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The Survival of Intermediate Exchange Rate Regimes

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Abstract

Why are so many emerging countries reluctant to follow the prescription of the economic profession to let their exchange rate float freely or fix it forever? We show how the traditional trade-off between stabilization and disinflation can produce soft pegs as optimal exchange rate regimes even when financial fragility and the cost of regime switches in terms of credibility are taken into account. The optimal degree of exchange rate flexibility depends on the structural characteristics of the country and on the preferences of monetary authorities, confirming Jeffrey Frankel's insight that "*no single currency regime is right for all countries or at all times*". This finding is confirmed by a cross-section logit estimation for 92 countries before and after the 1997-1998 emerging markets crises, relating exchange rate regime choice with the countries structural patterns. The model correctly predicts up to 86% of observed regimes and some of the recent moves towards hard pegs. It also suggests that some countries, including Argentina, should have adopted intermediate exchange rate regimes rather than hard pegs.

Keywords: Exchange rate regime, Developing countries, Logit model

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1. Introduction

1.1 Conventional wisdom

It is now part of the conventional wisdom of international policymaking that economies open to international capital flows should not try to fix their nominal exchange rate, unless they adopt a currency board or they move to full dollarization, "euroization" or currency union. This advice is rooted in the experience of the 1992-1993 collapse of the European exchange rate mechanism and the 1997-1998 emerging markets crises. As Stanley Fischer (2001) has noted, "*each of the major capital markets-related crises since 1994 has in some way involved a fixed or pegged exchange rate regime*". There is also some empirical evidence of a "hollowing out" of the distribution of exchange rate regimes in recent years, away from intermediate regimes and towards free floats or hard pegs (Caramazza and Aziz, 1998, and Fischer, 2001).

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The crux of the argument in favor of the "two corner" or "two pole" theory of exchange rate regime choice is Robert Mundell's impossible trinity. In a world of high capital mobility, nominal exchange rate pegs cannot be sustained without giving up an independent monetary policy, either by implementing a currency board arrangement[1], by joining a currency union, or by adopting a currency issued by another country. The choice between hard pegs and free float then falls on the traditional stabilization/inflation trade-off and on optimal currency area arguments.

Recently, the argument has been tilted toward the "hard peg" corner by focusing on financial structure and asset markets channels. Domestic risk premia, liability dollarization and vulnerability to international contagion make a case for dollarization against floating, at least for economies which are already partially dollarized -see Calvo (2000) or Eichengreen and Hausmann (1999)[2].

If this trend continues, the implications will be striking for what Jerry Cohen (1998) called the "geography of money". The world will ultimately be structured into a few large currency areas (say, a US dollar area in the Americas, a euro area around Europe, and possibly an Asian currency area in a more distant future) and a handful of independently floating currencies. The whole issue of exchange rate regime choice will then belong to economic history.

1.2 A fragile wisdom?

At a closer look, however, the picture appears much less clear cut. First, the "two corner" approach does not yet have undisputed theoretical foundations. Oddly enough, no existing theoretical model produces hard pegs or free floating as optimal solutions of some welfare maximizing exercise where the whole range of exchange regimes would be available as policy options. Second, there is growing empirical evidence that intermediate exchange rate regimes are well alive, maybe under the form of dirty floats or soft pegs.

Many emerging countries claim to be floating but do actually manage their exchange rate with interest rate or foreign exchange market intervention (Calvo and Reinhart, 2000; Levi-Yeyati and Sturzenegger, 2000; Bénassy-Quéré and Coeuré, 2001). Thus, in the IMF annual reports on exchange arrangements and exchange restrictions, many regimes classified as free floats are in fact managed. As from 2000, the IMF has corrected its classification for evident discrepancies with *de facto* behavior, but the corresponding time series are not available so far. Even drawing on the official classification, Paul Masson (2001) has shown that the dynamics implicit in exchange rate regime switches does not support the hypothesis that intermediate regimes are hollowing out in the long run.

Guillermo Calvo and Carmen Reinhart (2000), among others, have suggested explanations for this *fear of floating:* exchange rate pass-through, liability dollarization, dollar invoicing of domestic

[1] See Ghosh, Gulde and Wolf (2000) for an appraisal of the experience with currency boards.
[2] See Berg and Borensztein (2000) or Levy-Yeyati and Sturzenegger (2001) for a survey of dollarization, including the seigneuriage and financial supervision aspects which are out of the scope of this paper.

and external transactions, and an underdeveloped market for currency hedging make more desirable to fix the nominal exchange rate. These factors are specific to emerging markets and dependent on each country's own history.

There remains of course a difference in terms of commitment and institutional framework between managed floats and old-style exchange rate commitments such as the crawling pegs or fluctuation bands advocated by John Williamson (2000). What is important in our view, and what we will try to investigate in this paper, is the survival of "intermediate" exchange rate regimes, or soft pegs, defined in a broad sense as regimes other than free floats and hard pegs.

1.3 Which currency regime is right for which country and at which time?

Given these competing arguments and the lack of a unified framework to sort them out, it has often been concluded that the choice of an exchange rate regime should depend on each country's own characteristics and history. Jeffrey Frankel's intuition that "*no single currency regime is right for all countries or at all times*" is increasingly fashionable.

The fact that this motto has been more or less endorsed by the IMF (see Masson et al., 2000) and by policymakers[3] is not necessarily good news. Although it is an apt summary of the literature, it could allow the official community to become more relaxed with the exchange rate regime issue. As the memories of the recent crises recall us, this would be a mistake. On the contrary, what we urgently need is an analytical and empirical tool to give each country, given its economic structure and at a given point in its history, the right policy advice. This is the direction we try to explore.

To sort out the arguments, we start from a simple model of exchange rate regime choice in a continuum going from a free float to a hard peg. We find that optimal choice depends on the country structural characteristics and government preferences, namely: the magnitude of domestic and foreign shocks, exchange rate pass-through, trade openness, the magnitude of the interest-rate channel, the persistence of inflationary reputation, and the government's time preference and aversion to inflation. We then discuss under which conditions the optimal regime will be sustainable.

The relevance of these factors is assessed on a cross-section of 92 countries before and after the 1997-1998 emerging markets crises. We use a non-ordered trinomial logit model so as to account for intermediate regimes independently from corner solutions. We then use the estimated model to understand why some countries have changed regimes after the crises and some others have not – and whether they should better have done so. Finally, we discuss dynamics issues which are not addressed as such in the paper.

[3] A recent example is the 2001' Asia-Europe finance ministers' meeting concluding statement : " *Ministers acknowledged that there is a spectrum of possible exchange rate arrangements, depending on various aspects such as the size of the economy, trade and investment structure, the sequencing of capital account liberalization and the level of economic development. No single arrangement is necessarily right for all countries all the time.*"

2. Exchange rate regime choice: theory

2.1 Existing literature [4]

Why do theoretical models fail to exhibit corner solutions? Most of them are open economy extensions of a Barro-Gordon trade-off between stabilization and disinflation. They concentrate on two simplified cases: fixing and floating, without considering "intermediate" regimes as an option (see e.g. the models of Edwards, 1996; Ghosh et al., 1999; Berger, Sturm, and de Haan, 2000; Méon and Rizzo, 2001). An important but isolated contribution is Aizenman and Frenkel (1986) where the degree of exchange rate flexibility is introduced as the elasticity of the money supply to the nominal exchange rate.

Recently, Lahiri and Végh (2001) proposed a model of optimal choice among four policy options: nominal exchange rate peg, pure floating, dirty floating, and sterilized intervention. Concentrating on monetary shocks, they find that the optimal rule depends on the size of the shock: policymakers should let the exchange rate adjust for small negative monetary shocks, while for larger shocks they should intervene to stabilize it.

There exists a gap between the existing literature and some important dimensions of the ongoing policy debate.

First, it is important to distinguish two features of the exchange rate regime: the degree of flexibility, which ranges from a fixed peg to a free floating regime; and the degree of institutional commitment, which differentiates hard pegs from intermediate regimes (defined in a broad sense, as indicated above).

In addition, models *à la* Barro and Gordon usually do not capture the financial channels which are at the heart of the current discussion on the viability of exchange rate regimes. In particular, they fail to describe how the credibility of the exchange rate regime may impact balance sheets and thereby the real economy through the domestic interest rate.

Finally, these models usually assume purchasing power parity, whereas the crises have highlighted the role of real exchange rate misalignments. The real exchange rate may vary both in the short run (because of nominal exchange rate targeting and/or price rigidities) and in the long run (because external balance has to adjust somehow). In the next section, we present a simple model which incorporates these ingredients.

[4] See Edwards (2000) or Mussa et al. (2000) for a general overview of exchange rate regime choice.

2.2 Optimal exchange rate flexibility: disinflation, stabilization, and credibility

In Appendix A, we present a model of exchange rate regime choice in a small economy. There are two periods, short term and long term. In the long run, prices are fully flexible and the real exchange rate balances the current account, either through nominal exchange rate or through price adjustment. The exchange rate regime is therefore neutral for the real economy and the only difference between a fixed and a flexible regime is the amount of price adjustment. In the short run, exchange rate movements pass only partially through prices, depending on pricing to market, wage indexation and the degree of *de facto* dollarization. Long run depreciation expectations are built into the short run interest rate, thereby impacting aggregate demand. Lastly, there is an inflation reputation effect: Period 1 inflation has a lasting impact on Period 2.

The authorities pick the exchange rate regime for each of the two periods in a continuum ranging from a hard peg to a free float. They can use the exchange rate to stabilize short run aggregate demand, but to a certain extent only, depending on how much they weight price stability. In addition, there is a cost *à la* Drazen and Masson (1994) to changing regimes; this cost is proportional to the amount of added flexibility and it is used by the authorities as a commitment not to renege on their first period choice.

The implications of the model are threefold.

Conclusion 1. In the presence of a Barro-Gordon "inflation bias" problem, the optimal exchange rate regime is typically an intermediate one, depending on the trade-off between stabilization and disinflation.

Conclusion 2. The optimal degree of exchange rate flexibility depends on the structure of the economy, the nature of the shocks it faces, the preferences of monetary authorities, and the persistence of inflationary reputation. All things being equal, the following patterns will tend to favor less flexible regimes:

- a more persistent inflationary reputation, a higher aversion to inflation and/or a longer time horizon of monetary authorities. This latter result is in line with theoretical contributions which stress the political cost of adjustment under a hard peg, thus the difficulty of sustaining such a regime for governments with a weak political support -see e.g. Edwards (1996), and Frieden, Ghezzi and Stein (2000) for a survey;
- a higher degree of exchange rate pass-through. This is consistent with the recent literature on the fear of floating, which stresses the importance of *de facto* dollarization and of pass-through effects[5];

[5] See also Jadresic (1998) for a discussion of exchange rate regime choice with indexed wage contracts.

- a less open economy, because of a lesser need to accommodate foreign shocks. Consistently, hard pegs are more likely to be chosen by countries facing shocks on domestic demand or on interest rates than by countries facing shocks on foreign demand. In a nutshell, the "current account" channels favor flexibility while the "capital account" channels favor harder pegs;
- an aggregate demand less reactive to real interest rates, for instance due to longer term debt contracts or weaker balance sheet effects.

Conclusion 3. The authorities may be tempted to renege on the exchange rate regime. This can be fixed by raising ex-ante the cost of changing regimes. It turns out that corner solutions require a stronger ex-ante commitment than intermediate regimes. For instance, since hard pegs cannot accommodate foreign demand shocks, they create an incentive to use the nominal exchange rate in the following period to achieve part of the necessary adjustment of the real exchange rate.

2.3 Back to the hollowing out hypothesis

To sum up, we have seen that intermediate regimes are tailored to address the stabilization/disinflation trade-off better than hard pegs or free floats, which concentrate on one only of these two aspects. This result is not surprising in a Barro-Gordon framework; at its heart lies the idea that whatever the exchange rate regime chosen by the authorities in the short run, real exchange rate adjustment will require some amount either of nominal exchange rate or of price flexibility in the long run. The degree of flexibility in intermediate regimes can then be adjusted through the authorities' announcements to market participants and, if the case of fluctuation bands, by choosing the width and "softness" of the bands – see Williamson (2000) for a discussion.

It could be concluded that the only issue at stake is the optimal degree of nominal exchange rate flexibility and that this line of reasoning discards in principle corner solutions. However, bringing credibility into the debate, we have also seen that regimes close to the corners are more difficult to commit to. Since it is likely that the commitment to a particular regime (what we captured in our model as raising the cost of regime switches) requires not only an appropriate institutional framework but also transparency and verifiability (see Frankel et al., 2000, for more on this issue), there is a case for moving directly to the corners. Thus what we expect to find in practice is either intermediate regimes or, whenever the case for a very flexible or a very inflexible exchange rate is pervasive enough, corner solutions.

3. Exchange rate regime choice: broad facts

We now turn to the empirical relation between exchange rate regime choice and countries characteristics and preferences.[6]

[6] Other cross section studies focus on the reserve causality running from exchange rate regime choice to growth and inflation performance, see e.g. Ghosh et al. (1997); Levy-Yeyati and Sturzenegger (2001).

Several recent studies of the determinants of exchange rate regime choice have concentrated on the impact of political instability, with a particular attention to Latin America (Edwards, 1996; Frieden, Ghezzi and Stein, 2000; Méon and Rizzo, 2001) They conclude that political instability make fixed pegs more difficult to sustain, consistently with the theory.

Other recent contributions are Rizzo (1998), Berger, Sturm and de Haan (2000), and Poirson (2001). Rizzo (1998) finds a significant role for optimal currency area criteria: country size, level of development, openness and geographical diversification of trade. Berger, Sturm and de Haan (2000) concentrate on the volatility and correlation of domestic and foreign output. Poirson (2001) evidences the role of the following factors: country size, external shock vulnerability, inflation performance, capital mobility, level of reserve, political risk, partial dollarization and foreign currency borrowing.

We want to improve on these studies in two directions. First, all of them use a binomial or an ordered multinomial discrete choice model, or even a linear relationship between an exchange rate flexibility index and the explanatory variables (Poirson, 2001). In so doing, they impose an implicit pecking order on exchange rate regime choice. They are therefore not suited to identify factors which may favor intermediate regimes against corner solutions, and they are not consistent with the empirical finding of Masson (2001) that transitions are symmetrical between the three types of regimes. In what follows, we shall give the three categories the same status by estimating a multinomial logit model. Besides, except for Poirson (2001) who uses an alternative exchange rate flexibility measure, all of these studies use some version of the IMF official classification. As already noted, this classification is at odd with actual behavior and it is therefore inappropriate. We shall therefore use an alternative measure based on actual exchange rate behavior.

3.1 Identifying exchange rate regimes

We need a classification of exchange rate regimes according to their degree of flexibility. First, we use the official classification (IMF, 1997 and 2000) after rearranging regimes into three categories: adjustable pegs, crawling pegs, regimes with fluctuation bands and managed floats are grouped into “intermediate regimes”, while currency boards, dollarized regimes and currency unions are grouped into “hard pegs”.

Several methods are available to identify *de facto* exchange rate pegs (see Bénassy-Quéré and Coeuré, 2001, for a discussion). Most authors regress the bilateral exchange rate against some numeraire currency (or a commodity, or a basket of currencies) against the exchange rates of reference currencies against the same numeraire (see e.g. Frankel and Wei, 1995). This approach is not satisfactory since the numeraire is likely to be correlated with one or all of the reference currencies. Recently, Levi-Yeyati and Sturzenegger (2000) have suggested using cluster analysis to classify countries according to the volatility of exchange-rate variations and of official reserves. However their

classification does not discriminate hard pegs from more traditional fixed pegs, which makes it unsuitable to test for the choice of corner solutions against intermediate regimes.

In a second step, we thus use a *de facto* classification derived from the observed behavior of each currency against the US dollar, the euro and the yen, which gives a symmetrical role to reference currencies (Bénassy-Quéré and Coeuré, 2001). A currency is said to be freely floating over some period of time if there exists no stable combination of its bilateral exchange rates against the US dollar, the euro and the yen. Unsurprisingly, such situations are much less frequent than reported by the IMF.[7] We define intermediate regimes as those regimes where a *de facto* basket peg (or single currency peg) is identified but not reported to the IMF as a hard peg. Lastly, we define hard pegs the same way as the IMF. The estimation is run separately for each country on weekly data on the pre-crises (January 1994-June 1997) on post-crises (October 1998-March 2001) periods[8].

3.2 Relevant structural features

In order to draw the lessons of the 1997-1998 emerging markets crises and to allow for a possible structural break, we run the estimation separately on the same sample of countries before and after the crises. Given the availability of the data[9], this leaves us with 92 countries which comprise industrial, emerging and less developed economies. The estimated logit model is:

$$P(Y_i=1|X_i) = a_0^1 + a_1^1 \, OPEN_i + a_2^1 \, TDEBT_i + a_3^1 \, DOMVAR_i + a_4^1 \, CAPC_i + a_5^1 \, IND_i + a_6^1 \, TURN_i + u_i$$

$$P(Y_i=2|X_i) = a_0^2 + a_1^2 \, OPEN_i + a_2^2 \, TDEBT_i + a_3^2 \, DOMVAR_i + a_4^2 \, CAPC_i + a_5^2 \, IND_i + a_6^2 \, TURN_i + v_i$$

$$P(Y_i=0|X_i) = 1 - P(Y_i=1|X_i) - P(Y_i=2|X_i)$$

Y_i is the exchange rate regime of country i: $Y_i = 0$ for a free float, 1 for an intermediate regime and 2 for a hard peg. Contrary to an ordered logit, the two probabilities $P(Y_i=1)$ and $P(Y_i=2)$ are not nested. The explanatory variables included in X_i are the following:

- *OPEN* is the ratio of exports to GDP in 1996 or 1999. Since the dollarization index was not significant (see below) and was therefore not introduced as such, this variable may capture both trade exposure and exchange rate pass-through effects. Its sign is therefore ambiguous. In order to disentangle the two effects, we supplemented *OPEN* with the share of manufacturing in value–added, *IND*, as a rough proxy of sectoral diversification.[10] The idea is that a larger weight of

[7] On a sample of 92 countries, we find that the proportion of true floats has increased only from 10% to 11% after 1997/98, while the official proportions are 24 % and 28 %, see Bénassy-Quéré and Coeuré (2001).
[8] A detailed presentation of the method is to be found in Bénassy-Quéré and Coeuré (2001). A spreadsheet with complete estimation results, including basket coefficients for each country, is available on request to the authors.
[9] All variables and data sources are detailed in Appendix E.
[10] This follows Poirson (2000). More sophisticated measures of trade diversification (calculated on very disaggregated data from the CHELEM trade database) did not show up significant.

manufacturing, thus a smaller weight of primary goods, makes an emerging market economy less dependent on commodity market fluctuations, which are especially large.

- *TDEBT* is the ratio of total (domestic + foreign) debt to GDP in 1996 or 1999. This variable catches the importance of the interest-rate channel. It is appropriate to include foreign debt since interest rate rises due to depreciation expectations will also lead domestic agents to expect a re-evaluation of foreign currency debt. This variable is set to zero for industrial countries due to data unavailability.

- *DOMVAR* is the variability of domestic demand. It is calculated as the standard deviation of domestic demand growth over the period 1982-1996.

- *CAPC* is an index of capital controls taken in 1996 (pre crises) or 1999 (post crises) from the corresponding IMF exchange arrangements and exchange restrictions reports (IMF, 1997 and 2000)[11]. Capital controls reduce the likeliness of financial account shocks, captured in the model of Section 2 as shocks to the interest rate.

- *TURN* is the rate of turnover of central bankers over the period 1980-1989, used as a proxy of aversion to inflation. Although it is only available for a subset of countries and over a relatively remote period, we preferred using this variable rather than past inflation performance. The link between inflation and the choice of an exchange rate regime is ambiguous since a high inflation record makes a hard peg more desirable, but less likely to be sustained.[12] The lag in the turnover variable also rules out the reverse causality problem;

Other variables consistent with the theoretical model were tried but turned out not to be available and/or significant and are therefore not reported in the tables:

- we introduced a dollarization index taken from Baliño, Bennett and Borensztein (1999). However this index is available only for a limited number of countries, and it was not significant in this limited subset;

- another variable suggested by theory is the government discount factor. We introduced it as the share of majority seats in Parliament, using World Bank data (see Appendix E). Contrary to Frieden et al. (2000), Méon and Rizzo (2001) and Poirson (2001), the variable was not significant. This may be due to our particular proxy or to the fact that our sample includes both industrial countries and emerging countries and LDCs. Among the mentioned studies, the two former studies only include emerging countries and LDCs, whereas the latter proxies political unrest by the

[11] Namely, CAPC is the proportion of financial transactions categories subject to government restrictions.
[12] Past inflation is not significant in Frieden et al. (2000) and hardly so in Poirson (2000).

number of revolutions, which is equal to zero in industrial countries and which is not relevant for politically mature emerging economies;

- as an alternative to central bankers turnover, we tried average GDP growth over 1982-1996, with the idea that a poor growth performance raises the government incentive to inflate. This variable was not significant.

3.3 Estimations results

The maximum-likelihood estimation results are presented in Appendix C in Tables C1 (baseline model), C2 (adding the share of manufacturing) and C3 (adding central bankers turnover). Each of them covers the two periods and the two alternative exchange rate regime classification.

The first four columns give the estimates and corresponding p-values for the coefficients of the probabilities of intermediate regimes $P(Y_i=1|X_i)$ and of hard pegs $P(Y_i=2|X_i)$.[13] The last four columns give the derivatives of the three probabilities with respect to the explanatory variables.

The rate of correctly predicted observations goes from to 31% (model with turnover, IMF classification, pre-crises) to 86% (same model, de facto regimes, post-crises). This rate, as well as the log-likelihood, are systematically higher when using *de facto* classification rather than the IMF one. They are also higher when using augmented models rather than the baseline one. We now concentrate on Table C2 (with manufacturing share) in order to interpret the coefficients.

We find that most variables, although not always significant, have the sign predicted by theory:

- the most significant variable is trade openness *OPEN*. This result is robust to the time period and dataset. Trade openness increases the probability of an intermediate regime and even more of a hard peg, relatively to free float. This is consistent with Frieden et al. (2000), but it contrasts with Méon and Rizzo (2001), Poirson (2001) and Berger et al. (2000) who find either no significant relationship or a positive relationship between openness and exchange rate flexibility[14]. Remember that *OPEN* captures both exposure to foreign shocks (which is expected to favor flexibility) and pass-through effects (which are expected to favor fixing), the result suggests that the latter tend to dominate. This is confirmed when the model is augmented with the manufacturing share *IND*: hard pegs are even more likely when *IND* is higher, thus when the economy is more immune to global shocks. The only ways to settle the debate would be to include a separate dollarization or pass-through index;

[13] To compute p-values, estimated coefficients are normalized by assuming that $a_i^1+a_i^2=1$.
[14] One possible explanation for the result of the three studies mentioned is that they include country size along with trade openness, and larger countries are more likely to be found floating.

- although the coefficient is not always significant, a higher debt ratio *TDEBT* seems to reduce the probability of an intermediate regime. This is consistent with the fact that intermediate regimes lead to more unstable interest rates, which are all the more costly that debt is higher (in the model of Section 2, this is captured by interest rate elasticity $\boldsymbol{a}$). However, *TDEBT* does not clearly favor hard pegs over free floats;

- domestic demand variability *DOMVAR* is significant only in the post-crises period. It increases the probability of a hard peg, and even more of an intermediate regime relatively to a free float;

- capital controls *CAPC* raise the probability of intermediate regimes (in the first period, they also raise the probability of a hard peg). Taking the result at face value, the derivative of the corresponding probability with respect to this variable is 0.173 in the second period, meaning that moving from 100% capital controls (CAPC=1) to free capital movements (CAPC=0) would increase the odds of choosing a corner solution by 17%;

- lastly, when introducing central bankers turnover *TURN* (Table C3), we find as expected that a higher turnover (thus a weaker central bank and presumably less aversion to inflation) reduces the probability of a hard peg, especially after the crises. Other results remain broadly unchanged.

Note that the performance of the model (in terms of the percentage of correct predictions as well as in term of likelihood) is systematically higher before the 1997-1998 crises, suggesting that the relationship between exchange rate regimes and structural features of the economies have not yet settled back to a "stable" configuration.

Let us now turn to individual predictions. Appendix D gives the "most certain" predictions of the model as measured by the 15 highest and 15 lowest predicted probabilities within each regime. The main results are the following:

- the model predicts hard pegs correctly for CFA countries in both periods, and after the 1997-1998 crises for Hong Kong, Estonia and Panama. However, it fails to predict Argentina's currency board, El Salvador and Ecuador's dollarization and EMU membership for most participating countries (except Luxembourg, Belgium and the Netherlands). According to the model, Argentina, El Salvador and EMU countries should have intermediate exchange rate regimes, while Ecuador should float. Interestingly, though, the probability of a hard peg has substantially risen for all EMU countries;

- the model predicts very few free floats, except for Japan (for which the probability to float is 91%) and Indonesia (the United States do not belong to the sample); interestingly, although the model

predicts that China should keep an intermediate regime, the probability of floating the renminbi has massively risen (from 12% to 25%) after the 1997-1998 crises.

Lastly, the model predicts that 22 of the 92 countries should have changed regimes after the 1997-1998 crises. These countries are:

- from an intermediate regime to a hard peg: four Latin American countries (Bolivia, Guatemala, Nicaragua and Panama), three Asian countries (Hong Kong, Singapore and Nepal), and five European countries (Belgium, Luxembourg, Denmark, Estonia, and the Netherlands); and to a free float: Ecuador, Sierra Leone and Indonesia;

- from a hard peg to an intermediate regime: Chile, Latvia, Slovakia and the Republic of Congo; and to a free float: Guinea-Bissau;

- from a free float to an intermediate regime: Venezuela and Yemen; and to a hard peg: none.

5. Conclusion

We have seen that there remains a theoretical case for intermediate exchange rate regimes even when financial channels and credibility costs are taken into account, because intermediate regimes are best suited to address the disinflation/stabilization tradeoff and because extreme choices in the short run may reveal counterproductive later on, when the real exchange rate has to adjust to long term equilibria. We have also seen that fixing or floating requires a stronger commitment, making a case for moving to the corners rather than close to the corners.

Theory suggests, and cross-section observation confirms that exchange rate regime choice should ultimately depend on the countries structural characteristics and preferences, notably trade openness and capital mobility. In addition, factors highlighted in the recent "fear of floating" literature such as exchange pass-through and interest rate sensitivity are likely to be associated with less exchange rate flexibility.

Are these factors likely to become more or less frequent as world integration goes on? The answer is probably positive, since trade openness and free capital mobility are likely to become the general case. Thus the trend towards harder pegs is likely to continue. However, there remains some room for intermediate regimes to survive.

A crucial question which we do not address in our model, is how to organize the transition from one regime to another in the case the fundamentals have changed.[15] Moreover, as most other authors, we did not explore the possibility that some of the "fear of floating" factors listed above, such as partial dollarization and interest rate sensitivity (not to mention trade invoicing and the market for currency

hedging), may be endogenously related to the choice of an exchange rate regime. We think that the priority for future research should be to endogenize these dynamics, building a bridge towards Masson's (2001) empirical account of the transitions between exchange rate regimes.

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