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When countries do not do what they say: Systematic discrepancies between exchange rate regime announcements and de facto policies¹

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ABSTRACT:

We study the apparent disconnect between what countries announce to be their exchange rate regime and what they de facto implement. Even though discrepancies between announcements and de facto policies are frequent, there is a lack of understanding of actual patterns and underlying reasons. We contribute to the literature by identifying a number of robust stylized facts by means of an in-depth analysis of a large cross-country dataset. A key insight is that countries that operate under intermediate de facto regimes tend to announce fixed or flexible exchange rate regimes. The exact nature of deviations is related to country characteristics such as trade structure, financial development, and financial openness. Furthermore, regime discrepancies have followed secular trends, which are most likely related to financial globalization and changes in monetary policy design.

JEL: F31; F33; F41

KEYWORDS: Exchange rate regimes, de facto versus de jure, exchange rate policy

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I. INTRODUCTION

A look at the exchange rate regime choices of 133 countries over the period 1973-2004 reveals a striking phenomenon: nearly one half of all observations (40 per cent) show inconsistencies between what countries officially declare to be their chosen regime, and what countries actually do with respect to exchange rate management. Moreover, the exact nature of deviations seems to follow secular trends. In the early 1970s, countries that managed their exchange rate less than what could be expected given their announcement dominated the picture, but their share has decreased over time. Over the same period, the frequency of observing a country intervening more than announced has been increasing, in particular in the 1990s and 2000s, a trend that has recently attracted substantial attention from policymakers and academics (see, for example, Barajas, Erickson, and Steiner, 2007). Only the proportion of consistent regimes has remained roughly constant.

The finding that countries often do not follow their exchange rate regime announcement has important implications for research and policy. Most importantly, studies on the relationship between exchange rate policies and economic development (Aghion, Bacchetta, Ranciere, and Rogoff, 2006)⁴, financial stability (Bubula and Otker-Robe, 2003), or the emergence of inflation targeting as a preferred monetary policy regime for emerging markets (Goldstein, 2002) will remain incomplete without an understanding of regime discrepancies. It is therefore not surprising that recent years saw the emergence of a whole body of literature reviewing the proper definition, nature and implication of de jure and de facto exchange rate regime choices, including the seminal contributions by Reinhart and Rogoff (2004) and Levy-Yeyati and Sturzenegger (2003a, b, 2005).

We know that discrepancies between announced and de facto exchange rate policies are common, but we have a poor understanding of the underlying reasons. Most importantly, and contrary to some statements in related contributions, the literature on the “fear of floating” phenomenon initiated by Calvo and Reinhard (2002) does not provide an answer to the question: If countries indeed have good reasons to manage their exchange rate actively, why

⁴ Genberg and Swoboda (2005) show that both announcement and actual exchange rate policy matter for the economic performance of a country.

would they not announce a regime consistent with optimal policies? Put differently, while the literature offers several theoretical explanations why countries dislike exchange rate fluctuations⁵ and why countries may be forced to abandon fixed exchange rate regimes⁶, we know little about systematic and potentially voluntary deviations between announced and actual exchange rate policies.

Related Literature

To the best of our knowledge, there are only four contributions that address this question more or less directly. Carmignani, Colombo, and Tirelli (2006) study the role of political factors in explaining regime choices more broadly, also touching upon the issue of “broken promises”. The authors argue that, in general, countries attempt to choose de facto and de jure regimes consistently, except for those cases in which political incentives lead to some form of cheating or dynamic inconsistency. While the authors do not attempt to provide an “immediate theoretical interpretation” for their findings, an implicit assumption of the study seems to be that the stronger the incentive to peg or float the stronger the incentive to do so consistently, and that deviations from this policy either mirror politically motivated or wrong decision-making.

Von Hagen and Zhou (2006) view regime gaps as part of an “error-correction” mechanism that allows governments to adjust their actual policies in case the de jure regime has been chosen sub-optimally. Such a view, however, does not explain why de jure regimes are chosen sub-optimally in the first place. This is particularly troublesome since many of the (significant) explanatory variables used in their regression analysis do not change much over time, implying that they could have been taken into account by policymakers ex ante. Similarly, a dynamic error-correction mechanism should allow for the possibility of adapting the de jure regime to changing circumstances or policy misjudgments. Such a mechanism, however, cannot be identified in the data, since regime discrepancies display substantial persistence.

Alesina and Wagner (2006) analyze the relationship between regime discrepancies and the quality of institutions. They find that countries with low institutional quality tend to announce pegs, but are unable to sustain them. At the same time, countries with high institutional quality tend to

⁵ See, in particular, the literature on “fear of floating” started by the seminal contribution of Calvo and Reinhart (2002).

⁶ See the literature on currency crises, e.g. Krugman (1979) and Obstfeld (1996).

either consistently float or to actively manage the exchange rate without announcing it. Alesina and Wagner (2006) interpret this behavior as indication of a signaling game, in which countries with relatively good institutions try to distinguish themselves from countries with low institutional quality.

While signaling might indeed play an important role in explaining regime discrepancies, the evidence provided to support this view suffers from two major shortcomings. First, proxies for institutional quality display very little variation over time. Consequently, the quality of institutions cannot explain trends in the data. Second, Alesina and Wagner do not explain why countries with low-quality institutions announce a peg in this signaling setting. This, in turn, also calls into question the validity of the signaling strategy more generally, since policymakers confronted with low-quality institutions have a clear incentive to imitate their counterparts, given that the expected reputation gain of an announced but not consistently implemented peg is likely to be small. Consequently, a crucial question becomes how markets and the public actually react to attempts of “signaling by inconsistency”.

Starting from this last observation, Barajas et al. (2007) study the reaction of emerging market bond spreads to de jure and de facto exchange rate regime choices. They test the hypothesis that countries classified towards a flexible exchange rate regime are rewarded with lower spreads. As to the potential reasons for fearing to declare a more interventionist regime, the authors argue that markets might have a subjective bias against officially fixed exchange rate regimes. This bias could be either due to the fact that fixed exchange rates have received much of the blame for the emerging market crises in the 1990s, or be the result of the perceived advantage of operating an inflation targeting regime. Their main finding is that contrary to the working hypothesis both the announcement of a more heavily managed regime and the actual intensity of intervention lower spreads significantly. This leaves the puzzle why countries are reluctant to declare that they are intervening given that international capital markets do not reward neither de facto nor de jure floaters.

Aim and outline of the study

While none of the mentioned contributions offers a clear-cut theoretical explanation for the observed discrepancies, they all start from certain implicit presumptions about the underlying phenomenon. Implicit in the analysis is either the view that deviations between announced and implemented policies are the result of sub-optimal policies, or the reflection of some underlying

political or institutional reality, or a subjective bias in market perceptions. Apart from Alesina and Wagner (2006), existing contributions usually assume that inconsistencies to one side or the other can be analyzed separately. Also, issues of policy communication are treated very lightly, in spite of the fact that inflation targeting (a communication framework) is sometimes suspected to underpin more recent trends in the data. Finally, trends over time are usually not studied but taken for granted, in that the fear of floating phenomenon represents the motivation for the inquiry.

The aim of this study is to fill some of the gaps present in existing studies. First and foremost, we believe that the existing knowledge of time-series and cross-sectional patterns of regime discrepancies is highly incomplete. Before testing specific hypotheses about the reasons for and the consequences of different arrangements, it is therefore essential to first identify empirical regularities that could form the basis of establishing a set of robust stylized facts. To this end, we extend the existing *de jure* regime classification for 2000 - 2004 and pay particular attention to regional patterns and clustering, methodological issues in defining regimes, as well as country characteristics.

While our main interest lies in establishing a series of patterns *without* starting from restrictive presumptions, it is obviously impossible to operate in a theory vacuum: As indicated in the title of the paper, our working hypothesis is that observed regime discrepancies are *systematic*, i.e. not the result of random policy errors. In fact, one of our main objectives is to provide evidence for the existence of systematic elements in observed regime discrepancies, by linking them to specific country characteristics. Put differently, we intend to show that there indeed are country characteristics that systematically lead decision-makers to favor one type of deviation from consistency. For the case of regime discrepancies, this either means that there are (perceived) benefits from not declaring that a certain intervention strategy is being followed, or from declaring a policy that will not be always followed.

In providing evidence for systemic discrepancies between declarations and implementation, we highlight the importance of regime announcements as elements of a more comprehensive communication framework for monetary and exchange rate policies. At first glance, the idea that inconsistencies between announcements and policies could serve a purpose seems difficult to maintain, as markets and the public would either anticipate *ex ante* or punish *ex post* deviations from announcements. This, however, is not necessarily the case if one takes into account the

potentially constructive role of ambiguity. As pointed out in Best (2005), a work closely related to ours, ambiguity can serve a purpose by keeping policy regimes flexible enough to adapt to changing economic and political circumstances as well as to re-equilibrate conflicting interests.

Our main empirical finding is that countries tend to communicate exchange rate regimes at the corners of the flexibility spectrum, i.e. either fixed or flexible regimes, but to operate intermediate regimes. Whether countries announce a fixed or a freely floating exchange rate regime depends on country characteristics, in particular related to trade structure, financial development, and financial openness. Countries at different stages of economic and financial development differ in the nature of regime discrepancies. Finally, the decreasing frequency of countries managing their exchange rate less than announced and the increasing occurrence of countries intervening more than announced align with broader economic trends and developments worldwide.

The rest of the paper is organized as follows. Section II describes the data; section III analyzes time trends and joint factors of regime discrepancies. In section IV a descriptive statistical analysis of deviations of de facto from announced exchange rate regimes is presented. Section V contains the econometric analysis and an interpretation of the findings. The last section concludes and gives an outlook on future research.

II. DATA

Our sample covers 133 countries from 1973 to 2004. The countries are classified as high, upper middle, lower middle, or low income countries according to the classification provided by the World Bank for 2004. Table A1 in the appendix lists the countries included in the sample.

Exchange rate regimes and discrepancies

Our analysis focuses on the announcement and actual implementation of exchange rate policy. Until 1999, the *announcement strategy* is measured by the de jure exchange rate regimes as categorized by Ghosh, Gulde, and Wolf (2002) based on the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER) data. The AREAER contains the intended

exchange rate policies that member countries reported to the IMF on an annual basis⁷. To cover more recent trends, we extended the de jure regime classification for the years 2000-2004, allowing us to employ a new and unique dataset. To update regime announcements, we start with information from AREAER, which since 1998 does not report de jure classifications anymore, but contains additional verbal information that often allows identification of a country's stated regime choice. We combine this information with other sources, such as IMF staff reports and central banks reports, to complete and cross-check our data. Due to data limitations and consistency concerns, we only distinguish between fixed, intermediate, and flexible exchange rate regimes, consolidating the more detailed classification of Ghosh et al. (2002) into these three groups.⁸

We capture the actual *intervention strategy* through the de facto exchange rate regime classification ("natural" classification) developed by Reinhart and Rogoff (2004). One of the key characteristics of this classification method is the use of data on parallel and dual exchange rate markets⁹. These market-determined exchange rates are often a better measure of actual and expected future monetary policy. In addition, they usually capture the economic impact of exchange rate changes more directly than official exchange rates, and do thus display a closer relationship to other variables of interest. To identify exchange rate regimes, Reinhart and Rogoff separate observations with unified exchange markets from those with parallel or dual markets. The de facto classification of the former is then obtained by statistical verification of regime announcements or (in cases without announcement) by direct statistical interference, which is also used for country-year observations with dual or parallel markets. The statistical evaluation measures de facto exchange rate behavior via the mean absolute monthly change in the market-determined (official or parallel) nominal exchange rate, based on a five-year moving window.

⁷ In most of the years covered by our sample, countries were required to assign themselves to one of four categories (fixed, limited flexibility, managed floating, and independently floating). For an exposition of the IMF classification and changes over time, see e.g. Reinhart and Rogoff (2002). Ghosh, Gulde, and Wolf (2002) extended these groups to fifteen buckets, see table A2.

⁸ The exact mapping is shown in table A2. Our coarse classification corresponds to the one used by Ghosh, Gulde, and Wolf (2002) with the exception of the secret basket pegs which we include into the intermediate category instead of the fixed one. We explain the reasons in the appendix (table A2).

⁹ Dual markets are typically legal while parallel markets may or may not be legal (Reinhart and Rogoff (2004)).

Reinhart and Rogoff (2004) use fourteen buckets for their regime classification. However, as the categorizations of de jure and de facto exchange rate regimes are not congruent, we regroup them into three broad categories: fixed, intermediate, and floating regimes; the precise mapping is presented in table A2¹⁰. The Reinhart and Rogoff dataset¹¹ covers 153 countries for the period 1946-2001. For the years 2002-2004 we use the update of the “natural” classification provided by Eichengreen and Razo-Garcia (2006).¹²

Compared to other de facto classifications (e.g. the widely used dataset by Levy-Yeyati and Sturzenegger, 2005¹³, the IMF de facto classification used in Bubula and Otker-Robe, 2002, or the recent compilation by Klein and Shambaugh, 2006¹⁴) the Reinhart and Rogoff dataset has the advantage of offering the most extensive country and time coverage¹⁵. Moreover, we see at least two methodological reasons to prefer the Reinhart and Rogoff classification. First, the use of market-determined exchange rates seems to provide a much better picture of the underlying economic policies than official rates do (all other de facto classifications rely on official exchange rates). Reinhart and Rogoff point out that parallel markets are frequently used as “back door” floating, in most cases with simultaneous exchange controls. In these situations, the use of official rates would strongly bias the results towards observing consistency between de jure and de facto fixed regimes. Second, Reinhart and Rogoff take the perspective of larger and more continuous regimes by using a five-year moving window, making it less likely to wrongly identify a one-time devaluation or shock as a regime change.

¹⁰ Our three groups correspond to the coarse classification provided by Reinhart and Rogoff (2004) when categories 2 and 3 are subsumed as intermediate and 4 and 5 as floating regimes.

¹¹ Available at <http://www.publicpolicy.umd.edu/faculty/reinhart/annual1.dta>.

¹² This data, available at http://www.econ.berkeley.edu/~eichengr/updated_rr_nat_class.pdf, covers the years 1990-2004. If observations not classified by Reinhart and Rogoff (2004) during that period were classified by Eichengreen and Razo-Garcia (2006) we use the improved data.

¹³ Available at http://200.32.4.58/~ely/Base_2005.zip.

¹⁴ Klein and Shambaugh's (2006) classification distinguishes only between fixed and floating exchange rates which we consider insufficient as intermediate regimes are quantitatively important and different in nature from fixed and floating regimes, as will be discussed later on.

¹⁵ The IMF de facto classification is available only since 1990. The Levy-Yeyati and Sturzenegger (2005) classification suffers from a substantial number of unclassified observations due to a lack of data, especially on international reserves. See Frankel and Wei (2007) for a discussion of different de facto classifications and a novel proposal for a synthesis of techniques to determine the de facto exchange rate regime of countries.

A drawback of the Reinhart and Rogoff approach is that only the unconditional volatility of the nominal exchange rate is used, so measures of intervention intensity such as international reserve and interest rate changes are not taken into account. Thus, no clear distinction can be made between exchange rate stability arising from active policies or from the absence of shocks, leading to a potential overestimation of de facto fixed exchange rate regimes. Although Reinhart and Rogoff provide evidence that potential biases are limited, the possibility should be kept in mind. Nonetheless, we consider the RR classification the one most suitable to the questions we post. To check robustness, we test the sensitivity of our results against Levy-Yeyati and Sturzenegger's (2005) classification, which includes the volatility of international reserves, but does not take into account interest rate policy.

Figure 1: Taxonomy of de jure and de facto exchange rate regime combinations

Communication Framework Intervention strategy	De jure Fixed	De jure Intermediate	De jure Flexible
De facto Fixed	C	IMA	IMA
De facto Intermediate	ILA	C	IMA
De facto Flexible	ILA	ILA	C

With respect to the concrete alternatives policymakers are facing, it is useful to start with a taxonomy of de jure and de facto regime combinations (figure 1). Our aim is to find empirical regularities related to a country's choice to locate either to the northeast (with a strategy combination in which policymakers intervene more than announced, or IMA) or to the southwest (with a strategy combination in which policymakers intervene less than announced, or

IIA) of the main diagonal (consistency between de jure and de facto, or C).¹⁶ Obviously, conscious choice will never explain fully the observed combination of the jure and de facto regimes, since policymakers will usually not take into account all the possible future states of the world. In fact, the de jure exchange rate regime is an ex-ante stated policy intention while the de facto regime resembles the ex-post actual policy decisions. However, we intend to show that there indeed are country characteristics that systematically lead decision-makers to favor one type of deviation from consistency.

Explanatory variables

We use a wide set of macroeconomic, structural, institutional, and financial indicators to identify those characteristics that are associated with regime discrepancies of a specific kind.¹⁷ The complete dataset is described in Table A3 in the appendix. Our choice of variables is mainly guided by previous studies on the determinants of exchange rate regimes, as we expect that many of the variables relevant for the choice of de jure and de facto regimes separately will also explain part of the variation in regime discrepancies. Underlying this expectation is our view that regime discrepancies are a reflection of conflicting views and agendas on exchange rate policies that give ambiguity a potentially constructive role.

Starting with trade-related variables, we measure the degree of openness as the sum of exports and imports relative to GDP. The importance of primary commodity exports is proxied by the sum of agricultural raw materials, ores, metals and fuel exports as a share of all merchandise exports while trade concentration is measured as the share of total exports to the three largest trading partners. Furthermore, we include the three year centered standard deviation of the terms of trade growth rate to measure the volatility of an economy's external environment.

¹⁶ We consider the labels “fear of floating” and “fear of pegging” used by other authors inappropriate in the present context. Consider “fear of floating” as introduced by Calvo and Reinhart (2002): it describes the desire of a country to limit exchange rate fluctuations but it does not embrace why countries do not announce their actual intervention strategy. “Fear of pegging” has been used by Alesina and Wagner (2006) and by von Hagen and Zhou (2006) to describe a situation where the de jure exchange rate regime is more rigid than the de facto one (what we label IIA). However, Levy-Yeyati and Sturzenegger (2005) have used the term to describe situations in which a country having a (de facto) fixed exchange rate regime is unwilling to explicitly announce it (“fear of floating” in a narrow sense).

¹⁷ The macroeconomic data is mainly taken from the International Financial Statistics and the World Economic Outlook as well as from the World Development Indicators. An important subset of explanatory variables is related to financial development and financial openness.

The degree of financial market development seems to influence the choice of exchange rate policies (see e.g. Husain, Mody, and Rogoff, 2005). Stages of development are captured by two different types of country classifications: the World Bank concept of income groups and the Morgan Stanley Capital International Index (MSCI) concept of emerging markets and developed economies. We consider the income categories of the World Bank (low, lower middle, upper middle, and high income) based on GNI per capita (in USD) the most suitable indicator of economic development. The low and middle income countries are often referred to as developing countries. The MSCI distinguishes between developing, emerging market, and developed economies. The separating feature of emerging market economies (EMEs) from other developing countries is the level of market capitalization. The MSCI differentiates between EMEs and advanced economies using a combination of macroeconomic and financial indicators, such as GDP per capita, the extent and quality of financial regulation and restrictions and perceived investment and/or country risk. Thus, starting from a threshold level of financial market development, the separating line between the country groups is drawn based on financial sector and institutional strength. We mainly use the World Bank groups for our analysis while controlling for the robustness of our findings with respect to the alternative MSCI categorization. Additionally, we use a time-varying MSCI dummy as explanatory variable, which is equal to 1 from the year of inclusion of a country in the MSCI onwards and 0 otherwise.

Two alternative measures of financial openness are used to account for the distinction between de facto and de jure policies.¹⁸ The degree of financial openness and the actual integration into international financial markets are very likely to affect a country's choice of an exchange rate regime and of how to communicate this choice. When capital markets are open and financial integration is high, the potential for market discipline increases. If capital controls are in place (or the capital account is open but no capital actually flows across borders), these possibilities are limited or absent and policymakers have additional leverage on domestic monetary policy. As de jure measure, we use the indicator of financial openness constructed by Chinn and Ito (2006)¹⁹ which is based on the intensity of capital controls (official restrictions on capital account transactions) as reported in the AREAER. To capture the degree of actual financial integration,

¹⁸ For a discussion of how to measure financial openness and financial integration, see e.g. Kose, Prasad, Rogoff, and Wei (2006).

¹⁹ Available at http://www.ssc.wisc.edu/~mchinn/kaopen_2005.xls.

we follow Kose, Prasad, Rogoff, and Wei (2006) and construct an additional measure based on the sum of external assets and liabilities over GDP, using the data provided by Lane and Milesi-Ferretti (2006)²⁰.

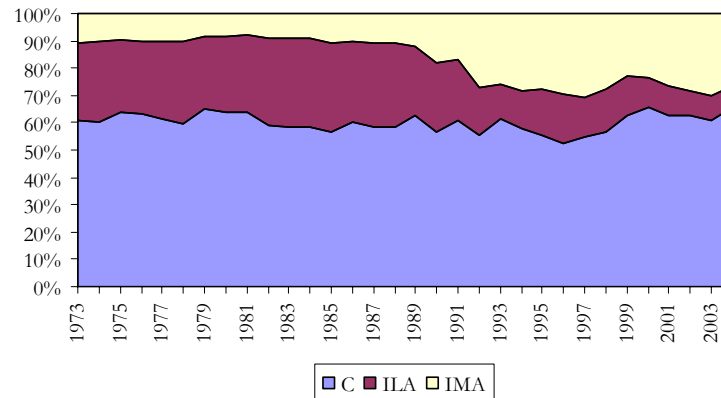
In addition to variables related to trade and financial structure and openness, we assess the role of country size (measured by population or GDP) and the level of economic development (GDP per capita). In some of the regressions in section V, year dummies are included. We also look at regional dummies to account for the geographic clustering we found in our statistical analysis.

III. TIME TRENDS AND JOINT FACTORS

As already pointed out by Reinhart and Rogoff (2004) and Rogoff, Husain, Mody, Brooks, and Oomes (2003) the type of discrepancy between announced and de facto policy has been subject to an important shift over time, from “labeling something as a peg when it is not, to labeling something as floating when the degree of exchange rate flexibility has in fact been very limited” (Reinhart and Rogoff, 2004, p.37). However, neither of the two publications has pursued this aspect further, so it is worthwhile to lay out some important patterns we find in the data. Over the whole sample period (1973-2004) only 60 per cent of the total observations²¹ involve consistent regimes while 22 per cent are associated with ILA and 18 per cent with IMA. However, as can be seen from graph 1 the occurrence of ILA has been decreasing over time, from 28 per cent in the 1970s to 10 per cent in the 2000s, while the frequency of observing IMA has been increasing, from 10 per cent in the 1970s to 27 per cent in the 2000s. The proportion of consistent regimes has remained roughly constant.

²⁰ The data is available at <http://www.imf.org/external/pubs/ft/wp/2006/data/wp0669.zip>.

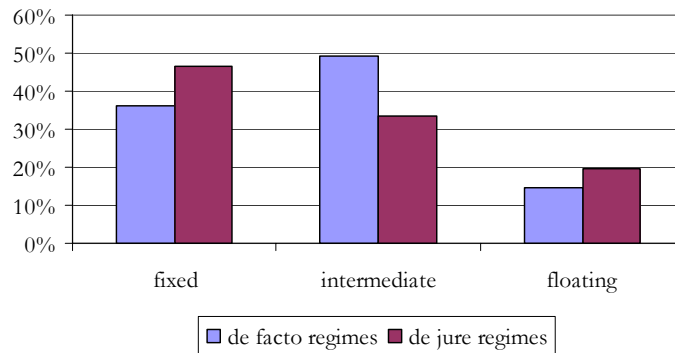
²¹ With observation we mean a country-year data point.

Graph 1: Exchange rate regime discrepancies, 1973-2004

It is instructive to look at the de facto and de jure exchange rate regimes accompanying observed discrepancies. Not surprisingly, the higher the proportion of de jure fixed or floating regimes, the higher is the potential for ILA and IMA, respectively. For the whole sample, 47 per cent of the total observations were de jure fixed, 33 per cent intermediate and 20 per cent floating exchange rate regimes²² (graph 2). However, the distribution of de facto exchange rate regimes differs substantially; only 36 per cent of all the observations were associated with fixed exchange rate regimes (11 percentage points less than de jure), 49 per cent intermediate (16 percentage points more) and 15 per cent floating regimes, which can be separated into 10 per cent of freely falling and, thus, only 5 per cent truly freely floating regimes. Note that it is important to separate out the freely falling category²³, characterized by (very) high inflation rates which lead to important distortions (see Reinhart and Rogoff, 2004).

²² The overall picture is unchanged if we look only at the years 1973-1999 for which the de jure regimes were published in the AREAER. If we include the secret basket pegs into the fixed category (this information is available only until 1999), 56 per cent of all observations are de jure fixed and only 27 per cent intermediate. For a discussion of the categorization of secret basket pegs see appendix.

²³ The freely falling category encompasses observations when the twelve-month inflation rate is equal to or exceeds 40 per cent per annum and, additionally, includes the first six months following an exchange rate crisis if it marked a transition from a peg or quasi-peg to a managed or independent float. (Reinhart and Rogoff, 2004, p.3-4)

Graph 2: Exchange rate regimes, 1973-2004

As graph A1a illustrates, de jure regimes have exhibited a clear trend from fixed towards flexible regimes: fixed regimes declined from 66 per cent in the 1970s to 42 per cent in the 2000s, while floating regimes increased from 7 per cent in the 1970s to 33 per cent in 2000s. In contrast, the distribution of the de facto exchange rate regimes has remained more stable (graph A1b). Fixed regimes decreased from 44 per cent in the 1970s to 31 per cent in the 1980s and increased to 40 per cent in the 2000s. The floating regimes increased from 8 per cent in the 1970s to 13 per cent in the 2000s while intermediate exchange rate regimes remained at 40 to 50 per cent of all observations.²⁴

Another interesting feature is that discrepancies between announced and de facto exchange rate policies are highly persistent over time, as documented by von Hagen and Zhou (2006). Discrepancies are not single observations that occur from time to time but they seem to follow systematic pattern. Some countries display ILA or IMA over nearly the whole sample period, while others moved from ILA to IMA following the overall trend, sometimes transitioning through consistent combinations. Most of the countries sticking to one type of discrepancies have changed their de facto and/or de jure policies quite frequently.

The transition from announcing more rigid regimes than de facto followed towards announcing more flexible regimes has been accompanied by increased financial liberalization and financial

²⁴ Additionally, we observe important differences in regime choices between country groups, specifically between high, upper middle, lower middle, and low income countries. For a graphical analysis on de facto and de jure exchange rates regimes as well as resulting discrepancies, see graphs A1-A5 and table A4 in the appendix.

integration (see graph A6). While the years around the transition from ILA towards IMA were characterized by particularly high world inflation rates, they have decreased to extraordinary low levels afterwards.

IV. DESCRIPTIVE STATISTICAL ANALYSIS

Consistent regime combinations

Before analyzing discrepancies between announced and de facto exchange rate regimes it is useful to point out some stylized facts and country characteristics which may induce policymakers to explicitly choose consistent regime combinations. A first observation is that the overwhelming part of consistent regimes are fixed (50 per cent), closely followed by intermediate exchange rate regimes (39 per cent) while only 11 per cent of the observations are related to floating regimes.

One reason for this observation is that extreme forms of fixed regimes (monetary unions, dollarization, and currency boards) are chosen to signal the impossibility of deviation from the announced regime. Failures to follow the announcements are immediately visible and the cost of exit is extremely high²⁵. Indeed, these regimes represent a significant share of consistent observations²⁶. Extreme forms of fixed regimes are mostly chosen by very small and open economies, such as the members of the CFA French franc zone²⁷ and the Eastern Caribbean Dollar zone²⁸, but also include advanced economies in the EMU or by countries with a long history of high inflation and crises (such as Argentina and Ecuador).

Among the consistent free floaters, one can distinguish two main country groups. The first group consists of countries that have experienced crises and high inflation rates over the

²⁵ The exit of Argentina from its currency board arrangement in 2001/2002 started a new discussion about the transparency and disciplining capacity of this exchange rate arrangement.

²⁶ The share is 29 per cent of the consistent regime combinations until 1999; afterwards we do not have detailed information.

²⁷ CFA franc zone countries included in the sample are: Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal, Togo (WAEMU), and Cameroon, Central African Republic, Chad, Equatorial Guinea, Gabon (CAEMC).

²⁸ The countries in the Eastern Caribbean currency union (ECCU is a currency board arrangement) included in the sample are: Antigua & Barbuda, Dominica, Grenada, St. Kitts & Nevis, St. Lucia, and St. Vincent & Grenadines.

majority of years in the sample. These countries usually are characterized as freely falling within the de facto classification, sometimes showing short and infrequent events to stabilize expectations through exchange-rate based stabilization programs. The second group consists of highly developed countries like Australia, Japan, and the United States.

Intervening Less Than Announced (ILA)

Over the whole sample the number of ILA observations is surprisingly high. Although the occurrence of ILA clearly declined over time, still 14 per cent of all observations are related to ILA in the 1990s and 2000s. How can this widespread phenomenon be explained? The announcement of a rigid exchange rate regime is a means to import credibility for tough monetary policy from the anchor country. Then, pursuing a more flexible exchange rate policy, e.g. through frequent parity adjustments, should result in a loss of credibility. As a consequence, any new attempt to build up credibility via a rigid exchange rate regime will most likely prove even harder. Consequently, the existing literature would not consider ILA to be the result of actual policy choices. Instead, it would be considered a crisis phenomenon resulting from the actual *inability* of a country to pursue the rigid policy (“inability to peg”).²⁹

Before taking a closer look at the economic characteristics of the countries that have a history of ILA, it is useful to point out two aspects of the data that in our view have not received enough attention in related contributions. When studying the countries identified as those operating under ILA, we were surprised about the sensitivity of the results with respect to (i.) the classification of some of the more rare or exotic exchange rate regimes, specifically secret basket pegs, and (ii.) the choice of reference currencies for cooperative systems. Not accounting for this sensitivity leads to potentially severe measurement errors and implies an often counter-intuitive classification with respect to the regime discrepancy. A more detailed discussion is provided in the appendix (table A2).

Turning to the characterization of countries that are mainly associated with ILA, exploring our data allowed us to identify a number of interesting empirical regularities. Most importantly, it is apparent from our data that ILA is not just a crisis phenomenon or a mere inability to peg.

²⁹ This is also the perspective taken in Alesina and Wagner (2006).

While the de jure exchange rate regimes predominately related to ILA are fixed regimes³⁰ (77 per cent), the dominating intervention strategies are de facto intermediate exchange rate regimes with 64 per cent of all ILA observations³¹. Only 33 per cent of all ILA observations were characterized as de facto freely falling. Since the latter can be interpreted as a proxy for crises episodes and, more generally, for the inability to implement restrictive monetary policies, crises and high inflation episodes account for an important, but limited proportion of ILA observations.³² The view that ILA represents an inability to stick to the announced rigid exchange rate regime is thus only partially supported. In this respect, it is worth mentioning that such “failures” only result in ILA if policymakers do not change their announced exchange rate regime during the crisis. One reason for such a behavior may be some form of announcement inertia, e.g. due to the time-consuming political process necessary to change the legal framework.³³

An important corollary to this observation is that de facto intermediate regimes are “overrepresented” in the ILA group, as intermediate exchange rate regimes constitute “only” half of the de facto regime observations. Although intermediate exchange rate regimes account for a significant proportion of intervention strategy choices, there seems to be a preference of not communicating such choice, and rather operate against the benchmark of an announced peg (or announced float, as argued below). Only half of all de facto intermediate exchange rate regime observations are actually announced, and countries choose instead a strategy of more

³⁰ More precisely, from 1973 to 1999 (due to data restrictions) ILA observations are predominantly associated with single currency pegs (43 per cent) and basket pegs (33 per cent).

³¹ These are predominantly de facto crawling bands (35 per cent) and managed floating (21 per cent).

³² 28 per cent of all ILA observations are indeed preceded or accompanied by a currency crisis and this proportion is higher than for IMA and consistent observations, 21 and 17 per cent, respectively. Note that these figures refer to 1975-1997 only due to data availability.

³³ As the de jure regime is reported only once a year (ex-ante) to the IMF, it is sufficient that policymakers are unable to follow their announced policy to generate a single ILA observation. Also, an announced change in the exchange rate regime may not be reflected in the official de jure classification when it occurs over the year. However, if at least two consecutive years of ILA are observed, other forces have to be in place, e.g. some form of announcement inertia. Note that only 22 ILA observations (out of 812) are neither preceded nor followed by an ILA observation (or missing observations).

intervention (a fixed exchange rate regime) in 28 per cent of the cases, resulting in ILA, or of no intervention (a floating regime), resulting in IMA.³⁴

A closer look at the countries predominately characterized by ILA (see table A4a) reveals some further interesting patterns. First, with respect to geographic distribution, low and middle income countries in the Middle East and North Africa show a particularly strong tendency of following less rigid exchange rate policies than announced. The high proportion of observations involving ILA in this country group is mirrored in the dominance of ILA in OPEC countries. Controlling for the higher prevalence of de jure fixed regimes (see the final column in table A4a) does not qualitatively alter these results.

The high incidence of ILA among Middle Eastern & North African as well as OPEC countries raises the question of whether there could be a potential link between the share of primary exports (in particular fuel export) and the occurrence of ILA. While we do not want to jump to a conclusion prematurely, it is interesting to note that primary exports (in per cent of all merchandise exports) belong to the group of variables for which the data shows a significant difference in group means, medians, and distribution considering all observations. However, fuel exports (as share of all merchandise exports) show significantly different means, medians, and distribution only for ILA observations related to de jure fixed regimes (see table A5, lower table). Moreover, countries with a large share of mineral exports seem to follow ILA policies in most world regions. For example, a significant share of the ILA observations in Sub-Saharan Africa (approximately 25%) is related to the cases of Botswana (with its dominant diamond industry) and Zambia (long dominated by copper). Similarly, most large mineral exporters in South America (excluding Chile) have at least one substantial data spell characterized by ILA³⁵. Finally, Norway is among the few European countries that show a substantial ILA spell, together with its Scandinavian neighbors³⁶.

³⁴ However, if an intermediate exchange rate regime is announced, the likelihood of actually observing it is relatively high: 70 per cent of the announced intermediate regimes are consistent and, therewith, it is the exchange rate category with the highest proportion of consistent regimes.

³⁵ In particular, Bolivia, Peru, and Suriname have substantial ILA observations (13, 13, and 12 years, respectively) and mineral exports are at least 30 per cent of all merchandise exports.

³⁶ Norway and Sweden had ILA from 1978 until 1991, Finland from 1977 until 1991, and Iceland 1973-1975, 1977-1983 and 1993-1999.

We performed parametric and non-parametric tests for the equality of means, medians, and distributions for several economic characteristics of countries that have IMA observations against consistent and IMA observations. As the assumption of a normal distribution of economic variables seems strong, the comparison of medians and distributions may provide a more meaningful picture of average performance in the two groups than the comparison of means. However, for robustness, we provide all three. The results, reported in table A5, suggest that variables related to inflation, trade openness, and financial openness as well as to institutional quality do differ between the groups operating under IMA and non-IMA regime combinations, in addition to the export structure described above. The inflation rates for IMA observations are significantly higher while trade openness and the import share are significantly lower. Financial openness, both de jure and de facto, and institutional quality (across different measures) are significantly higher for non-IMA observations. Measures of economic development (GDP per capita, in USD and PPP corrected) and economic size (GDP and population), however, show only a weak relationship with IMA observations.³⁷

Intervening More Than Announced (IMA)

Over the whole sample period from 1973 until 2004 we observe IMA in only 18 per cent of the total observations. However, while IMA has been decreasing, the frequency of observing IMA has been increasing over time. The literature on “fear of floating” started by the seminal work of Calvo and Reinhart (2002) provides numerous explanations for the reluctance of countries to tolerate substantial fluctuations in the exchange rate. The most prominent reasons are significant balance-sheet effects, mostly due to high liability dollarization, and high pass-through from exchange rates to prices.³⁸ Nevertheless, this literature does not offer a comprehensive justification for countries’ choices to announce a more flexible exchange rate regime. If there are no credibility gains through the announcement of a rigid exchange rate regime³⁹, policymaker may refrain from exchange rate commitments altogether and, thus, retain full flexibility.

³⁷ The numbers are not very sensitive to the inclusion of the years 2000-2004.

³⁸ Rationales for “fear of floating” are provided, e.g., by Hausmann, Panizza, and Stein (2001), Lahiri and Vegh (2001), Caballero and Krishnamurthy (2001).

³⁹ As exposed by, e.g., Rogoff et al. (2003) only countries at a low level of financial development seem able to gain low inflation credibility through the announcement of rigid exchange rate regimes.

Analyzing under which circumstances countries predominantly exhibit IMA reveals some interesting patterns. Remarkably, the relative frequency of observing IMA differs between country groups at different stages of economic and financial development (table A4b), and there has been an important shift over time (see discussion above). Over the whole sample period, advanced economies have the highest frequency of IMA (34 per cent of the observations in the country group) followed by EMEs with 21 per cent. Developing countries only choose IMA in 11 per cent of all cases. However, while until the beginning of the 1990s IMA is nearly an exclusive phenomenon of advanced economies, IMA is rapidly gaining importance in EMEs.⁴⁰ Especially lower middle income countries display a high and increasing share of IMA observations⁴¹. Additionally, IMA observations are clearly dominated by de facto intermediate exchange rate regimes, which account for 66 per cent of the total IMA observations, with little time variation⁴². Thus, de facto intermediate regimes are “overrepresented” in the IMA observations as they are in the IIA ones⁴³. With respect to announcement choices, floating regimes dominate accordingly (72 per cent).

These figures suggest that IMA is in important ways related to the choice of intermediate intervention strategies. Furthermore, the level of economic and financial development to which the difference between country groups can ultimately be pinned down seems to matter. It is interesting to note, however, that IMA is more widespread amongst lower middle than upper middle income countries. Among the countries showing considerable IMA spells we can additionally identify the following two groups. (i) EMU members prior to the adoption of the euro in 1999, and (ii) advanced economies which have well developed financial markets and are very open (economically and financially): Switzerland, Canada, and New Zealand. The

⁴⁰ This change comes along with the adoption of Inflation Targeting frameworks in EMEs which involve the announcement of a free float. Due to the particular economic and financial situation in many EMEs, however, they are reluctant to tolerate excessive exchange rate volatility, thus exhibiting “fear of floating” and mostly also IMA. This is the subject of another paper by one of the authors (Julia Bersch). The apparently reverting trend in 1999 is entirely due to the EU member countries adopting the euro which through a very strict implementation of the rule-based de jure regime to fulfill the Maastricht criteria have exhibited IMA.

⁴¹ Approximately half of the emerging market economies are lower middle and the other half upper middle income countries.

⁴² Among the de facto intermediate exchange rate regimes, crawling bands dominate with 30 per cent of all IMA observations closely followed by managed floats (26 per cent).

⁴³ Intermediate exchange rate regimes constitute only half of all de facto regime observations in the sample.

considerable increase of IMA as regime choice in recent years, in particular for EMEs, suggests that worldwide economic trends such as capital account liberalizations, increasing capital flows, and declining inflation rate may be of importance for its explanation (see section III).

For a better understanding of the key macroeconomic variables related to IMA, we look again at differences in means, medians, and distributions of central economic and financial variables between the countries operating under IMA and those with consistent or ILA regimes. The results are reported in table A6. For IMA observations, inflation rates are significantly lower⁴⁴, institutional quality and financial openness significantly higher. The differences in other variables are not significant across specifications. Furthermore, conditional on having announced a flexible exchange rate regime, countries with IMA have a significantly higher degree of trade openness and of trade concentration. For the whole sample, the degree of trade concentration and imports to GDP ratios are lower for IMA observations. Overall, countries operating under IMA have lower primary exports, are richer, and economically more developed while conditioning on de jure flexible regimes does not deliver significant differences.

V. ECONOMETRIC ANALYSIS

To give a more accurate picture of the potential links between country characteristics and regime discrepancies, we regress indicators of regime discrepancies on a broad set of variables using a pooled probit approach. After briefly discussing methodology and explanatory variables, we outline the main results of our empirical exercise. We then discuss the robustness of our results and provide an interpretation of the results.

Methodological Considerations

Our main interest lies in explaining the choice variable y^* , defined as the desired combination of communication and intervention strategy. We see y^* as a latent variable that depends on a vector of explanatory variables \mathbf{x}

$$y^* = G(\mathbf{x} \boldsymbol{\beta}) + u$$

⁴⁴ The large difference of average inflation rates conditional on having announced a flexible regime is due to the freely falling observations in the non-IMA groups.

where μ is an error term independent of \mathbf{x} with mean zero. Instead of the unobserved y^* , we have data on the combination y of de jure and de facto exchange rate regimes. If the announced exchange rate regime is more rigid than the de facto regime, y equals -1 (ILA), if the two regimes are of the same degree of flexibility, y equals 0 (consistent), and if the announced regime is more flexible than the de facto one, y equals 1 (IMA).

Given this characterization, one way to proceed would be to use a multinomial response model. Instead we opt for a binary approach, merging consistent and IMA (ILA) observations as control group when analyzing ILA (IMA), and then using pooled probit estimation techniques. One reason not to use a multinomial approach is that this would require assuming independence of irrelevant alternatives, a condition that is unlikely to hold in the present case. Similarly, there is no natural ordering for the three alternatives, precluding the use of an ordered discrete choice model. Finally, by using a binary specification, we make our results comparable to the related contribution of Alesina and Wagner (2006), who also compare ILA and IMA separately against the remaining observations.⁴⁵ We do not use fixed effects estimation, since many of our variables display no or very little variation over time. Also the use of a random effects estimator appears inappropriate, because we have a very large country sample which cannot be considered as randomly drawn from the underlying population. Finally, we prefer to follow an explicit binary choice model and then test our result against a linear probability model.

In addition to using the complete dataset, we create sub-samples, assessing the probability that a country chooses a certain regime combination conditional on observing certain de facto or de jure regimes. For both IMA and ILA, we first code the endogenous variable as 1 if we observe a specific discrepancy, and 0 otherwise. However, with this approach we cannot disentangle the general incentives to announce a more fixed or more flexible exchange rate regime. Therefore, in a second set of regressions, we will restrict our sample to those observations involving de jure fixed (in the case of ILA) or flexible (in the case of IMA) regimes, and then look at characteristics of countries sticking to their announcement against those that do not. As noted above, both types of discrepancies are dominated by intermediate de facto policies combined

⁴⁵ In contrast to our approach, Alesina and Wagner differentiate between degrees of distance between de facto and de jure policies (i.e., conditional on de jure flexible regimes, de facto intermediate regimes are treated differently than de facto fixed), by applying an ordered logit approach.

with the announcement of corner solutions, e.g. fixed or floating exchange rate regimes. Thus, in a last set of regressions we confine our sample to those observations involving de facto intermediate regimes and analyze what distinguishes countries with a de jure fixed (floating) regime from others.

As our aim is to identify a set of stylized facts, we use a broad set of potential explanatory variables and report best regression results, both in terms of robustness and significance. Starting from the observations in section IV above, we focus on the degree of trade openness, the importance of primary commodity exports, as well as measures of price stability, financial openness, and economic and financial development.

With respect to price stability, it is worth pointing out that the inflation rate is not only a likely determinant of exchange rate regime choices and possible deviations of de facto from announced policies but is itself determined by the exchange rate regime⁴⁶. However, the exchange rate policy is likely to have only a lagged effect on the inflation rate. Thus, by using the lagged yearly CPI inflation rate, the scope for endogeneity is reduced. Furthermore, the effect of the inflation rate on exchange rate regime choices is most likely not linear. Very high inflation rates (a commonly used threshold value being 40 per cent p.a.⁴⁷) will have a different effect than moderate rates of price increases. Therefore, we additionally include a (lagged) high inflation dummy for observations involving inflation rates of 40 per cent or more on an annual basis. Additionally, we include the ratio of imports to GDP to proxy the extent to which domestic prices are exogenously determined.

In our baseline specifications, we do not include measures of institutional quality, mainly because of the effect on sample size: Including standard measures of institutional quality data in the regressions reduces the sample substantially and systematically, since data is only available for a sub-set of countries and since 1984. However, to account for the potential importance of institutional quality and the evidence provided by Alesina and Wagner (2006), we run robustness checks, the results of which are reported below.

⁴⁶ See the literature on the macroeconomic effects of different exchange rate regimes, e.g. Ghosh et al. (2002), Kuttner and Posen (2001).

⁴⁷ High inflation is defined as inflation rates of 40 per cent or more per year following the definition of the World Bank, and of Reinhart and Rogoff (2004) for the freely falling category.

As pointed out above, we use two measures of financial openness: a de jure and a de facto measure. As with inflation, regime choices may affect financial integration and the incentives to change official restrictions on capital account transactions. On the one hand, if a country has a floating exchange rate regime, capital restrictions should not play a role. On the other hand, goods and capital markets dislike substantial uncertainties with respect to exchange rate fluctuations. While financial openness will affect a country's decisions on exchange rate policies, exchange rate policies are likely to affect actual financial integration only with some delay. Still, to mitigate potential endogeneity problems when using measures of financial openness as explanatory variables, we lag them by one period.

To account for important differences in the relation between regime choices and country characteristics at different stages of economic and financial development, we perform separate regressions for each country group. It is likely that economic and financial structure matter in different ways for countries at different stages of financial and/or economic development. For example, the stability implications of financial and trade openness will change as domestic financial markets develop, additional liquidity, insurance, hedging, and risk diversification services are provided, and credit constraints are relaxed. The development of financial markets and institutions thus influences an economy's ability to deal with and profit from international capital flows, and vice versa. A minimum level of financial development seems to be required to attract capital flows but countries without deep financial markets may be restricted in their capacity to absorb large capital inflows. Furthermore, if a country has important external financial positions, it is more sensitive to exchange rate volatility but it may suffer additional volatility if the positions are frequently changed due to high capital flows.

Baseline results

The results of the pooled probit estimations for ILA and IMA for the whole sample and separated by income groups are reported in tables A7 and A8-A11, respectively, in the appendix⁴⁸. In table A11 we provide an overview of the estimation results. A first important insight is that the separate treatment of countries at different stages of economic and financial development seems to be important. For example, higher terms of trade volatility increases the

⁴⁸ We use the same regressors for all sets of estimations to avoid additional selection problems due to data availability.

probability of ILA when a de jure regime is announced but has no significant effect otherwise when considering all countries jointly. Analyzing countries at different stages of economic development separately (either through subsamples or interaction terms), higher terms of trade volatility is associated with a significantly higher probability for ILA and a lower probability for IMA for lower middle income countries. For high income countries it reduces the likelihood of both IMA and ILA, thus making consistent combinations more likely.

With respect to other **trade-related variables**, a higher degree of trade openness reduces the probability of IMA, except for high income countries, and increases the probability of ILA for low and lower middle income countries while reducing it for upper middle income countries. More interestingly, higher exports of primary commodities increase the probability of consistent regime combinations (reduces it for both IMA and ILA) for low income countries. For lower middle income countries, however, the effect tends towards the opposite: higher primary commodity exports increase the probability of ILA. Conditional on a de facto intermediate exchange rate regime, upper middle income countries tend also significantly towards ILA.

In general, **high inflation** makes ILA more and IMA less likely, supporting the view that crises and inability to peg are part of the explanation. However, lower middle income countries having de facto intermediate regimes and having experienced high inflation in the previous year tend to be more cautious and to announce a flexible exchange rate regime.

Turning to **financial openness**, a de jure more open capital account significantly reduces the probability of ILA. Furthermore, it tends to increase the probability of IMA for all country groups except low income countries. The evidence for de facto financial openness is mixed, with the exception of high income countries for which a higher de facto financial openness makes IMA significantly more and ILA less likely.

A listing in the MSCI index (a proxy for the crossing of a critical level of financial market development) increases the likelihood of experiencing inconsistent regime combinations, both ILA and IMA, for lower middle income countries while reducing it for upper middle income countries. Conditional on de facto intermediate regimes, all countries have a higher probability of announcing a more flexible exchange rate regime when included in the MSCI. More specifically, the inclusion in the MSCI increases the probability of IMA for upper middle income countries while increasing the probability of deviations from consistent regimes for lower middle income countries.

Furthermore, we get the following insights from the regressions conditional on specific exchange rate regime announcements made. On the one hand, **conditional on de jure fixed regimes**, higher terms of trade volatility, lower trade openness, and higher de facto financial openness reduce the likelihood of IMA for high income countries. However, lower middle income countries are more likely to have IMA when included in the MSCI index, when they have higher primary commodity exports, and higher terms of trade volatility. The probability of IMA is higher for low income countries when they have lower primary commodity exports and high inflation in the previous year. On the other hand, **conditional on the announcement of a flexible exchange rate regime**, higher trade openness, lower terms of trade volatility, and higher financial openness (both de facto and de jure) make it more likely for high income countries to operate under IMA. Upper middle income countries are more likely to have IMA when they are not included in the MSCI, are less open to trade, have low inflation, and higher de jure financial openness. For lower middle income countries, higher primary commodity exports, lower terms of trade volatility, and low inflation are positively related with IMA. Lower trade openness and de jure financial openness makes IMA more likely for low income countries.

Robustness checks – sensitivity analysis

As to methodological robustness, we have checked all our results with a linear probability model and using interaction terms instead of sub-samples and the signs of the coefficients remained unchanged. Furthermore, regressions for narrower samples, excluding small countries (with a population of less than one million) and considering only a number of economically important countries, confirmed our key results. Neither did the exclusion of the observations since 2000 (for which we construed the de jure exchange rate regimes) qualitatively alter the results. As has been previously discussed, freely falling observations may distort our results. However, regressions without these observations did not change our results.

Alesina and Wagner's (2006) results suggest that institutional quality is pivotal for explaining discrepancies between exchange rate regime announcements and de facto policies. As institutional quality data is only available for a sub-set of countries and since 1984, the sample is substantially and systematically changed. We, nevertheless, run robustness checks including indicators of country risk (composite risk rating), bureaucracy quality, and democratic accountability. The main insight is that better institutional quality significantly increases the likelihood of IMA while institutional quality has no effect on the probability of IMA across

different specifications. Furthermore, the signs of the coefficients of variables related to IMA are mostly unchanged while primary commodity exports (related to ILA) are not significantly related to regime discrepancies anymore. This, however, is not surprising since ILA is predominantly observed during the 1970s and 1980s for which institutional quality data is not available and which are thus not included.

The results reported above, however, are not very robust to the use of the de facto exchange rate regime classification of Levy-Yeyati and Sturzenegger. The main reason is that the classification differs fundamentally from the one of Reinhart and Rogoff (the correlation is only 0.5). Therefore, we consider only observations for which the two classifications coincide. This reduces the number of observations involving deviations between announcements and de facto policies significantly⁴⁹. However, using only observations for which Reinhart and Rogoff, and Levy-Yeyati and Sturzenegger agree in their de facto classification, we can broadly confirm our results. As discussed in section II, we nevertheless consider the Reinhart and Rogoff de facto classification the more appropriate for our questions.

Interpretation of the empirical evidence

To interpret these findings, it is essential to first go back to the two fundamental insights of the descriptive analysis above. **First**, there is a clear tendency for countries to announce either a fixed or floating exchange rate regime. This move to the corners of the exchange rate flexibility spectrum, however, is not mirrored in actual intervention strategies. Countries with a higher degree of de jure financial openness and countries that cross a critical level of financial market development will tend to intervene more than announced. At the same time, higher inflation and a higher share of primary commodities make it more likely that countries allow their exchange rate to float more than announced.

Second, the tendency towards announcing extreme exchange rate regimes goes hand in hand with a tendency towards de facto intermediate regimes. Countries for which an intermediate exchange rate regime would be the optimal choice face the following problem. Intermediate

⁴⁹ The overall frequency of ILA and IMA is reduced from 22 to 7 per cent and from 18 to 13 per cent, respectively.

exchange rate regimes have the reputation of being highly vulnerable to crises⁵⁰. Partly as a consequence, communicating intermediate regimes is complicated: In principle, policymakers could announce the parameters that will guide day-to-day policy decisions, for example through publication of the threshold levels of shocks that will trigger intervention. This, however, involves substantial communication risks since the states of the world that would have to be specified *ex ante* would be too large to be effectively displayed in a transparent manner. In addition, communicating the intermediate nature of the regime would reduce its benefits substantially, since the desired flexibility would be reduced by any attempt to formalize the intervention strategy. Furthermore, there will be always situations in which the expectations created by a certain regime announcement will be frustrated. A policymaker aware of this might want to choose a communication framework that does not aim at preventing the impossible, but at providing a suitable framework for explaining deviations. It may therefore be a viable alternative to announce a floating or fixed exchange rate regime as benchmark to explain policy deviations against a clear arrangement. Put differently, since ambiguity cannot be avoided, the policymaker's task will be to manage it appropriately. Financial markets and the public might not even be averse to such an approach: For markets, ambiguities might actually represent opportunities worth exploring (Best, 2005).

The announcement of a more flexible exchange rate regime than the one that is *de facto* implemented is more likely the more financially open and developed countries are. As countries develop (economically and financially), they increasingly benefit from flexible exchange rate regimes (Rogoff et al., 2003). Advanced (high income) countries often exhibit important nominal rigidities and rely on the nominal exchange rate as an adjustment mechanism. At the same time, they generally do not have severe currency mismatch problems as financial instruments in their own currencies and adequate hedging instruments are available. Nevertheless, these countries may opt to choose IMA. The announcement of a free float may be central for signaling an advanced stage of development, while the high openness may require intervention on a regular basis to smooth exchange rate variations.

⁵⁰ Bubula and Ötoker-Robe (2003) find that for countries more integrated with international capital markets (developed and emerging market economies) pegged exchange rate regimes are more prone to currency crises than floating regimes (they use the IMF *de facto* regimes). However, intermediate exchange rate regimes are the most crisis prone independent of the degree of financial integration.

Countries at an intermediate level of financial development often face important currency mismatches⁵¹ and are confronted with large and volatile capital inflows, making a more active exchange rate intervention strategy more likely. At the same time these countries will usually prefer a communication strategy that exposes the financial system's ability to manage exchange rate risks on its own. Doing so conveys the economy's ability to partly absorb external shocks without policy intervention, and may thus signal a certain degree of financial market development, and a relatively resilient macroeconomic environment. Closely related, IMA provides a tool for "learning to float"⁵² as policymakers signal to financial markets the need to develop skills and instruments⁵³ and, at the same time, intervene sufficiently to support weak and not fully developed markets. In this context, IMA may open a channel for reputation building by allowing the public to learn about policymakers' abilities to stabilize the exchange rate in an otherwise market-determined system, either directly or through the stabilization of fundamentals that spill over to the exchange rate. It may in fact be easier to stabilize the exchange rate when the commitment to stabilization is not excessive due to the existence of escape clauses. Drazen and Masson (1994) show that announcing an overly tough policy stance towards exchange rate changes may force policymakers to maneuver the economy into a situation in which subsequent exchange rate changes become more difficult to avoid. If carrying out an announced tough

⁵¹ Currency mismatches in the economy are a prominent explanation for countries exhibiting "fear of floating" and, thus, a reluctance to let their exchange rate float freely.

⁵² Countries have to fulfil certain criteria to be able to take full advantage of a flexible exchange rate regime and usually it takes time and effort to achieve critical levels. For a discussion of recommendable prerequisites see, e.g., Duttagupta, Fernandez, and Karacadag (2004), Asici and Wyplosz (2003), and Hakura (2005).

⁵³ As domestic markets develop agents may be able (and willing) to borrow and save in domestic currency reducing the vulnerability to exchange rate fluctuations. Rigid exchange rate regimes provide implicit insurance against exchange rate fluctuations and, thus, hinder the development of hedging instruments. Consider a country with a high degree of liability dollarization. Policymakers will usually pursue a more active intervention strategy as exchange rate fluctuations may induce bankruptcies of firms (through balance sheet effects). However, this is generally not an ideal situation for countries and they may want to reduce their exposure to foreign currency risk to be able to pursue a more independent monetary or exchange rate policy. However, as long as market participants are confident that policymakers will actively stabilize the exchange rate, thus providing implicit or explicit insurance against exchange rate risk, there is no reason for them to hedge their exposure. Thus, in order to induce firms to reduce their exchange rate risks, policymakers may want to follow a communication strategy which increases the uncertainty in the foreign exchange market sufficiently (by not making an active exchange rate management explicit, for example) to induce market participants to reduce their foreign currency risk exposure either by hedging or the choice of the currency denomination of assets and liabilities but without exposing the economy to full market forces. Kamil (2006) shows that the transition from a fixed to a flexible exchange rate regime may induce firms to hedge or limit their exposure to foreign currency risk.

policy has lasting effects on the underlying policy trade-off, the signaling benefits of such a strategy may be outweighed by the now larger cost of continuing to be tough.

Furthermore, middle income countries have been particularly prone to banking and twin crises, especially with rigid exchange rate regimes⁵⁴, and may thus be very cautious in providing any kind of explicit target. Clear exchange rate targets may not only trigger speculative attacks but also distort investment and borrowing decisions. High capital flows combined with financial and institutional weaknesses may exacerbate these distortions. If the perceived risk level is high, frequent and sudden reversals of capitals are not unusual and may be triggered by minor events⁵⁵. However, exchange rate fluctuations may be perceived as increasing the overall risk of a country calling for an active exchange rate management. Thus, middle income countries may find themselves facing a difficult policy dilemma to which IMA may provide a possible solution. Through the announcement of a flexible exchange rate regime, countries do not provide explicit guidance and thus no direct target for expectations. However, through active exchange rate management they limit the detrimental effects of large exchange rate fluctuations.

An interpretation of the relation between primary commodity exports and ILA can be found in discussions on exchange rate policies in countries characterized by a predominant export staple. On the one hand, these countries are vulnerable to large changes in the terms of trade, which, in theory, would require the exchange rate to depreciate (appreciate) after large negative (positive) shocks. On the other hand, the respective economies face difficult trade-offs when choosing a nominal anchor other than the exchange rate. The tension between these two policy concerns has led some observers to propose non-standard exchange rate anchors, such as pegging the export price (Frankel, 2005).

But trading off the need for flexibility and the degree of viability of the nominal anchor is not the only challenge for these countries. The respective economies are also vulnerable to “dutch disease”-type phenomena (e.g., Corden and Neary, 1982; van Wijnbergen, 1984): In order to diversify over the medium-term, policymakers may want to keep the real exchange rate at a

⁵⁴ Twin crises have almost exclusively been an emerging market phenomenon (Rogoff et al. 2003). Kaminsky and Reinhart (1999) show that twin crises typically occur in the aftermath of financial liberalization and that the coincidence of banking and currency crises is particularly costly.

⁵⁵ For a discussion of sudden stops, see e.g. Calvo, Izquierdo, and Mejía (2004).

competitive and stable level. However, if the country is experiencing high foreign capital inflows (e.g. due to booming primary commodity exports or large-scale remittances), this may lead to a steady real appreciation which threatens the competitiveness of other export sectors.⁵⁶ A policymaker concerned about competitiveness may thus want to limit real appreciations by adjusting the nominal exchange rate accordingly. This policy, however, results in an increase in foreign reserves that, if not sterilized, will increase domestic money supply and tend to increase inflation.⁵⁷

In many countries, the monetary challenges of such a policy are reinforced by two factors. First, money markets in the respective countries are often underdeveloped, effectively limiting the effectiveness of standard approaches to monetary management. Second, many of the large primary exporters are also heavily dependent on imports, and are thus characterized by a high pass-through from exchange rate to price changes. Both factors tend to increase the role of the exchange rate in stabilizing prices, and require authorities to provide clear signals with respect to the future level and volatility of the exchange rate (which are also important for emerging export sectors). It may thus be necessary to give clear guidance as to future exchange rate movements (especially in the short term), while preserving the flexibility to restore competitiveness (in the medium term). Put differently, the exchange rate is used to communicate with two different audiences. In specific circumstances, ILA may provide a way out of the policy dilemma. Through the announcement of a fixed exchange rate regime the policymaker can emphasize a willingness to maintain price stability, while using frequent parity realignments to avoid excessive real appreciations.⁵⁸

As an example, consider Botswana, a country that is considered by many as having successfully avoided “dutch disease”-type phenomena in the presence of large resource exports and for

⁵⁶ High domestic inflation may have the same effect.

⁵⁷ The monetary expansion may be limited by (partial) sterilization. However, the viability of sterilization is questionable and may induce an increase in domestic interest rates, triggering further capital inflows. A possible way out of the dilemma may be to impose (temporary) capital controls.

⁵⁸ Given that these adjustments take place frequently, maybe in small steps, e.g. to smooth variations in the nominal exchange rate as well, the de facto exchange rate regime may be considered a relatively flexible one, resulting in ILA. In this specific context, the expression ILA may be misleading as policymakers are actually intervening more than announced although not to keep the nominal exchange rate stable but the real one.

which we observe ILA since 1980⁵⁹. Botswana's main stated policy goals are to maintain the inflation rate at reasonable levels, to promote external competitiveness, and to successfully deal with external shocks (IMF, 2004). It is interesting to note that the first goal can, in principle, be supported by nominal exchange rate stability while the second and third may require occasional exchange rate adjustments, which may partly explain Botswana's relative diversification successes.

VI. CONCLUSIONS AND OUTLOOK

Our empirical analysis of discrepancies between announced and de facto exchange rate regimes indeed suggests that these discrepancies are systematic. Moreover, we identify a number of stylized facts. Most importantly, both types of discrepancies are clearly dominated by intermediate de facto policies. Since countries at the same time tend to communicate exchange rate regimes at the corners of the flexibility spectrum, inconsistencies emerge.

Whether ILA or IMA is observed depends on country characteristics. For example, ILA appears to be related to high shares of primary commodity exports and low de jure and de facto financial openness. A potential explanation is that ILA offers a way to simultaneously achieve short-term nominal exchange rate stability while preserving medium-term flexibility. Additionally, crises situations and high inflation periods are associated with ILA. IMA, in turn, is a widespread phenomenon amongst countries with medium to high levels of economic and financial development and high financial openness. IMA may provide an instrument to signal and foster financial market development while insulating the economy from extreme financial and economic disruptions due to high exchange rate fluctuations. Finally, we observe a significant secular trend from ILA towards IMA which matches the movement towards financial liberalization⁶⁰, the rapid development of financial markets, increasing capital mobility and financial integration, as well as of worldwide reductions in inflation rates. These developments coincide in many aspects with the individual country characteristics related with ILA and IMA.

⁵⁹ According to the chronologies accompanying the Reinhart and Rogoff (2004) classifications, there was also a parallel market 1986-1996.

⁶⁰ See e.g. Kose et al. (2006) and Kaminsky and Schmukler (2003).

Our study provides novel insights into the empirical regularities related to discrepancies between de jure and de facto exchange rate regimes. A theoretical analysis of our findings is left for future research. There is still significant work to be done to improve our understanding of the implementation and communication of exchange rate policies. Recently, countries have emphasized the benefits of bounded de facto flexibility combined with a well-defined communication strategy and have been successful in following this approach (inflation rates and the occurrence of crises have declined). One important manifestation is that the communication of explicit exchange rate targets is increasingly being substituted by the communication of explicit inflation targets. How exchange rate policies can be integrated into inflation targeting regimes is the subject of ongoing research.

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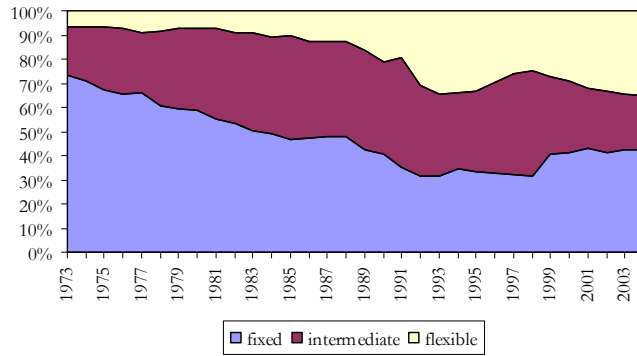
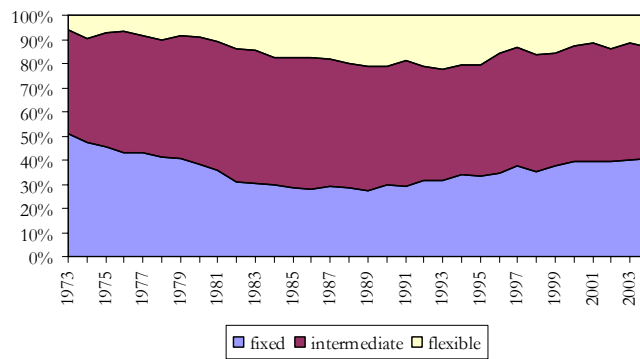
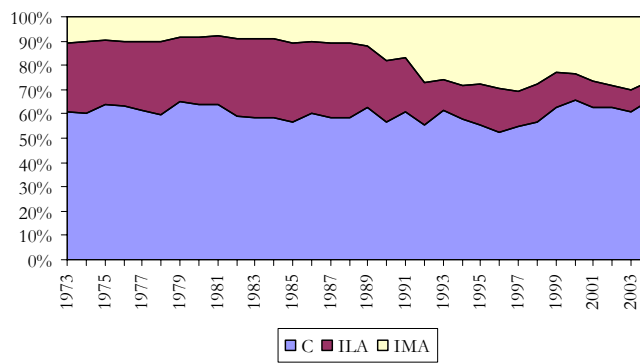
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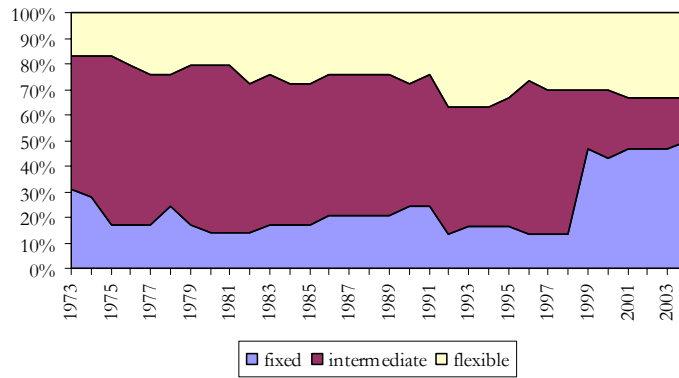
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APPENDIX

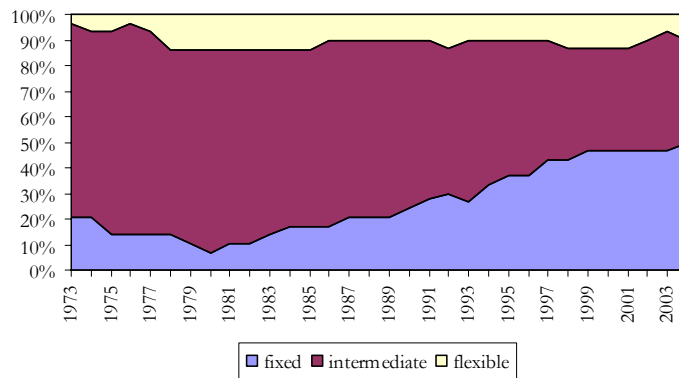
Graph A1: Exchange rate regimes and discrepancies over time – all countries**a.** De jure exchange rate regimes, 1973-2004**b.** De facto exchange rate regimes, 1973-2004**c.** Regime discrepancies, 1973-2004

Graph A2: Exchange rate regimes and discrepancies over time – high income countries

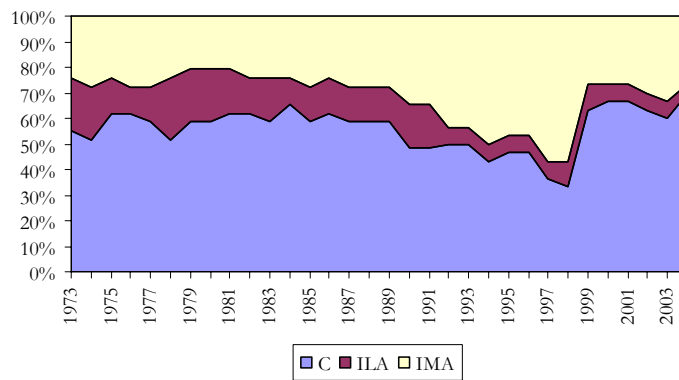
a. De jure exchange rate regimes, 1973-2004



b. De facto exchange rate regimes, 1973-2004

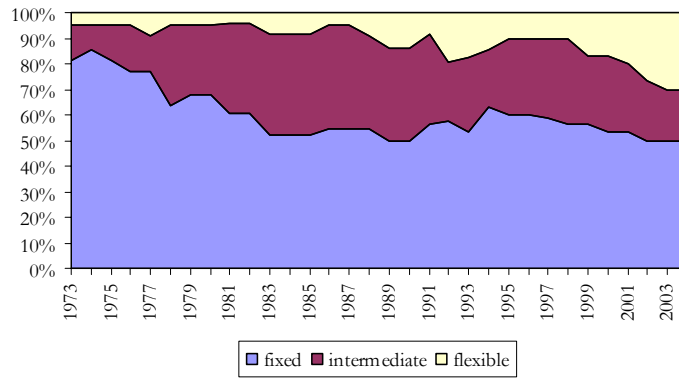


c. Regime discrepancies, 1973-2004

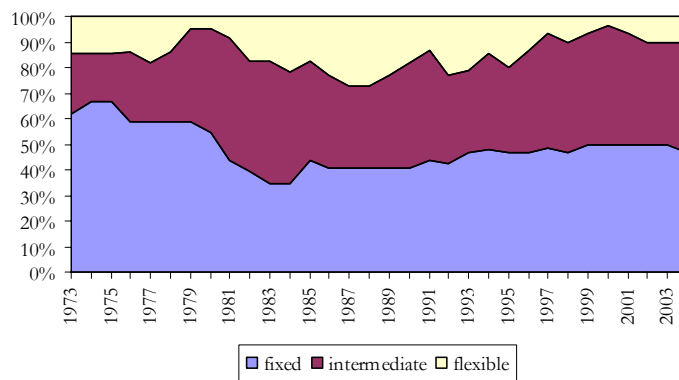


Graph A3: Exchange rate regimes and discrepancies over time – upper middle income countries

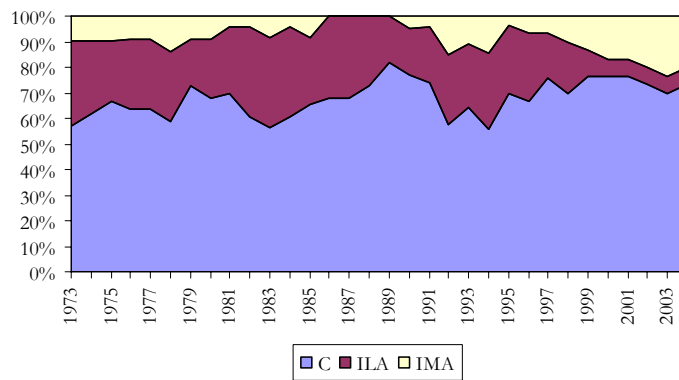
a. De jure exchange rate regimes, 1973-2004



b. De facto exchange rate regimes, 1973-2004

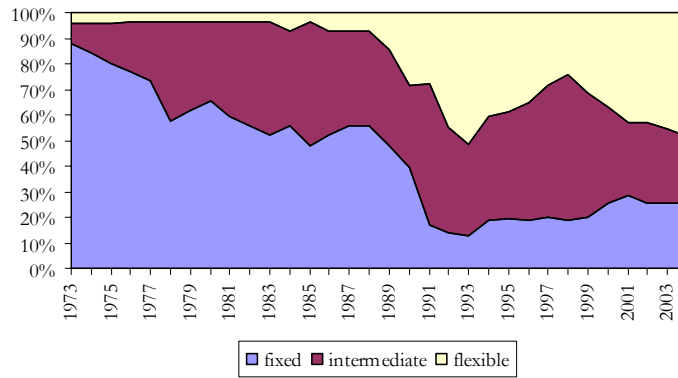


c. Regime discrepancies, 1973-2004

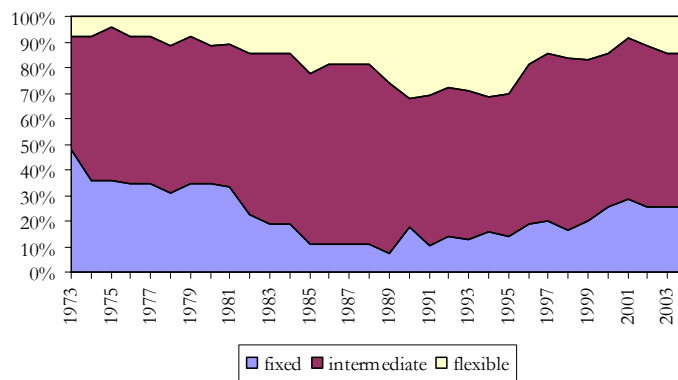


Graph A4: Exchange rate regimes and discrepancies over time – lower middle income countries

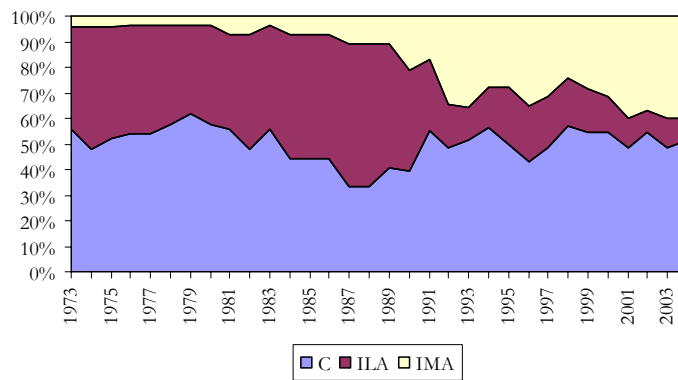
a. De jure exchange rate regimes, 1973-2004

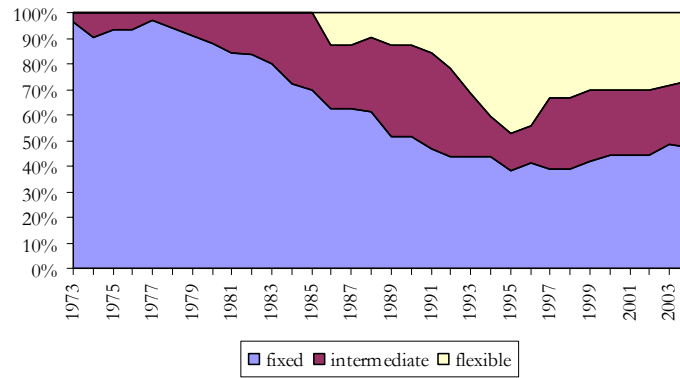
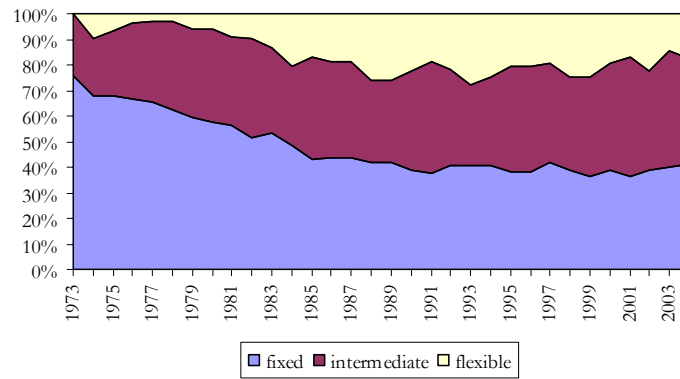
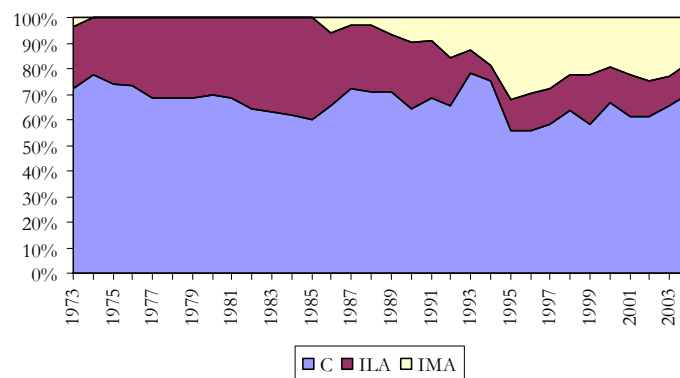


b. De facto exchange rate regimes, 1973-2004



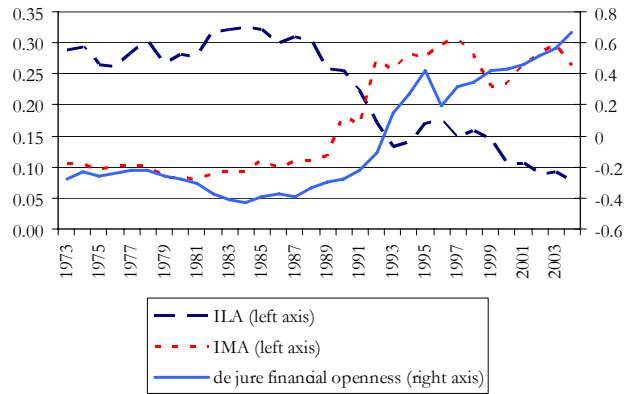
c. Regime discrepancies, 1973-2004



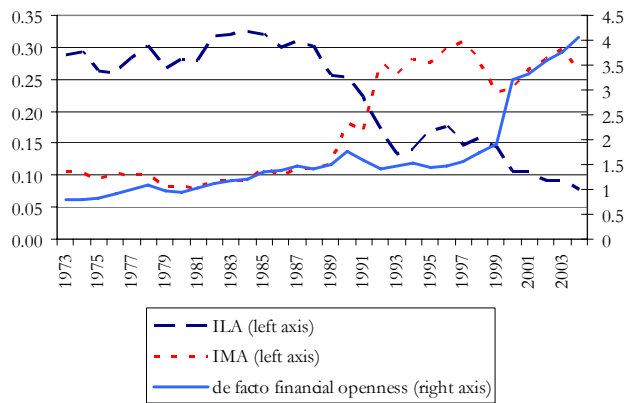
Graph A5: Exchange rate regimes and discrepancies over time – low income countries**a. De jure exchange rate regimes, 1973-2004****b. De facto exchange rate regimes, 1973-2004****c. Regime discrepancies, 1973-2004**

Graph 6: Exchange rate regime discrepancies, financial openness and world inflation

a. De jure financial openness



b. De facto financial openness (financial integration)



c. World inflation rates (per cent p.a.)

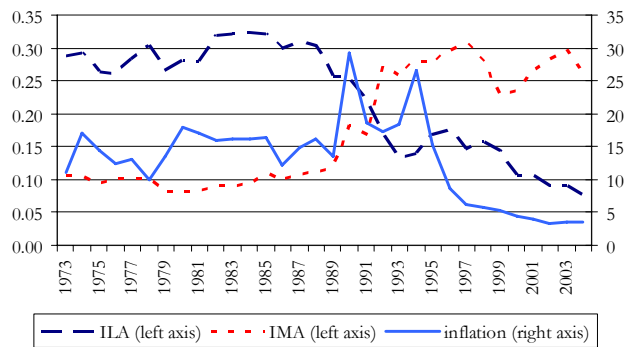


Table A1: Country coverage

High income	Upper middle income	Lower middle income	Low income
Australia	Antigua & Barbuda	Albania	Benin
Austria	Argentina*	Algeria	Burkina Faso
Belgium	Botswana	Armenia	Burundi
Canada	Chile*	Azerbaijan	Cameroon
Cyprus	Costa Rica	Belarus	Central African Rep.
Denmark	Czech Republic*	Bolivia	Chad
Finland	Dominica	Brazil*	Cote D'Ivoire
France	Equatorial Guinea	Bulgaria	Gambia
Greece	Estonia	China, P.R.*	Ghana
Hong Kong	Gabon	Colombia*	Guinea
Iceland	Grenada	Dominican Republic	Guinea-Bissau
Ireland	Hungary*	Ecuador	Haiti
Israel*	Latvia	Egypt*	India*
Italy	Lebanon	El Salvador	Kenya
Japan	Libya	Georgia	Kyrgyz Republic
Korea*	Lithuania	Guatemala	Lao P.D.R.
Kuwait	Malaysia*	Guyana	Lesotho
Luxembourg	Mauritius	Honduras	Liberia
Malta	Mexico*	Indonesia*	Madagascar
Netherlands	Panama	Iran, I.R. of	Malawi
New Zealand	Poland*	Iraq	Mali
Norway	Russia*	Jamaica	Mauritania
Portugal	Slovak Republic	Jordan*	Moldova
Singapore	South Africa*	Kazakhstan	Myanmar
Slovenia	St. Kitts & Nevis	Morocco*	Nepal
Spain	St. Lucia	Paraguay	Nicaragua
Sweden	St. Vincent & Grenadines	Peru*	Niger
Switzerland	Turkey*	Philippines*	Nigeria
United Kingdom	Uruguay	Romania	Pakistan*
United States	Venezuela*	Sri Lanka*	Senegal
		Suriname	Tajikistan
		Swaziland	Tanzania
		Syrian Arab Republic	Togo
		Thailand*	Uganda
		Tunisia	Zambia
		Turkmenistan	Zimbabwe
		Ukraine	

The distinction between income groups follows the World Bank methodology which is based on GNI per capita in USD. Countries are categorized as of their status in 2004. Low income countries are those with a GNI per capita < 825 USD, lower middle income with 826- 3,255 USD, upper middle income with 3,256- 10,065 USD and high income countries > 10,065 USD. Countries with a star (*) are emerging market economy as defined by the Morgan Stanley Capital International (MSCI) index.

Table A2: Exchange rate regimes

	De jure exchange rate regimes, Ghosh, Gulde, and Wolf (2002)	De facto exchange rate regimes, Reinhart and Rogoff (2004)
Fixed	Dollarized Currency board Monetary union to outside (CFA) or inside (EMU) set of countries Single currency peg Published basket peg (SDR or non- SDR)	No separate legal tender Pre announced peg or currency board arrangement Pre announced horizontal band that is narrower than or equal to +/-2% De facto peg
Intermediate	Secret basket peg Cooperative system (EMS or predecessor) Crawling peg Target zone Unclassified rule-based intervention Managed float with heavy intervention Unclassified managed float Other floats	Pre announced crawling peg Pre announced crawling band that is narrower than or equal to +/-2% De facto crawling peg De facto crawling band that is narrower than or equal to +/-2% Pre announced crawling band that is wider than or equal to +/-2% De facto crawling band that is narrower than or equal to +/-5% Moving band that is narrower than or equal to +/-2% (i.e., allows for both appreciation and depreciation over time) Managed floating
Floating	Float with light intervention Float with no intervention	Freely floating Freely falling

Data issues

The first example of a potentially misleading classification is related to the choice of reference currencies. To understand the potential measurement errors resulting from an inadequate approach, consider as an example Germany. Its de jure exchange rate regime was classified as cooperative system (EMS or predecessor) during 1973-1998 and, thus, as intermediate regime. However, the de facto regime is classified as freely floating by Reinhart and Rogoff (2004) as they use the USD (instead of a basket of the other European currencies relative to which the announcement is made) as reference currency⁶¹. Thus, during 1973-1998, Germany displays ILA, even though there was neither unwillingness nor inability to stick to the announced policy. In fact, with 25 years of ILA, Germany belongs to the small country group in which ILA has been observed nearly throughout the sample period. To account for this problem, we drop Germany from our sample.⁶²

A second interesting finding along these lines is that the classification choice for de jure secret basket pegs can significantly affect the results by increasing the occurrence of ILA substantially: When secret basket pegs are included in the fixed exchange rate regimes (as it is standard in the literature, e.g. in Ghosh et al. (2002), Alesina and Wagner (2006), and von Hagen and Zhou (2006)), the overall share of ILA increases⁶³. Indeed, nearly all secret basket peg observations (87 per cent⁶⁴) are associated with intermediate de facto regimes. Secret basket pegs are exchange rate regimes where the national currency is pegged to a basket of at least two currencies based on country-specific criteria with the weights of the currencies and/or the composition of the basket being secret and possibly variable (Ghosh et al. (2002)). Secret basket pegs are special in the sense that, depending on policy implementation, they can be either considered fixed or intermediate regimes. If we regard easy verifiability of the exchange rate regime a distinguishing

⁶¹ Also Levy-Yeyati and Sturzenegger (2005) use the USD as reference currency for Germany (see Levy-Yeyati and Sturzenegger (2003b)) and come to the same conclusion, that the exchange rate regime was a floating one until 1998.

⁶² Note that all numerical statements made in this paper refer to the sample when Germany is excluded and secret basket pegs are included in the intermediate exchange rate category except noted otherwise.

⁶³ The detailed de jure classification is only available until 1999. The share of ILA until 1999 is 24 per cent with secret basket pegs in the intermediate category and 33 per cent when included in the fixed regime, with 37 per cent in the 1970s and 22 per cent in the 1990s.

⁶⁴ This proportion refers to the period 1973-1999 due to data availability.

feature of fixed regimes as put forward by Frankel, Fajnzylber, Schmukler, and Serven (2001), then secret basket pegs are closer in nature to intermediate than to fixed regimes. A basket peg may have significant variations in the composition and relative weights of the included currencies. If, in addition, the composition or the relative weights are not public information, as it is the case for secret basket pegs, the exchange rate regime may be very difficult or even impossible to verify in a reasonable amount of time. Specifically, the exchange rate regime may be perceived as intermediate without implying a diverging announcement and intervention policy.

As an interesting illustration, consider Malta, which announced a basket peg the composition of which was secret until 1997 and published thereafter. During the same time, the country followed a de facto narrow mowing band. If the composition and the relative weight of currencies in the basket change frequently without this being public information, the exchange rate may indeed be fixed to a difficult-to-infer central parity and appear as floating in a narrow band around some reference currency (in the case of Malta, first the UK pound, then the DM and finally the Euro)⁶⁵. If we categorize secret basket pegs as fixed, we would classify all the observations as IIA, if we consider them as pertaining to the intermediate category, we would have consistent regime combinations until 1997. Thus, by including the secret basket pegs into the de jure intermediate regime category we get a more accurate picture of exchange rate regime choices while being more conservative in favor of consistent regime combinations.⁶⁶

⁶⁵ Malta has not been classified by Levy-Yeyati and Sturzenegger (2005).

⁶⁶ Von Hagen and Zhou (2006) and Alesina and Wagner (2006) include secret basket pegs into the fixed regimes. Carmignani et al. (2006) give no clear statement about their exchange rate regime classifications and the groupings used.

Table A3: Data sources

Variable	Source
Exchange rate regimes:	
de jure	Ghosh, Gulde, and Wolf (2002), AREAER (various issues), Information of national authorities and international institutions
de facto	Reinhart and Rogoff (2004), http://www.publicpolicy.umd.edu/faculty/reinhart/annual1.dta Eichengreen and Razo-Garcia (2006), http://www.econ.berkeley.edu/~eichengr/updated_rr_nat_class.pdf Levy-Yeyati and Sturzenegger (2005), http://200.32.4.58/~ely/Base_2005.zip .
Financial openness:	
de jure	Chinn and Ito (2006), http://www.ssc.wisc.edu/~mchinn/kaopen_2005.xls
de facto	Lane and Milesi-Ferretti (2006), http://www.imf.org/external/pubs/ft/wp/2006/data/wp0669.zip and authors' calculations: (external assets + external liabilities)/GDP [in USD]
Macroeconomic indicators:	
CPI inflation rate	International Financial Statistics
GDP per capita (in PPP)	World Economic Outlook
Population	International Financial Statistics
Primary commodity exports	World Development Indicators and authors' calculation
Terms of trade volatility	World Economic Outlook and authors' calculations: Terms of trade growth, 3 year centered standard deviation
Trade concentration	Ghosh Gulde, and Wolf (2002); Direction Of Trade Statistics
Trade openness	World Economic Outlook and authors' calculations: (exports + imports)/GDP
Currency crises	Glick and Hutchison (2001)
Institutional quality	The PRS Group, Inc., 1979-2006, East Syracuse, NY 13057 USA.
Regional dummies	World Bank

Table A4a: Distribution of regime discrepancies by Regions and Country Groups – ILA

	ILA	Overall	Share	P(ILA de jure=fixed)
East Asia & Pacific*	70	221	31.7%	74.7%
Europe & Central Asia*	69	281	24.6%	35.5%
Latin America & Caribbean*	224	884	25.3%	30.1%
Middle East & North Africa*	133	314	42.4%	78.3%
South Asia*	29	118	24.6%	58.0%
Sub-Saharan Africa*	171	975	17.5%	20.4%
OECD	122	860	14.2%	47.0%
OPEC	103	248	41.5%	80.5%
Transition countries	85	323	26.3%	50.6%
Developing countries	533	2119	25.2%	31.9%
Emerging market economies	183	738	24.8%	57.6%
Advanced countries	96	877	10.9%	40.7%
Developing countries (time-varying)	667	2530	26.4%	35.2%
EMEs (time-varying)	50	363	13.8%	42.9%
Advanced countries (time-varying)	95	841	11.3%	40.4%
Low income countries	233	1,040	22.4%	27.9%
Lower middle income countries	287	952	30.1%	58.8%
Upper middle income countries	176	801	22.0%	24.4%
High income countries	116	941	12.3%	44.6%
Low income countries (time-varying) ⁶⁷	228	1034	22.1%	30.4%
Lower middle income countries (time-varying)	305	1222	25.0%	37.2%
Upper middle income countries (time-varying)	168	651	25.8%	38.0%
High income countries (time-varying)	111	827	13.4%	44.7%
All observations	812	3734	21.7%	36.0%

*Only low and middle income countries are included.

⁶⁷ We use the historical country classification of the World Bank since 1987 and changes in lending categories for the preceding years to account for changes in income levels of countries over time (available at <http://siteresources.worldbank.org/DATASTATISTICS/Resources/OGHIST.xls>).

Table A4b: Distribution of regime discrepancies by Regions and Country Groups – IMA

	IMA	Overall	Share	P(IMA de jure=floating)
East Asia & Pacific*	61	221	27.6%	75.5%
Europe & Central Asia*	54	281	19.2%	52.0%
Latin America & Caribbean*	109	884	12.3%	70.5%
Middle East & North Africa*	39	314	12.4%	72.7%
South Asia*	21	118	17.8%	100.0%
Sub-Saharan Africa*	95	975	9.7%	58.4%
OECD	305	860	35.5%	68.6%
OPEC	10	248	4.0%	36.4%
Transition countries	62	323	19.2%	56.4%
Developing countries	230	2119	10.9%	63.5%
Emerging market economies	152	738	20.6%	62.6%
Advanced countries	294	877	33.5%	71.0%
Developing countries (time-varying)	272	2530	10.8%	62.3%
EMEs (time-varying)	126	363	34.7%	66.4%
Advanced countries (time-varying)	278	841	33.1%	70.8%
Low income countries	113	1040	10.9%	58.7%
Lower middle income countries	188	952	19.7%	70.7%
Upper middle income countries	78	801	9.7%	61.9%
High income countries	297	941	31.6%	67.7%
Low income countries (time-varying)	139	1034	13.4%	58.2%
Lower middle income countries (time-varying)	190	1222	15.5%	69.2%
Upper middle income countries (time-varying)	58	651	8.9%	67.2%
High income countries (time-varying)	289	827	34.9%	68.3%
All observations	676	3734	18.1%	65.7%

*Only low and middle income countries are included.

Table A5: ILA – tests for equality of means, medians, and distributions

all observations	Mean		t-test ⁽¹⁾	Median test ⁽²⁾	Mann-Whitney test ⁽³⁾
	ILA=1	ILA=0			
<i>Macro</i>					
GDP per capita (PPP)	4271.1	6830.9	0.000	0.000	0.000
Population	35.7	36.6	0.852	0.074	0.000
CPI Inflation	107.5	23.0	0.002	0.000	0.000
<i>Trade Regime</i>					
Openness	0.6	0.9	0.000	0.000	0.000
Trade Concentration	52.1	52.9	0.275	0.289	0.193
Imports to GDP	0.3	0.5	0.000	0.000	0.000
Primary Exports	34.7	25.6	0.000	0.000	0.000
Fuel Exports	20.3	11.9	0.000	1.000	0.033
<i>Institutions</i>					
Bureaucratic Quality	1.8	2.4	0.000	0.000	0.000
Accountability	3.3	4.0	0.000	0.000	0.000
Country Risk	58.1	67.7	0.000	0.000	0.000
<i>Financial Openness</i>					
De Jure	-0.9	0.3	0.000	0.000	0.000
De Facto	1.0	2.0	0.000	0.000	0.000

conditional on de jure fixed regime	Mean		t-test ⁽¹⁾	Median test ⁽²⁾	Mann-Whitney test ⁽³⁾
	ILA=1	ILA=0			
<i>Macro</i>					
GDP per capita (PPP)	4374.4	4859.3	0.122	0.000	0.197
Population	36.7	14.5	0.000	0.000	0.000
CPI Inflation	102.8	12.1	0.010	0.000	0.000
<i>Trade Regime</i>					
Openness	0.6	1.0	0.000	0.000	0.000
Trade concentration	53.6	59.2	0.000	0.000	0.000
Imports to GDP	0.3	0.6	0.000	0.000	0.000
Primary Exports	37.6	27.8	0.000	0.372	0.000
Fuel Exports	22.7	9.7	0.000	0.000	0.000
<i>Institutions</i>					
Bureaucratic Quality	1.8	2.1	0.001	0.000	0.000
Accountability	3.2	3.6	0.002	0.003	0.002
Country Risk	59.0	66.2	0.000	0.048	0.000
<i>Financial Openness</i>					
De Jure	-0.9	0.1	0.000	0.000	0.000
De Facto	1.1	3.0	0.000	0.000	0.000

Notes: (1) The p-values are reported for the two means being different. The groups are not assumed to have equal variance. (2) Nonparametric test on the equality of medians testing the null hypothesis of the two samples being drawn from populations with the same median. The test chi-squared statistic is continuity corrected. (3) Nonparametric test on the equality of distributions testing the null hypothesis of the two samples being drawn from populations with the equal distribution. The p-values are reported for two-tailed tests and corrected for ties.

Table A6: IMA – tests for equality of means, medians, and distributions

all observations	Mean		t-test ⁽¹⁾	Median test ⁽²⁾	Mann-Whitney test ⁽³⁾
	IMA=1	IMA=0			
<i>Macro</i>					
GDP per capita (PPP)	9883.5	5478.5	0.000	0.000	0.000
Population	56.5	31.9	0.001	0.000	0.000
CPI Inflation	9.5	47.5	0.000	0.000	0.000
<i>Trade Regime</i>					
Openness	0.71	0.83	0.000	0.149	0.040
Trade Concentration	50.8	53.1	0.007	0.001	0.001
Imports to GDP	0.37	0.45	0.000	0.004	0.003
Primary Exports	20.0	29.3	0.000	0.000	0.000
Fuel Exports	7.8	15.1	0.000	0.577	0.153
<i>Institutions</i>					
Bureaucratic Quality	2.7	2.1	0.000	0.000	0.000
Accountability	4.5	3.7	0.000	0.000	0.000
Country Risk	71.4	64.0	0.000	0.000	0.000
<i>Financial Openness</i>					
De Jure	0.94	-0.18	0.000	0.000	0.000
De Facto	1.76	1.73	0.884	0.000	0.000

conditional on de jure flexible regime	Mean		t-test ⁽¹⁾	Median test ⁽²⁾	Mann-Whitney test**
	IMA=1	IMA=0			
<i>Macro</i>					
GDP per capita (PPP)	8538.1	8681.6	0.830	0.585	0.430
Population	52.3	60.9	0.328	0.163	0.001
CPI Inflation	9.4	143.0	0.003	0.000	0.000
<i>Trade Regime</i>					
Openness	0.71	0.62	0.006	0.073	0.000
Trade concentration	52.1	47.4	0.001	0.000	0.012
Imports to GDP	0.38	0.34	0.022	0.483	0.001
Primary Exports	20.6	25.1	0.028	0.234	0.145
Fuel Exports	6.9	8.2	0.276	0.122	0.015
<i>Institutions</i>					
Bureaucratic Quality	2.5	2.2	0.007	0.031	0.006
Accountability	4.4	4.1	0.055	0.054	0.071
Country Risk	69.2	64.3	0.000	0.001	0.000
<i>Financial Openness</i>					
De Jure	0.93	0.68	0.063	0.031	0.039
De Facto	1.72	1.28	0.000	0.076	0.000

Notes: (1) The p-values are reported for the two means being different. The groups are not assumed to have equal variance. (2) Nonparametric test on the equality of medians testing the null hypothesis of the two samples being drawn from populations with the same median. The test chi-squared statistic is continuity corrected. (3) Nonparametric test on the equality of distributions testing the null hypothesis of the two samples being drawn from populations with the equal distribution. The p-values are reported for two-tailed tests and corrected for ties.

Table A7: Pooled probit estimations for whole sample

	(1) ILA	(2) ILA de jure fixed	(3) IMA	(4) IMA de jure flexible	(5) ILA de facto intermediate	(6) IMA de facto intermediate
Openness	-0.078 (0.104)	-0.400* (0.228)	-0.259*** (0.091)	0.714 (0.547)	-0.280*** (0.099)	-0.664*** (0.172)
Primary commodity exports	5.533e-04* (3.186e-04)	2.592e-03*** (9.465e-04)	-8.945e-04** (4.266e-04)	-3.750e-03** (1.502e-03)	8.784e-04** (4.184e-04)	-1.127e-03** (5.712e-04)
Volatility of terms of trade	0.024 (0.051)	0.250** (0.126)	-0.118 (0.146)	0.082 (0.346)	-0.051 (0.074)	-0.160 (0.152)
Imports to GDP	-0.011 (0.196)	0.228 (0.399)	0.237 (0.178)	-0.669 (1.053)	0.341** (0.171)	0.679** (0.334)
Lagged inflation rate	-1.874e-05 (1.520e-05)	-7.303e-06 (3.975e-05)	-1.280e-04 (8.260e-05)	-2.620e-03 (2.306e-03)	2.096e-04** (9.774e-05)	-2.605e-04** (1.085e-04)
Lagged high inflation dummy	0.363*** (0.047)	0.435*** (0.099)	-0.097*** (0.027)	-0.391*** (0.145)	0.047 (0.064)	0.060 (0.084)
Lagged de jure financial openness	-0.055*** (0.006)	-0.217*** (0.021)	0.031*** (0.007)	0.020 (0.022)	-0.047*** (0.009)	0.048*** (0.010)
Lagged de facto financial openness	-0.014** (0.007)	-0.031** (0.015)	0.011** (0.005)	0.161*** (0.035)	-0.006 (0.011)	0.083*** (0.014)
MSCI dummy	-0.068*** (0.020)	-0.053 (0.069)	0.165*** (0.025)	-0.103 (0.093)	-0.097*** (0.025)	0.210*** (0.033)
Observations	2327	822	2327	509	1302	1302
Pseudo R-squared	0.24	0.45	0.20	0.23	0.18	0.33
Percent correctly predicted	84.44%	82.24%	79.80%	78.39%	81.34%	81.80%
Percent correctly predicted for dependent variable=0	96.53%	87.40%	94.60%	52.69%	96.30%	91.38%
Percent correctly predicted for dependent variable=1	30.19%	73.89%	27.34%	90.94%	17.41%	54.57%

The coding of the dependent variable is the following. (1) ILA = 1 if de jure regime more rigid than de facto; 0 otherwise. (2) Conditional on de jure fixed regimes: ILA = 1 if de facto intermediate or floating; 0 otherwise. (3) IMA = 1 if de jure regime less rigid than de facto; 0 otherwise. (4) Conditional on de jure flexible regimes: IMA = 1 if de facto intermediate or fixed; 0 otherwise. (5) Conditional on de facto intermediate: ILA = 1 if de jure fixed; 0 otherwise. (6) Conditional on de facto intermediate: IMA = 1 if de jure flexible; 0 otherwise.

Marginal effects are reported. Robust standard errors are reported in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%. GDP per capita (PPP based), population, year, regional, and income group dummies have been included as additional controls in all regression.

Table A8: Pooled probit estimations for low income countries

	(1) ILA	(2) ILA de jure fixed	(3) IMA	(4) IMA de jure flexible	(5) ILA de facto intermediate	(6) IMA de facto intermediate
Openness	0.311** (0.147)	0.130 (0.271)	-0.351* (0.197)	-3.555* (2.063)	-0.729 (0.606)	-1.166 (0.984)
Primary commodity exports	-0.002*** (0.001)	-0.002** (0.002)	-0.002** (0.001)	-0.002 (0.003)	0.000 (0.002)	-0.002 (0.003)
Volatility of terms of trade	0.063 (0.047)	0.181 (0.110)	0.088 (0.082)	-0.955 (0.610)	0.249* (0.150)	0.080 (0.247)
Imports to GDP	-0.590** (0.287)	-0.344 (0.453)	0.537 (0.375)	5.445 (3.575)	0.802 (1.043)	2.794* (1.644)
Lagged inflation rate	-2.773e-06 (1.536e-05)	-1.009e-05 (1.963e-05)	2.878e-06 (2.347e-05)	-0.003 (0.004)	0.007** (0.003)	-0.007 (0.006)
Lagged high inflation dummy	0.412** (0.171)	0.414** (0.207)	-0.011 (0.020)		-0.079 (0.067)	0.451 (0.292)
Lagged de jure financial openness	-0.090*** (0.023)	-0.272*** (0.051)	-0.007 (0.008)	-0.106** (0.052)	-0.090** (0.038)	-0.051 (0.045)
Lagged de facto financial openness	-0.013 (0.014)	-0.008 (0.010)	-0.022 (0.026)	-0.203 (0.181)	-0.020 (0.037)	-0.121** (0.058)
Observations	410	229	410	82	147	147
Pseudo R-squared	0.47	0.41	0.47	0.34	0.19	0.09
Percent correctly predicted	89.02%	86.03%	90.98%	78.05%	86.39%	72.11%
Percent correctly predicted for dependent variable=0	96.78%	96.11%	97.72%	55.17%	99.17%	96.00%
Percent correctly predicted for dependent variable=1	50.00%	48.98%	50.85%	90.57%	26.92%	21.28%

The coding of the dependent variable is the following. (1) ILA = 1 if de jure regime more rigid than de facto; 0 otherwise. (2) Conditional on de jure fixed regimes: ILA = 1 if de facto intermediate or floating; 0 otherwise. (3) IMA = 1 if de jure regime less rigid than de facto; 0 otherwise. (4) Conditional on de jure flexible regimes: IMA = 1 if de facto intermediate or fixed; 0 otherwise. (5) Conditional on de facto intermediate: ILA = 1 if de jure fixed; 0 otherwise. (6) Conditional on de facto intermediate: IMA = 1 if de jure flexible; 0 otherwise.

Marginal effects are reported. Robust standard errors are reported in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%. GDP per capita (PPP based) and population have been included as additional controls in all regression and year and regional dummies in (1) and (3).

Table A9: Pooled probit estimations for lower middle income countries

	(1) ILA	(2) ILA de jure fixed	(3) IMA	(4) IMA de jure flexible	(5) ILA de facto intermediate	(6) IMA de facto intermediate
Openness	0.533*** (0.145)	0.813 (1.334)	-0.458** (0.215)	-0.520 (0.661)	0.213 (0.287)	-0.229 (0.321)
Primary commodity exports	0.002*** (0.001)	0.014*** (0.005)	0.001 (0.001)	0.010** (0.005)	0.002*** (0.001)	-0.001* (0.001)
Volatility of terms of trade	0.217* (0.122)	1.672*** (0.583)	-0.467** (0.185)	-2.718** (1.188)	0.365** (0.143)	-0.253 (0.163)
Imports to GDP	-0.962*** (0.299)	-2.550 (2.092)	0.673* (0.396)	1.379 (1.410)	-0.684 (0.492)	0.400 (0.562)
Lagged inflation rate	-6.395e-05*** (1.774e-05)	-1.201e-04 (2.586e-04)	-3.905e-04 (2.477e-04)	-7.342e-04 (9.816e-04)	2.339e-04** (1.043e-04)	-1.717e-04 (1.282e-04)
Lagged high inflation dummy	0.568*** (0.100)	0.170 (0.176)	-0.073** (0.033)	-0.441** (0.174)	0.131 (0.149)	0.257* (0.147)
Lagged de jure financial openness	-0.117*** (0.016)	-0.524*** (0.135)	-0.020* (0.012)	0.002 (0.034)	-0.129*** (0.017)	0.091*** (0.015)
Lagged de facto financial openness	-0.142*** (0.036)	-0.148 (0.243)	0.016 (0.011)	0.052 (0.121)	0.020 (0.041)	-0.014 (0.050)
MSCI dummy	0.181** (0.073)	0.788*** (0.091)	0.158*** (0.057)	0.105 (0.111)	0.212** (0.092)	0.265*** (0.075)
Observations	682	245	682	160	437	437
Pseudo R-squared	0.41	0.70	0.34	0.48	0.30	0.21
Percent correctly predicted	84.75%	93.47%	82.26%	88.75%	80.32%	79.18%
Percent correctly predicted for dependent variable=0	91.83%	91.67%	93.47%	63.64%	91.41%	90.71%
Percent correctly predicted for dependent variable=1	63.10%	94.89%	45.96%	95.28%	47.75%	46.49%

For the coding of the dependent variable see table A8. Marginal effects are reported. Robust standard errors are reported in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%. GDP per capita (PPP based) and population have been included as additional controls in all regression. Year dummies are included in (1), (2), and (3) and regional dummies in (1) to (4).

Table A10: Pooled probit estimations for upper middle income countries

	(1) ILA	(2) ILA de jure fixed	(3) IMA	(4) IMA de jure flexible	(5) ILA de facto intermediate	(6) IMA de facto intermediate
Openness	-0.181 (0.171)	-0.640*** (0.224)	-0.302** (0.128)	-7.462*** (2.673)	-0.285** (0.136)	-0.100 (0.417)
Primary commodity exports	-1.138e-04 (5.306e-04)	-6.728e-05 (1.072e-03)	-4.401e-04 (4.302e-04)	0.010 (0.006)	0.001* (0.000)	-0.005*** (0.001)
Volatility of terms of trade	-0.220** (0.108)	-0.459 (0.329)	0.083 (0.068)	0.673 (0.516)	-0.034 (0.042)	0.091 (0.149)
Imports to GDP	0.154 (0.308)	0.902*** (0.305)	0.484** (0.231)	14.610*** (5.046)	0.429* (0.235)	-0.593 (0.809)
Lagged inflation rate	3.273e-05 (4.506e-05)	-2.678e-04** (1.245e-04)	-3.893e-06 (4.086e-05)	0.018* (0.009)	-0.003* (0.002)	-0.005* (0.003)
Lagged high inflation dummy	0.379*** (0.083)	0.282 (0.271)	-0.050** (0.020)	-0.699*** (0.211)	0.089 (0.187)	0.251 (0.315)
Lagged de jure financial openness	-0.017 (0.011)	-0.153*** (0.038)	0.002 (0.008)	0.144** (0.072)	-0.013* (0.007)	0.038** (0.018)
Lagged de facto financial openness	-0.061*** (0.023)	-0.007 (0.013)	-0.042*** (0.014)	0.156 (0.173)	-0.047 (0.035)	0.103** (0.050)
MSCI dummy	0.041 (0.048)	-0.155** (0.063)	-0.059** (0.029)	-0.655*** (0.156)	-0.089** (0.040)	0.115* (0.059)
Observations	403	142	403	64	191	191
Pseudo R-squared	0.47	0.61	0.29	0.47	0.35	0.19
Percent correctly predicted	86.10%	90.85%	87.34%	82.81%	92.67%	83.77%
Percent correctly predicted for dependent variable=0	92.60%	92.38%	97.14%	70.83%	97.63%	97.35%
Percent correctly predicted for dependent variable=1	64.13%	86.49%	22.64%	90.00%	54.55%	32.50%

For the coding of the dependent variable see table A8. Marginal effects are reported in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%. GDP per capita (PPP based) and population have been included as additional controls in all regression, year and regional dummies in (1) and (3).

Table A11: Pooled probit estimations for high income countries

	(1) ILA	(2) ILA de jure fixed	(3) IMA	(4) IMA de jure flexible	(5) ILA de facto intermediate	(6) IMA de facto intermediate
Openness	-0.113 (0.072)	1.728** (0.850)	-0.250 (0.319)	4.475*** (1.274)	-0.174** (0.077)	-0.880*** (0.159)
Primary commodity exports	1.568e-04 (5.023e-04)	0.029 (0.018)	0.001 (0.001)	-0.003 (0.002)	2.518e-04 (3.579e-04)	0.002** (0.001)
Volatility of terms of trade	-0.096 (0.095)	-3.276** (1.390)	-2.023*** (0.524)	-2.723** (1.339)	-0.083 (0.086)	-1.430*** (0.334)
Imports to GDP	0.123 (0.133)	-1.781 (1.666)	-0.024 (0.645)	-7.083*** (2.674)	0.210* (0.119)	1.134*** (0.252)
Lagged inflation rate	0.001 (0.000)	0.023** (0.012)	-0.004 (0.004)	0.012 (0.012)	-0.001 (0.001)	0.002 (0.003)
Lagged high inflation dummy	-0.051** (0.023)					
Lagged de jure financial openness	-0.014* (0.008)	-0.167* (0.089)	0.062*** (0.017)	0.080** (0.037)	-0.015* (0.009)	0.062*** (0.018)
Lagged de facto financial openness	-0.014** (0.007)	-0.253*** (0.060)	0.030*** (0.009)	0.180*** (0.039)	-0.006 (0.006)	0.086*** (0.020)
MSCI dummy	-0.060* (0.033)	0.023 (0.104)	0.185*** (0.037)	0.389 (0.274)	0.010 (0.016)	0.084** (0.035)
Observations	832	204	823	215	525	525
Pseudo R-squared	0.18	0.62	0.22	0.47	0.22	0.54
Percent correctly predicted	87.98%	91.67%	79.34%	86.98%	83.24%	89.14%
Percent correctly predicted for dependent variable=0	99.18%	89.57%	91.44%	81.33%	99.54%	95.09%
Percent correctly predicted for dependent variable=1	2.08%	94.38%	49.79%	90.00%	0.00%	72.46%

For the coding of the dependent variable see table A8. Marginal effects are reported in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%. GDP per capita (PPP based) and population have been included as additional controls in all regression, year dummies in (1), (3), and (4).

Table A12: Overview of estimation results (tables A8-A11)

Variable	ILA	ILA de jure fixed	IMA	IMA de jure flexible	ILA de facto intermediate	IMA de facto intermediate	Income group
Openness	+	(+)	-	-	(-)	(-)	Low
	+	(+)	-	(-)	(+)	(-)	Lower middle
	-	(-)	-	-	-	(-)	Upper middle
	(-)	+	(-)	+	-	-	High
Primary commodity exports	-	-	-	(-)	(+)	(-)	Low
	+	+	(+)	+	+	-	Lower middle
	(-)	(-)	(-)	(+)	+	-	Upper middle
	(+)	(+)	(+)	(-)	(+)	+	High
Volatility of terms of trade	(+)	(+)	(+)	(-)	+	(+)	Low
	+	+	-	-	+	(-)	Lower middle
	-	(-)	(+)	(+)	(-)	(+)	Upper middle
	(-)	-	-	-	(-)	-	High
Lagged high inflation dummy	+	+	(-)	n.a.	(-)	(+)	Low
	+	(+)	-	-	(+)	+	Lower middle
	+	(+)	-	-	(+)	(+)	Upper middle
	-	n.a.	n.a.	n.a.	n.a.	n.a.	High
Lagged de jure financial openness	-	-	(-)	-	-	(-)	Low
	-	-	-	(+)	-	+	Lower middle
	(-)	-	(+)	+	-	+	Upper middle
	-	-	+	+	-	+	High
Lagged de facto financial openness	(-)	(-)	(-)	(-)	(-)	-	Low
	-	(-)	(+)	(+)	(+)	(-)	Lower middle
	-	(+)	-	(+)	(-)	+	Upper middle
	-	-	+	+	(-)	+	High
MSCI dummy	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	Low
	+	+	+	(+)	+	+	Lower middle
	(+)	-	-	-	-	+	Upper middle
	-	(+)	+	(+)	(+)	+	High

Note: the signs of the marginal effects of the pooled probit estimations are reported, signs are in parenthesis if they are not statistically significant.