprised of 110 countries for the period 1975-2005. See the list of countries in table 2.

We based our regime's classification on Reinhart and Rogoff (2004) and the Annual Report on Exchange Arrangements and Exchange Restrictions (several issues) since the 2002 issue. For the dependent variable we construct a dummy variable which is set equal to 1 if the country has a non-flexible exchange rate regime (intermediate or fixed in the terminology of Reinhart and Rogoff (2004)) and 0, otherwise. This binary classification relies on two reasons. First, it makes our estimation approach more tractable because it is easier to deal with discrete choice panel data models with two possible responses, instead of three or more. Second, this classification is the purest if one is interested in disentangle what drives the choice of exchange regimes situated at the extremes of the spectrum of the exchange rate regimes distribution.

For the right-hand side variables we use primarily the Word Bank data set (World Development Indicators) because it seems to be a revised version of the IFS database constructed by the IMF. This is the case for the current account, reserves to GDP ratio, inflation rate, trade openness, GDP, domestic credit to private sector (used as proxy for financial development), and GDP per capita. We also use this information as input for constructing our additional OCA variables. Thus, we compute the correlation between output gaps of countries with that of USA, performing rolling calculations over the HP-filtered output series. We use a similar measure calculated over the normalized inflation rate, having always as a reference, that variable for USA. In addition, we allow for the presence of real and nominal shocks, as well. The volatility of terms of trade and money growth is computed as the coefficient of variation of such variables using rolling calculations.

The overall budget balance is assembled based on the Government Financial Statistics (prepared by the IMF), the Economist Intelligence Unit and figures found in official government's web pages. The variable on exchange rate regimes also deserves more attention.

The details on the construction and the sources of all these variables we used in the estimations are shown in table 1.

Table 1: Determinants of Exchange Rate Regimes Likelihood

Variable	Description	Source	Expected signs	Estimated signs
Current account	Current account balance/GDP	WDI (2007)	Negative	Negative
Government budget balance	Overall Budget Balance (surplus)/GDP	GFS and EIU	Negative	Not significant
Real Exchange Rate Misalignment	Real Exchange Rate Misalignment measure as the deviation from an RER equilibrium based on a fundamentals' model	Elbadawi, Kaltani and Schmidt-Hebbel (2007)	Negative	Negative
Normalized inflation rate	CPI inflation rate/(1+CPI inflation)	WDI (2007)	Ambiguous	Positive
Trade openness	(X+M)/GDP	WDI (2007)	Positive	Positive
Financial integration	External assets and liabilities/GDP	Lane and Milesi-Ferreti (2001, 2007)	Positive	Negative
GDP	GDP (PPP values)	WDI (2007	Negative	Negative
Financial development	Domestic credit to private sector /GDP	WDI (2007)	Negative	Negative
GDP per capita	Log of the GDP per capita	WDI (2007)	Negative	Not significant
GDP gap correlations with USA	Rolling calculation of the correlation coefficient between the output gap of country *i* and that of USA	WDI (2007). Own elaboration	Positive	Positive
Inflation correlations with USA	Rolling calculation of the correlation coefficient between the inflation rate of country *i* and that of USA	WDI (2007). Own elaboration	Positive	Positive
Terms of trade volatility	Rolling calculation for the coefficient of variation of terms of trade	WDI (2007). Own construction	Negative	Positive
Money growth volatility	Rolling calculation for the coefficient of variation of M2	WDI (2007). Own construction	Positive	Negative

Source: Own elaboration
Notes:
WDI: Word Development Indicators
GFS: Government Financial Statistics
EIU: The Economist Intelligence Unit
AREAER: Annual Report on Exchange Arrangements and Exchange Restrictions, several issues

Table 2: Country sample

Sample Countries

Annual data, 1975-2005

High income OECD (24)

AUS	Australia	FRA	France	JPN	Japan	PRT	Portugal
AUT	Austria	DEU	Germany	KOR	Korea	ESP	Spain
BEL	Belgium	GRC	Greece	LUX	Luxembourg	SWE	Sweden
CAN	Canada	ISL	Iceland	NLD	Netherlands	CHE	Switzerland
DNK	Denmark	IRL	Ireland	NZL	New Zealand	GBR	United Kingdom
FIN	Finland	ITA	Italy	NOR	Norway	USA	United States

High income non OECD (8)

ISR	Israel	KWT	Kuwait
ARE	United Arab Emirates	SAU	Saudi Arabia
CYP	Cyprus	SGP	Singapore
HKG	Hong Kong	SVN	Slovenia

Upper middle income (22)

ARG	Argentina	HRV	Croatia	OMN	Oman	TUR	Turkey
BWA	Botswana	HUN	Hungary	PAN	Panama	URY	Uruguay
CRI	Costa Rica	LBN	Lebanon	POL	Poland	VEN	Venezuela
CHL	Chile	MEX	Mexico	ROM	Romania	ZAF	South Africa
CZE	Czech Republic	MUS	Mauritius	SVK	Slovak Republic		
GAB	Gabon	MYS	Malaysia	TTO	Trinidad and Tobago		

Lower middle income (27)

BRA	Brazil	DOM	Dominican Republic	IRN	Iran, Islamic Rep.	PRY	Paraguay
BGR	Bulgary	DZA	Algeria	JAM	Jamaica	PHL	Philippines
BOL	Bolivia	ECU	Ecuador	JOR	Jordan	SLV	El Salvador
COL	Colombia	EGY	Egypt, Arab Rep.	LKA	Sri Lanka	SYR	Syrian Arab Republic
CHN	China	GTM	Guatemala	MAR	Morocco	THA	Thailand
CMR	Cameroon	HND	Honduras	NIC	Nicaragua	TUN	Tunisia
COG	Congo, Rep.	IDN	Indonesia	PER	Peru		

Lower income (29)

BEN	Benin	HTI	Haiti	PAK	Pakistan	TZA	Tanzania
BFA	Burkina Faso	IND	India	PNG	Papua New Guinea	UGA	Uganda
BGD	Bangladesh	KEN	Kenya	RWA	Rwanda	ZAR	Congo, Dem. Rep.
CIV	Côte d'Ivoire	MDG	Madagascar	SDN	Sudan	ZMB	Zambia
ETH	Ethiopia	MLI	Mali	SEN	Senegal	ZWE	Zimbabwe
GHA	Ghana	MWI	Malawi	SLE	Sierra Leone		
GIN	Guinea	NER	Niger	TCD	Chad		
GMB	Gambia, The	NGA	Nigeria	TGO	Togo		

Table 3: Pair-wise correlations

pair-wise correlations	dummy-regime	current account	budget balance (surplus)	reserves to GDP	RER misalignment	inflation	trade openness	financial integration	GDP	financial development	GDP per capita	GDP gap correlations	inflation correlations	terms of trade volatility	money growth volatility
dummy-regime	**1**	0.0192	**-0.0431**	0.0396	**-0.239**	**-0.2992**	**0.2549**	**0.1185**	**-0.3208**	**-0.120**	0.005	-0.036	**0.103**	**-0.185**	**0.184**
current account	**-0.0647**	**1**	**0.392**	-0.011	**-0.217**	**-0.397**	**0.342**	**0.291**	**0.310**	**0.076**	**0.462**	**0.186**	**0.245**	**-0.188**	**-0.072**
budget balance (surplus)	**-0.0675**	**0.336**	**1**	**0.076**	-0.042	**-0.244**	**0.252**	**-0.050**	**0.071**	**-0.113**	**0.250**	**0.188**	**0.059**	**-0.075**	**0.112**
reserves to GDP	0.0391	0.006	**0.051**	**1**	-0.038	**0.091**	-0.031	-0.029	-0.018	-0.014	-0.018	**-0.083**	**0.056**	-0.004	**0.329**
RER misalignment	**-0.0849**	**-0.113**	-0.019	-0.015	**1**	**0.415**	**-0.341**	**-0.237**	**-0.195**	**0.216**	**-0.456**	**-0.302**	**-0.298**	**0.283**	**-0.076**
inflation	**-0.0625**	**-0.105**	**-0.180**	**0.047**	**0.211**	**1**	**-0.241**	**-0.096**	**-0.142**	**0.050**	**-0.332**	**-0.154**	**-0.273**	**0.327**	**-0.053**
trade openness	**0.1475**	**0.167**	**0.070**	-0.014	**-0.209**	**-0.173**	**1**	**0.336**	**-0.198**	0.018	**0.320**	**0.118**	**0.235**	**-0.211**	0.026
financial integration	**0.0509**	**0.061**	0.013	-0.011	**-0.160**	**-0.049**	**0.388**	**1**	**-0.104**	0.014	**0.188**	**0.077**	**0.073**	**-0.243**	-0.011
GDP	**-0.2532**	**0.226**	**0.078**	-0.003	**-0.143**	**-0.126**	**-0.188**	-0.027	**1**	**-0.011**	**0.529**	**0.352**	**0.300**	**-0.368**	**-0.277**
financial development	**-0.1199**	0.025	-0.008	-0.026	**-0.291**	-0.024	-0.005	0.000	0.013	**1**	**0.063**	**-0.095**	**-0.084**	**-0.155**	**-0.044**
GDP per capita	-0.0374	**0.329**	**0.202**	-0.009	**-0.308**	**-0.264**	**0.331**	**0.154**	**0.542**	0.027	**1**	**0.453**	**0.625**	**-0.481**	**-0.173**
GDP gap correlations	**-0.063**	0.023	0.040	**-0.074**	**-0.063**	-0.036	**0.057**	**0.055**	**0.217**	-0.033	**0.272**	**1**	**0.335**	**-0.334**	**-0.146**
inflation correlations	**0.1821**	-0.033	0.004	0.025	**-0.101**	**-0.189**	**0.043**	**0.051**	**0.129**	**0.040**	**0.315**	**0.169**	**1**	**-0.390**	**-0.173**
terms of trade volatility	-0.0119	**-0.107**	0.029	-0.019	**0.066**	**0.191**	**-0.182**	**-0.189**	**-0.326**	**-0.398**	**-0.423**	**-0.170**	**-0.238**	**1**	**0.092**
money growth volatility	0.0248	-0.008	0.033	**0.138**	-0.033	0.018	0.015	0.013	**-0.055**	-0.019	-0.035	-0.020	0.001	0.017	**1**

Source: Own elaboration based on the WDI data set.
Numbers in bold denote correlation coefficients statistically significant at 5 percent at maximum
Numbers in the inferior triangle are the cross correlations across the time and countries (pooled correlations) while the numbers in the superior triangle are cross correlations across countries (among time demeaned variables)

Table 4
Choice of Exchange Rate Regime: full sample estimations
Dependent variable: dummy for the Exchange Rate Regime (flexible=0, fixed=1)
Estimation methods: Discrete-choice logit panel-data models
Sample: 1975-2005

	Fixed effects			Random effects		
	1	2	3	4	5	6
Macroeconomic conditions						
Current account surplus	-4.805	-20.435 ***	-9.228 ***	-13.638 ***	-17.371 ***	-10.091 ***
	(0.79)	(3.90)	(2.69)	(3.52)	(5.12)	(3.82)
Budget surplus	-21.712 **	-	-	-3.309	-	-
	(2.07)	-	-	(0.69)	-	-
Reserves to GDP	0.045	-	-	0.045	-	-
	(0.23)	-	-	(0.37)	-	-
Real exchange rate misalignment	-9.437 **	-4.539 **	-4.201 ***	-4.565 ***	-5.917 ***	-4.255 ***
	(2.32)	(2.03)	(2.83)	(2.65)	(3.96)	(3.74)
Inflation	14.200 ***	11.035 ***	7.626 ***	7.926 ***	7.526 ***	7.257 ***
	(2.88)	(3.90)	(3.99)	(3.80)	(4.26)	(4.98)
	-	-	-	-	-	-
OCA conditions	-	-	-	-	-	-
Trade openness	3.306	4.854 **	2.346 **	1.146	1.699 **	0.724
	(1.10)	(2.16)	(2.09)	(1.29)	(2.17)	(1.34)
Country size	-8.887 ***	-4.277 **	-4.138 ***	-0.699 ***	-0.427 **	-0.512 ***
	(2.79)	(2.12)	(3.51)	(3.16)	(2.38)	(3.41)
GDP per capita	-3.595	-0.043	2.879	0.167	0.493	0.402 *
	(0.72)	(0.01)	(1.61)	(0.45)	(1.64)	(1.68)
Output correlation	5.604 **	-	-	0.852	-	-
	(2.51)	-	-	(1.15)	-	-
Inflation correlation	4.194 ***	3.476 ***	2.253 ***	3.135 ***	3.129 ***	2.429 ***
	(4.50)	(5.99)	(6.14)	(6.84)	(8.19)	(8.16)
Terms of trade volatility	11.003 ***	7.166 ***	-	9.591 ***	7.429 ***	-
	(2.77)	(2.73)	-	(4.07)	(3.68)	-
Money growth volatility	-0.263 **	-	-	0.020	-	-
	(2.02)	-	-	(0.18)	-	-
Financial approach						
Financial openness	-12.247 ***	-5.574 ***	-1.894 ***	-0.941 ***	-0.417	-0.393 **
	(4.90)	(4.75)	(3.77)	(3.75)	(1.46)	(2.39)
Financial development	-5.227 **	-5.008 ***	-4.372 ***	-0.892	-1.832 **	-1.558 ***
	(2.31)	(2.86)	(4.08)	(1.14)	(2.55)	(3.00)
Interactions						
Financial openness*output correlation	-9.824 ***	-	-	-1.691 **	-	-
	(3.06)	-	-	(2.06)	-	-
Constant	-	-	-	15.571 ***	6.488	10.732 ***
	-	-	-	(2.91)	(1.41)	(2.97)
Observations	473	571	832	833	1093	1365
Number of countries	29	35	42	49	64	66
LR statistic	299.15	285.84	270.9	173.47	180.21	203.1
p-value	0.00	0.00	0.00	0.00	0.00	0.00

Note: Absolute value of z statistics in parentheses
** significant at 10%; ** significant at 5%; *** significant at 1%*

Table 5

Choice of Exchange Rate Regime: sensitivity to different econometric techniques

Dependent variable: dummy for the Exchange Rate Regime (flexible=0, fixed=1)

Estimation methods: Discrete-choice logit and probit panel-data models

Sample: 1975-2005

	Logit panel data models				Probit panel data models	
	Pooled	**Fixed effects**	**Random effects**	**Random effects**	**Pooled**	**Random effects**
	1	*2*	*3*	*4*	*5*	*6*
Macroeconomic conditions						
Current account surplus	-3.863 ***	-9.228 ***	-10.091 ***	-8.769 ***	-2.140 **	-5.943 ***
	(2.59)	(2.69)	(3.82)	(2.96)	(2.48)	(3.69)
Real exchange rate misalignment	-2.550 ***	-4.201 ***	-4.255 ***	-4.033 ***	-1.488 ***	-2.391 ***
	(3.99)	(2.83)	(3.74)	(3.24)	(3.91)	(3.44)
Inflation	0.013	7.626 ***	7.257 ***	10.125 ***	-0.078	4.444 ***
	(0.02)	(3.99)	(4.98)	(5.97)	(0.19)	(5.03)
OCA conditions						
Trade openness	1.442 ***	2.346 **	0.724	0.576	0.820 ***	0.268
	(4.75)	(2.09)	(1.34)	(0.95)	(4.84)	(0.78)
Country size	0.011	-4.138 ***	-0.512 ***	-0.095	-0.001	-0.483 ***
	(0.18)	(3.51)	(3.41)	(0.45)	(0.03)	(4.05)
GDP per capita	-0.123	2.879	0.402 *	0.159	-0.065	0.411 **
	(1.25)	(1.61)	(1.68)	(0.51)	(1.14)	(2.23)
Inflation correlation	1.458 ***	2.253 ***	2.429 ***	2.784 ***	0.859 ***	1.424 ***
	(7.69)	(6.14)	(8.16)	(8.51)	(7.75)	(8.11)
Financial approach						
Financial openness	0.143	-1.894 ***	-0.393 **	-0.846 ***	0.071	-0.303 ***
	(1.26)	(3.77)	(2.39)	(3.70)	(1.11)	(2.78)
Financial development	-0.938 ***	-4.372 ***	-1.558 ***	-1.079 *	-0.521 ***	-1.254 ***
	(3.19)	(4.08)	(3.00)	(1.82)	(3.05)	(3.74)
Constant	1.199	-	10.732 ***	1.239	0.866	9.824 ***
	(0.81)	-	(2.97)	(0.26)	(1.00)	(3.64)
Observations	1365	832	1365	832	1365	1365
Number of countries	66	42	66	42	66	66
LR statistic	127	270.9	203.1	163.87	128.5	233.52
p-value	0.00	0.00	0.00	0.00	0.00	0.00

Note: Absolute value of z statistics in parentheses

** significant at 10%; ** significant at 5%; *** significant at 1%*

Table 6
Choice of Exchange Rate Regime: sensitivity to alternative control groups
Dependent variable: dummy for the Exchange Rate Regime (flexible=0, fixed=1)
Estimation methods: Discrete-choice logit panel-data models
Sample: 1975-2005

	All countries			High-income OECD countries	Middle-income countries	Low-income countries
	Fixed effects	Random effects	Fixed effects	Random effects	Random effects	Random effects
	1	2	3	4	5	6
Macroeconomic conditions						
Current account surplus	-9.228 ***	-10.091 ***	-9.228 ***	-10.171 ***	-8.956 ***	-9.518 ***
	(2.69)	(3.82)	(2.69)	(3.50)	(3.33)	(3.35)
Real exchange rate misalignment	-4.201 ***	-4.255 ***	-4.201 ***	-4.289 ***	-4.074 ***	-4.122 ***
	(2.83)	(3.74)	(2.83)	(3.50)	(3.44)	(3.53)
Inflation	7.626 ***	7.257 ***	7.626 ***	10.000 ***	8.511 ***	8.103 ***
	(3.99)	(4.98)	(3.99)	(6.00)	(5.40)	(5.32)
OCA conditions						
Trade openness	2.346 **	0.724	2.346 **	0.726	0.965 *	0.278
	(2.09)	(1.34)	(2.09)	(1.25)	(1.73)	(0.50)
Country size	-4.138 ***	-0.512 ***	-4.138 ***	-0.055	-0.435 ***	-0.342 **
	(3.51)	(3.41)	(3.51)	(0.30)	(2.75)	(2.03)
GDP per capita	2.879	0.402 *	2.879	0.582 **	0.260	-0.087
	(1.61)	(1.68)	(1.61)	(2.13)	(1.02)	(0.32)
Inflation correlation	2.253 ***	2.429 ***	2.253 ***	2.775 ***	2.626 ***	2.493 ***
	(6.14)	(8.16)	(6.14)	(8.71)	(8.40)	(8.07)
Financial approach						
Financial openness	-1.894 ***	-0.393 **	-1.894 ***	-0.585 ***	-0.507 ***	-0.646 ***
	(3.77)	(2.39)	(3.77)	(2.85)	(3.25)	(3.06)
Financial development	-4.372 ***	-1.558 ***	-4.372 ***	-1.385 **	-1.647 ***	-0.889
	(4.08)	(3.00)	(4.08)	(2.52)	(3.10)	(1.58)
Constant	-	10.732 ***	-	-3.190	9.395 **	10.092 **
	-	(2.97)	-	(0.73)	(2.41)	(2.55)
Observations	832	1365	832	1002	1045	982
Number of countries	42	66	42	49	51	50
LR statistic	270.9	203.1	270.9	172.17	205.34	197.52
p-value	0.00	0.00	0.00	0.00	0.00	0.00

Note: Absolute value of z statistics in parentheses
** significant at 10%; ** significant at 5%; *** significant at 1%*

Table 7

Choice of Exchange Rate Regime: sensitivity to alternative time samples

Dependent variable: dummy for the Exchange Rate Regime (flexible=0, fixed=1)
Estimation methods: Discrete-choice logit panel-data models
Sample: 1975-2005

	1975-2005 (full sample)		1990-2005	
	Fixed effects	**Random effects**	**Fixed effects**	**Random effects**
	1	*2*	*3*	*4*
Macroeconomic conditions				
Current account surplus	-9.228 ***	-10.091 ***	-6.209	-10.639 ***
	(2.69)	(3.82)	(1.16)	(2.61)
Real exchange rate misalignment	-4.201 ***	-4.255 ***	-7.444 **	-6.917 ***
	(2.83)	(3.74)	(2.22)	(3.43)
Inflation	7.626 ***	7.257 ***	10.105 **	13.653 ***
	(3.99)	(4.98)	(2.50)	(5.79)
OCA conditions				
Trade openness	2.346 **	0.724	1.764	-0.952
	(2.09)	(1.34)	(0.73)	(1.20)
Country size	-4.138 ***	-0.512 ***	-12.942 ***	-0.235
	(3.51)	(3.41)	(3.56)	(0.92)
GDP per capita	2.879	0.402 *	1.913	0.114
	(1.61)	(1.68)	(0.35)	(0.27)
Inflation correlation	2.253 ***	2.429 ***	2.798 ***	2.915 ***
	(6.14)	(8.16)	(3.83)	(6.42)
Financial approach				
Financial openness	-1.894 ***	-0.393 **	-5.103 ***	-0.994 ***
	(3.77)	(2.39)	(3.82)	(3.58)
Financial development	-4.372 ***	-1.558 ***	-4.392 **	0.343
	(4.08)	(3.00)	(2.18)	(0.42)
Constant	-	10.732 ***		5.584
	-	(2.97)		(0.89)
Observations	832	1365	461	568
Number of countries	42	66	33	42
LR statistic	270.9	203.1	280.61	134.23
p-value	0.00	0.00	0.00	0.00

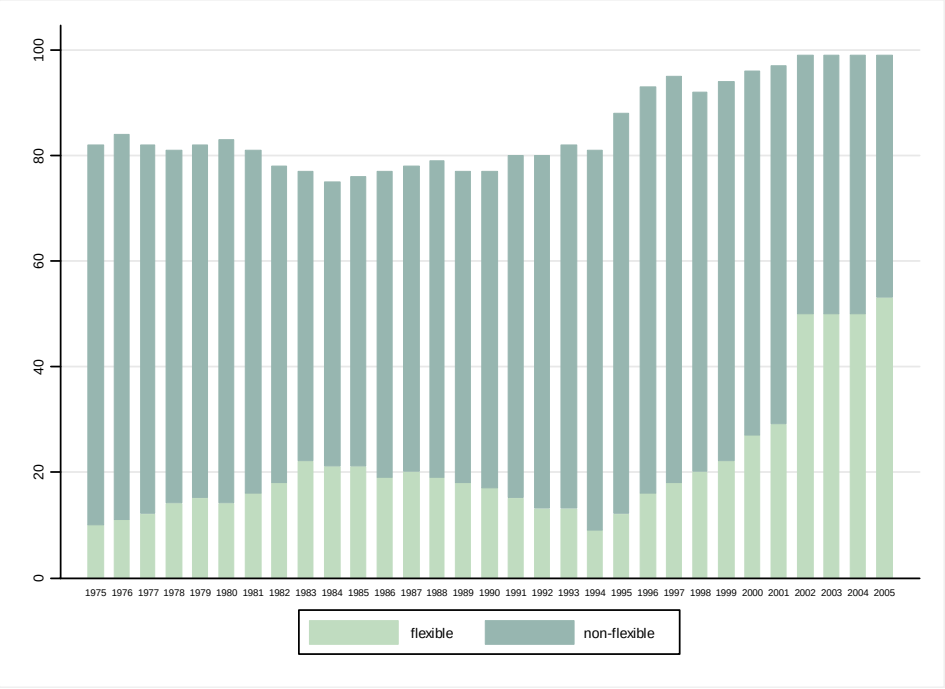
Note: Absolute value of z statistics in parentheses
** significant at 10%; ** significant at 5%; *** significant at 1%*

Table 8
Choice of Exchange Rate Regime: sensitivity to alternative definition of regimes
Dependent variable: dummy for the Exchange Rate Regime (flexible=0, fixed=1)
Estimation methods: Discrete-choice logit panel-data models
Sample: 1975-2005

	Fixed effects		Random effects		
	1	*2*	*3*	*4*	*5*
Macroeconomic conditions					
Current account surplus	-11.514	-10.190 *	-2.430	-7.192	-7.679 *
	(1.49)	(1.72)	(0.46)	(1.55)	(1.94)
Budget surplus	-	-	0.189	-	-
	-	-	(0.03)	-	-
Reserves to GDP	-	-	0.506	-	-
	-	-	(0.35)	-	-
Real exchange rate misalignment	-9.682 ***	-3.133	-0.393	-6.001 ***	-3.579 **
	(2.69)	(1.45)	(0.16)	(2.85)	(2.10)
Inflation	3.090	3.912 *	0.782	1.992	2.505
	(0.93)	(1.79)	(0.36)	(1.14)	(1.57)
OCA conditions					
Trade openness	2.706	0.139	1.494	1.473	1.494 *
	(0.89)	(0.06)	(1.17)	(1.41)	(1.69)
Country size	2.781	-5.191 ***	-0.766 **	-0.459 *	-0.565 **
	(0.90)	(2.99)	(2.27)	(1.76)	(2.42)
GDP per capita	-9.271 *	6.851 **	-1.038 *	0.038	-0.008
	(1.68)	(2.16)	(1.69)	(0.09)	(0.02)
Output correlation	-	-	0.978	-	-
	-	-	(0.73)	-	-
Inflation correlation	4.195 ***	2.968 ***	2.987 ***	3.089 ***	2.319 ***
	(3.53)	(4.49)	(3.76)	(5.10)	(4.86)
Terms of trade volatility	8.587 *	-	10.590 ***	5.927 *	-
	(1.80)	-	(2.79)	(1.90)	-
Money growth volatility	-	-	0.086	-	-
	-	-	(0.46)	-	-
Financial approach					
Financial openness	-0.489	1.034	-0.238	0.808	0.171
	(0.40)	(1.15)	(0.32)	(1.59)	(0.50)
Financial development	-4.498	-5.202 **	0.706	-0.892	-0.838
	(1.45)	(2.44)	(0.64)	(0.88)	(0.97)
Interactions					
Financial openness*output correlation	-	-	-1.676	-	-
	-	-	(1.30)	-	-
Constant	-	-	24.034 ***	9.348	13.297 **
	-	-	(3.31)	(1.56)	(2.52)
Observations	182	264	474	666	795
Number of countries	16	22	45	61	64
LR statistic	58.84	63.18	62.33	53.14	61.12
p-value	0.00	0.00	0.00	0.00	0.00

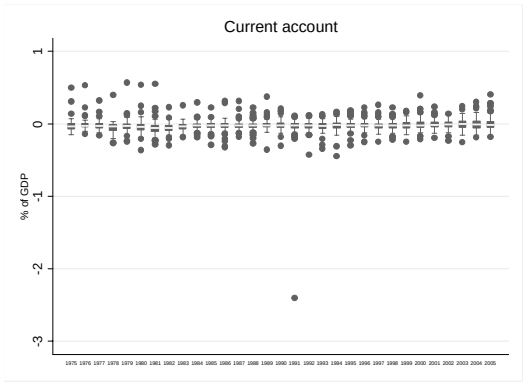
Note: Absolute value of z statistics in parentheses
** significant at 10%; ** significant at 5%; *** significant at 1%*

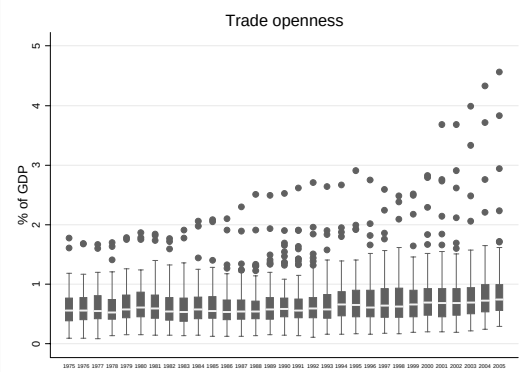
Figure 1: Adoption of Exchange Rate Regimes
(number of countries)

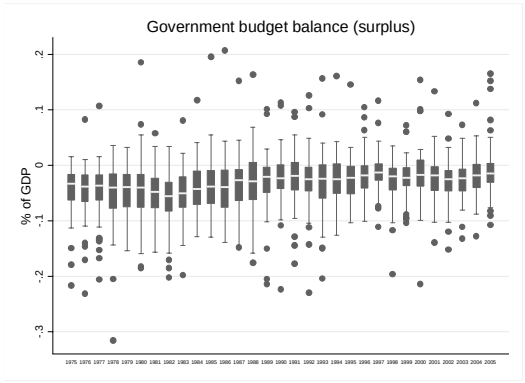


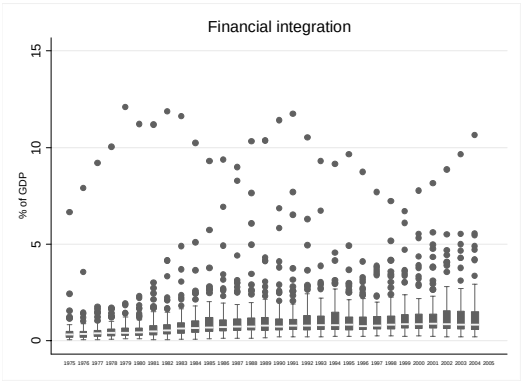
Source: Own elaboration

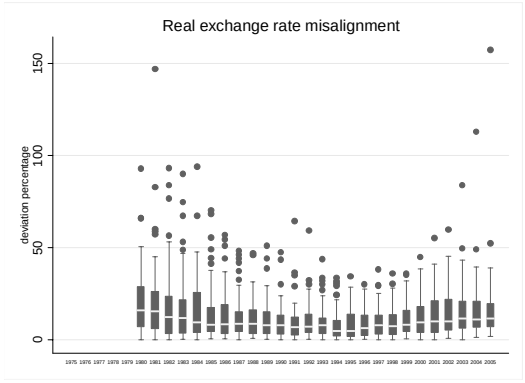
Figure 2: Full-Sample Distribution of 13 Explanatory Variables, 1975-2005

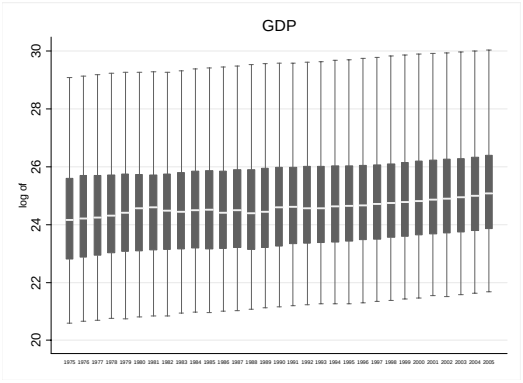


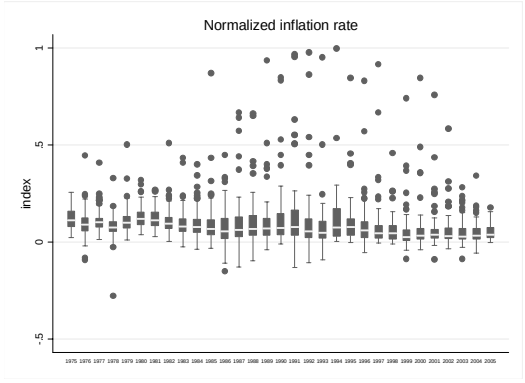


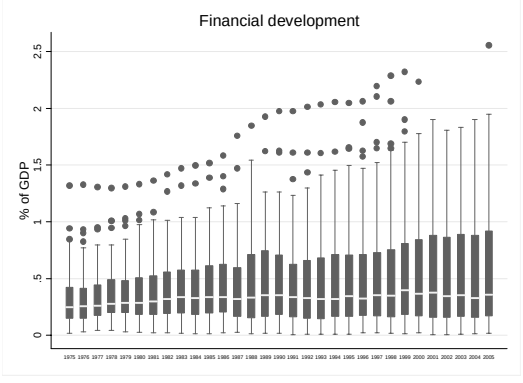


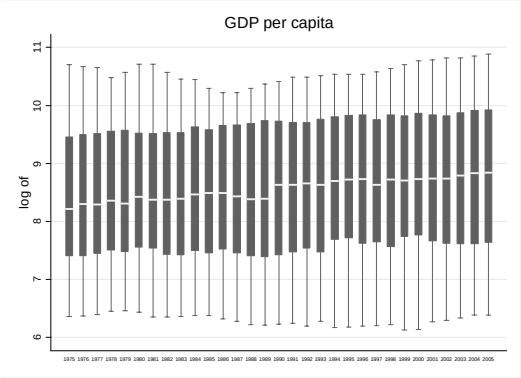


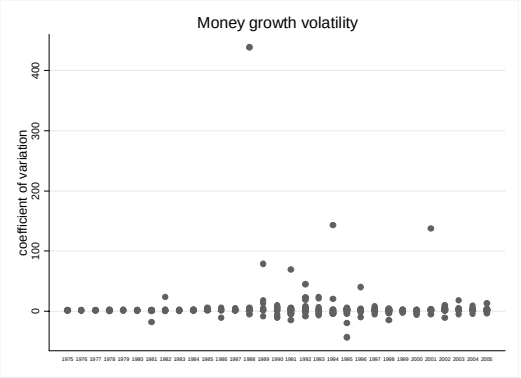


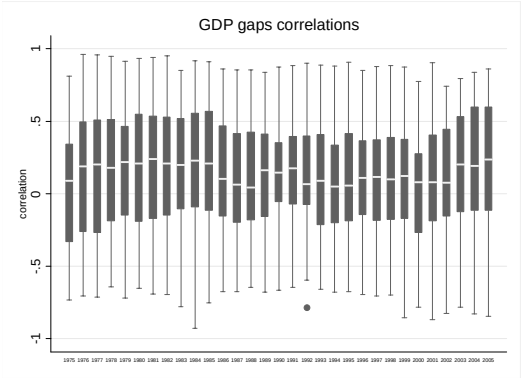


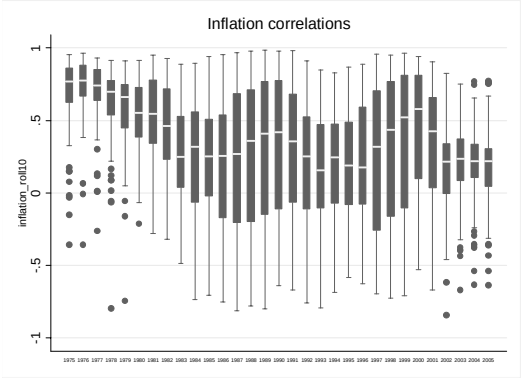


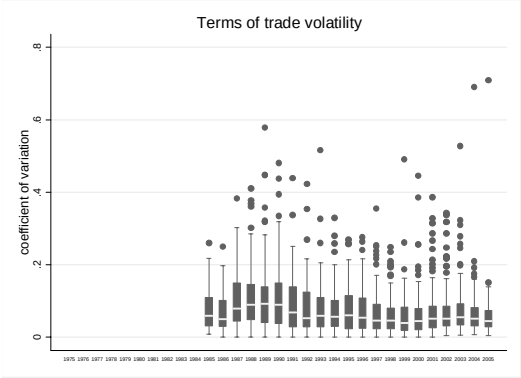






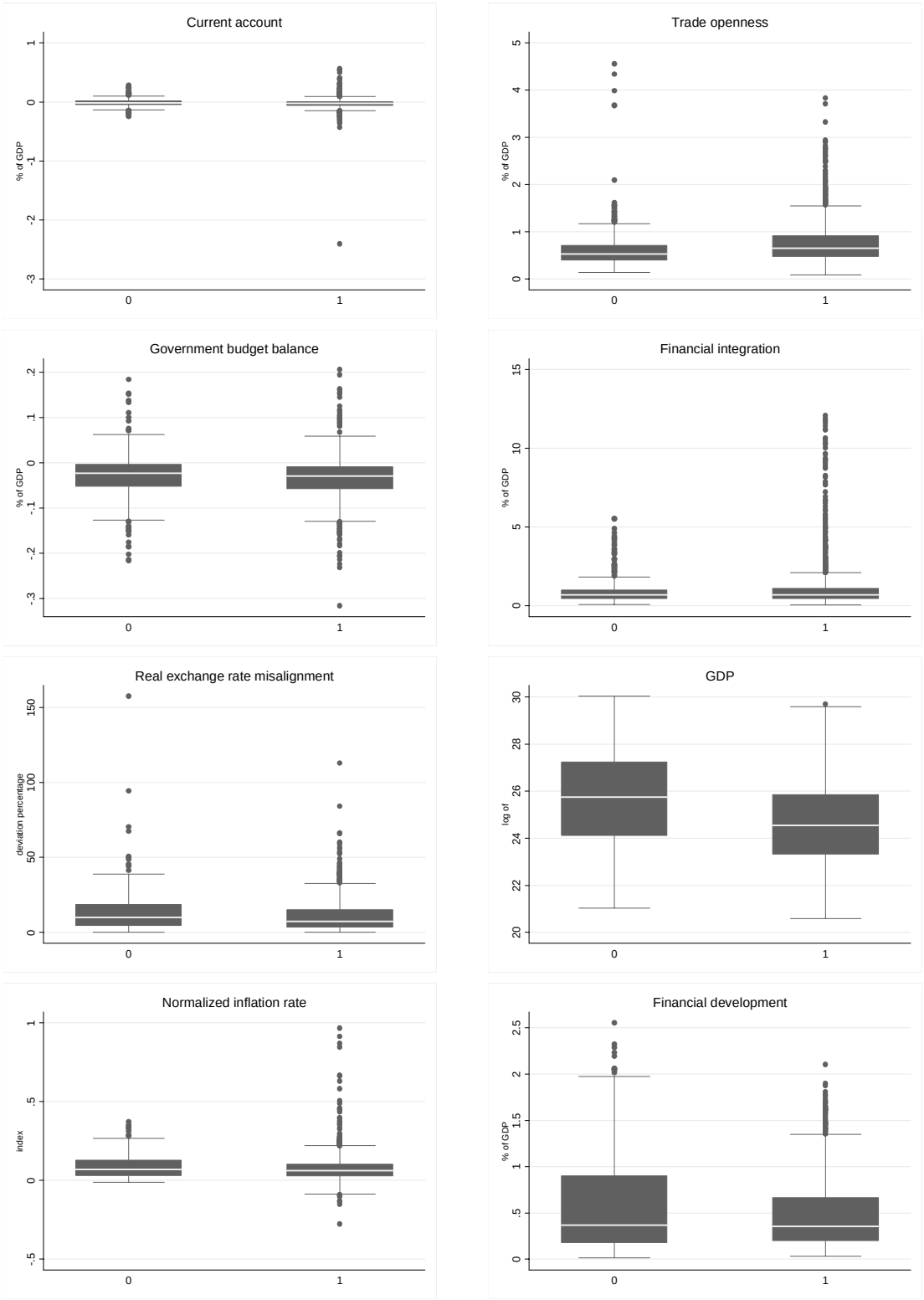


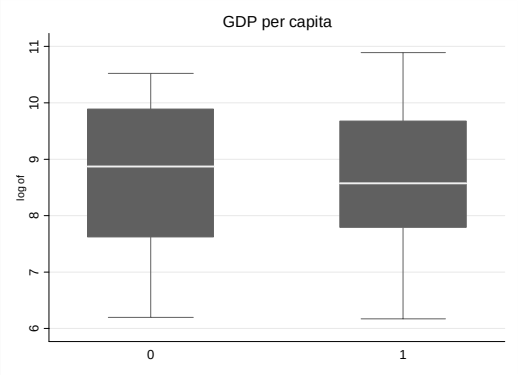


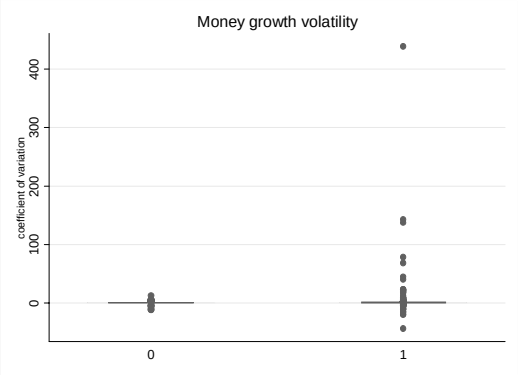


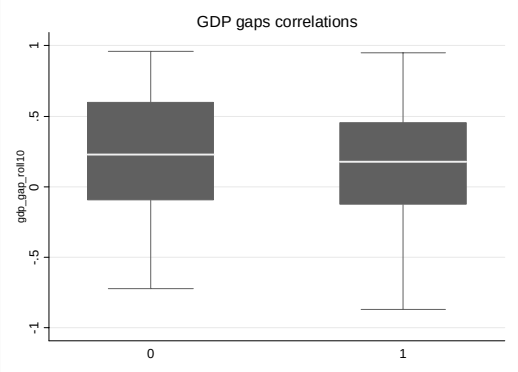
Source: Own elaboration based on the WDI data

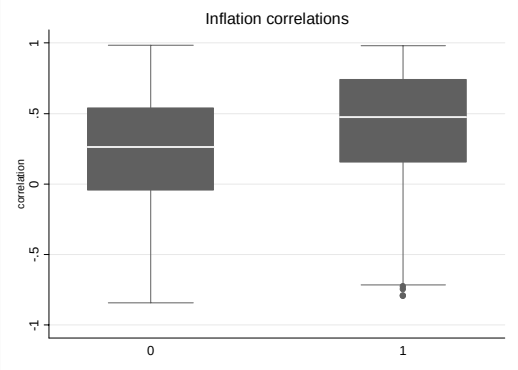
Figure 3: Flexible and Non-flexible Country Distribution of 13 Explanatory Variables, 1975-2005

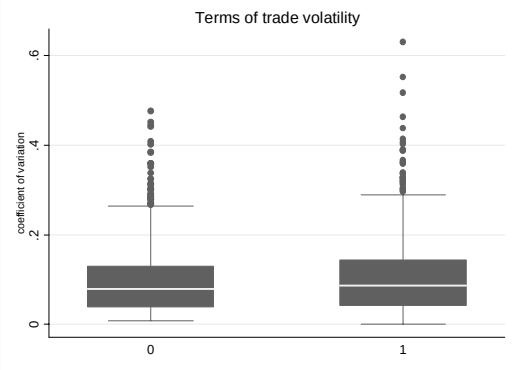












Source: Own elaboration based on the WDI data
Flexible regime=0 and non-flexible regime=1

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