EXCHANGE RATE REGIMES
A GLOBAL PICTURE SINCE THE EMERGING MARKET CRISES IN THE MID 1990s*

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1. INTRODUCTION

The emerging market crises in the mid 1990s revived the discussion on the exchange rate regime choice. More recently, discussions on the future of the Chinese exchange rate regime or on the appropriate arrangements for the new European Union Member States again highlighted the relevance of this topic. The aim of this article is to go over the debate on exchange rate regimes in recent years both at the theoretical and empirical level. The survey is organized as follows: Section 2 presents a snapshot of the recent trends in the literature on the exchange rate regime choice. Section 3 summarizes the main theoretical arguments regarding the selection of regimes: the traditional approaches, such as the criteria behind the "Optimum Currency Areas" theory or the nature of shocks affecting the economies and the more recent contributions of the political economy or the "fear of floating" school. Section 4 reviews the main contributions from empirical research, regarding both the link between exchange rate regimes and macroeconomic performance and the determinants of the exchange rate regime choice. Section 5 concludes. The appendix provides a description of the official International Monetary Fund (IMF) exchange rate regime classification.

2. OVERVIEW OF THE LITERATURE

In the early 1990s the core thinking in the literature on exchange rate regimes was that the need to meet several objectives - flexibility versus commitment, growth versus inflation stabilization, and insulation from real shocks versus insulation from monetary shocks - pointed to compromise solutions within the fixed versus flexible dichotomy for emerging market countries and developing countries(1).

In the second half of the 1990s the sustainability of policies, credibility and crisis prevention began to be viewed as key criteria for judging exchange rate regimes. The idea that bipolar choices, either hard pegs or floating exchange rates, were better than inside solutions gained increasing support, basically on the grounds that intermediate regimes were hard to sustain and more crisis-prone. This approach has been called in the literature "bipolar view", "corner solution" or "hollowing out"(2). In the context of bipolar choices, the dominant opinion was that floating exchange rates were more adequate for most emerging market economies, with hard pegs reserved for special conditions. Hard pegs were regarded sustainable only if supported by a strong national consensus, and, as such, unfeasible or too constraining for many emerging market countries. Underlying these arguments was the fact that most financial crises, Mexico in 1994, Thailand, Indonesia and Korea in 1997, Rus-

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(1) See Aghevli et al. (1991).

(2) Original references on the "hollowing out" hypothesis are in Eichengreen (1994). See also Obstfeld and Rogoff (1995), Eichengreen (1999) and Goldstein (1999).

sia and Brazil in 1998 and Argentina and Turkey in 2001, involved an exchange rate peg of some kind, while countries that did not have pegged rates, such as South Africa, and in 1998 Israel, Mexico and Turkey avoided crises of the type. Given the concern to minimize the frequency and severity of crises, the hypothesis that intermediate regimes would vanish became almost undisputed for some time. The "bipolar view" appears to be a corollary of the impossible trinity principle, according to which a country cannot have three goals simultaneously: exchange rate stability, monetary independence, and financial market integration. Since financial markets have become more and more integrated internationally, this would inevitably push the choice down to giving up exchange rate stability, or giving up monetary independence. The empirical evidence on countries switching to corner solutions during the 1990s appeared to support this view(3).

However, what appeared to be a new consensus did not last for long. In the late 1990s, several authors started to question the "bipolar view". Frankel (1999) notes that while it may be true that a country cannot maintain both exchange rate stability and monetary independence altogether, this does not mean it cannot have half stability and half independence, especially because between the two extreme options of full capital controls and full financial integration there is a varying degree of capital mobility. At the same time, the strength of the empirical evidence pointing towards corner solutions started to be questioned based on the discrepancy between the official "*de jure*" and the actual "*de facto*" exchange rate regimes. Levy-Yeyati and Sturzenegger (2002a) argue and empirically verify that while intermediate regimes are inherently more vulnerable to capital flows, and therefore bound to disappear in a world with increasingly integrated capital markets, the "bipolar view" does not apply to non emerging market developing countries(4). In fact, the observed pattern indicates that floats are less prevalent among this latter group and that the movement towards the extremes was almost inexistent in this case, suggesting that exposure to strong capital flows may be necessary for the "bipolar view" argument to be valid. Even Fischer (2001), a former proponent of the "bipolar view", departs from his original position by recognizing that developing countries which are not very exposed to international capital flows still face a wide range of intermediate exchange rate regime options. Mussa *et al*. (2000) and Rogoff *et al*. (2003) refine the argument in favour of intermediate regimes arguing that the fact that less hard peg regimes may not be sustainable for many countries does not imply they are not viable or cannot play a useful role for a limited period of time, for example, as a nominal anchor during a disinflation process. In fact, successful disinflations from triple digit inflation have generally taken place with the use of an exchange rate anchor, especially in countries with chronic monetary instability. The exchange rate anchor sometimes takes the form of a very hard peg (as in a currency board) but it can also be a "softer" form of peg. Whatever the case may be it is necessary that these countries find a way to safely exit from the peg without a crisis(5).

The idea that, in the context of bipolar choices, floating exchange rate regimes were more appropriate to emerging market countries was also questioned by several authors. Calvo and Reinhart (2002), proponents of the "fear of floating" view argue that, because of worries about inflation pass through and dollarization in the domestic financial system, sometimes coupled with credibility problems, central banks deliberately avoid movements in the exchange rate even if they officially declare to be floating, which results in flexible regimes that are managed as if they are fixed.

To sum up, the recent trend in the literature regarding exchange rate regime choice suggests that for countries in early stages of integration to global capital markets, a wide variety of pegged regimes remains appropriate. For emerging market economies, intermediate regimes can be useful as temporary solutions such as in cases when countries confront the problem of stabilizing from very high levels of inflation. As permanent arrangements for emerging market economies, however, the choice will more likely fall in a "corner" regime, some moving towards hard peg regimes (like currency boards or even full dollarization or euroisation), while others will choose exchange

(3) See Fischer (2001) and Bubula and Ötker-Robe (2002).

(4) See also Masson (2000).

(5) See Duttagupta *et al*. (2004) and references therein.

rate flexibility. How countries resolve this choice depends on how they trade off the advantages of credibility, commitment, and reduced inflation volatility on the one hand, and some monetary autonomy and the benefits of reduced output volatility on the other.

3. THEORETICAL CONSIDERATIONS FOR THE SELECTING THE EXCHANGE RATE REGIME

3.1. Traditional Approach

The theory of "Optimum Currency Areas" (OCA) has been the earlier contribution to the debate on the merits of the various exchange rate regimes. This literature stemmed from the debate on the advantages and disadvantages of fixed versus flexible exchange rate arrangements in fostering price stability and insulating countries from the various types of shocks. The OCA identifies several criteria under which a country should choose to adopt a single currency or to irrevocably peg its exchange rate. Following the seminal contribution of Mundell (1961) who noted that a sufficient inter regional labour mobility within the area could take over the adjustment role played by flexible exchange rates, other criteria emerged like the size of the economy and its degree of openness, geographic and product diversification of trade, inflation differentials with major trading partners and the degree of business cycle synchronization. Later on, it became apparent that a new set of criteria was also particularly important for the decision to adopt an institutional commitment to a fixed rate. Frankel (1999) refers that a strong need to import monetary stability (due to either a history of hyperinflation, an absence of credible public institutions, or unusually large exposure to international investors) and the desire for further close integration with a particular neighbour or trading partner may explain the desire to fix exchange rates. However, he also argues that this is unlikely to be successful without the economy having an adequate level of foreign reserves, a strong and well supervised financial system, as well as fiscal discipline. These additional characteristics have to do with credibility and the need to secure access to international financial markets. That might explain for instance why the new Member States of the European Union have chosen various types of exchange rate regimes[6]. Also within the *Mercado Comun del Cono Sur* (*Mercosur*) and the Association of South East Asian Nations (ASEAN) groups, the desire to stabilize intra regional exchange rates to foster trade and capital flows may call for avoiding exchange rate swings between integrating countries[7].

Another strand of the more traditional literature emphasizes the importance of the nature of shocks[8]. The primary element is to identify which regime would be better in stabilizing macroeconomic performance, that is to reduce output volatility or in controlling inflation, in the presence of specific shocks. In this context, where domestic shocks are largely monetary in nature then fixed exchange rates are preferable because they help to discipline erratic policy makers. If shocks are mostly real or external, however, then flexibility is important to stabilize economy.

3.2. Recent contributions

The most recent contributions date from the mid-1990s and can be grouped under two main headings: political economy and "fear of floating". The first approach appeared with Collins (1996) and Edwards (1996) who argue that there are political economy considerations that affect the choice of exchange rate regimes. The authors find out that political instability indicators such as the frequency of government changes or the transfers of power between the governing and the opposition party influence the choice of the exchange rate regime.[9]. The second approach, appeared with Calvo and Reinhart, (2000, 2002) who emphasize

(6) See appendix.

(7) The *Mercosur* countries are Argentina, Brazil, Chile, Paraguay and Uruguay. The ASEAN countries are Brunei, Indonesia, Malaysia, Myanmar, the Philippines, Singapore and Thailand. Recently, the Bank for International Settlements (2003) presented an extensive work specifically on the economic, legal and practical issues involving the introduction of a shared regional currency or the adoption of a foreign currency. The compilation of papers includes studies on monetary regimes in Europe Middle East Africa and the ASEAN group. See also studies of Bayoumi and Mauro (1999) for the ASEAN group and Masson and Pattillo (2001) for West African countries.

(8) See for instance, seminal contributions of Aizenman and Frenkel (1982).

(9) The study by Collins (1996) refers to 24 Latin America and Caribbean countries over the period 1978-92 whereas that by Edwards (1996) applies to 63 countries over the 1980 1992.

that many countries claiming to have floating exchange rate systems, do not allow their exchange rate to float freely after all, and rather use interest rates and intervention policy to affect its behaviour[10].

The political economy approach argues that a country without political stability may have an incentive to let the currency fluctuate because it lacks the political ability and support to take the unpopular measures necessary to defend a peg. In fact, the decision to move to a more flexible exchange rate is partly a decision to de politicize exchange rate adjustments. Collins (1996) argues that in floating regimes (managed floating regimes included) adjustments in the exchange rates are less perceptible by economic agents and, thus, less costly in political terms than a devaluation under a peg. Edwards (1996) refers that the more politically unstable countries are, the lower the probability of selecting a pegged exchange rate system. In fact, stronger governments are in a better position to withstand the political costs of a (possible) currency crisis and, thus, are more willing to adopt a peg.

The "fear of floating" approach relates to a situation in which a country officially declares to be following an independently floating exchange rate regime but actually smoothes the exchange rate by means of market interventions, or interest rate policy. Calvo and Reinhart (2000, 2002) focus on the presence of currency mismatches in balance sheets and high exchange rate risk exposure as reasons for such behaviour. These currency mismatches happen because these countries face many difficulties to borrow abroad in their own currency even for domestic purposes and this implies that their financial sector tends (needs to) to hold a large fraction of their debt in foreign currency[11]. Indeed, countries with high unhedged foreign currency denominated debt have an incentive to peg to the foreign currency in which they have borrowed since exchange rate volatility would translate into financial and economic uncertainty. Moreover, Calvo and Reinhart (2000) note that exchange rate volatility is more costly to trade in emerging market countries because exporters and importers lack the tools to hedge exchange rate risk through futures instruments due to capital markets incompleteness. In addition, Hausmann et al. (2001) refer that emerging market countries may fear floating because they worry about the exchange rate pass through to domestic inflation, which if countries have inflation targeting frameworks becomes even more important. However, Detken and Gaspar (2003) cast some doubts on the attempts to identify "*de facto*" exchange rate regimes in terms of comparisons of unconditional volatility of exchange rates, interest rates and foreign reserves. On the basis of a theoretical model they argue that for a small open economy with perfect capital mobility pursuing the objective of price stability, a free floating exchange rate regime can appear, under certain circumstances, equivalent to a managed floating or even more intermediate regime. This happens in particular when there is a large real exchange rate elasticity of domestic demand and frequent shocks to the interest rate risk premium. In this case the regime would be falsely classified "*de facto*" as a managed floating and in such cases the argument of "fear of floating" would not apply.

(10) Calvo and Reinhart (2002) estimate the probability of the percent changes in the exchange rates, foreign exchange reserves and also in interest rates in countries with regimes within the third group of the pre-1999 IMF classification, i.e., managed floating and independently floating, against a benchmark of "unsuspicious" committed to floating countries: United States, Germany and Japan. The results confirm that many of the stated floats of the post-1980s turned out to be "*de facto*" much closer to pegged exchange rate regimes, since they exhibited a high volatility in foreign reserves (an indication of sizable stabilizing intervention) and low variability of the nominal exchange rate. Finally, Calvo and Reinhart (2002) note that countries that end up changing their interest rates the most are the ones that would be expected to move them the least, since they are regarded as following a floating or managed floating exchange rate regime. According to the authors, this high volatility in nominal and real interest rates suggests that countries do not only rely on foreign exchange market intervention to limit exchange rate fluctuations but also use interest rate policy.

(11) This is the "original sin": borrowers simply cannot borrow in domestic currency, especially long-term debt, because no lender at home or abroad is willing to extend credit in domestic currency.

4. EMPIRICAL RESULTS REGARDING EXCHANGE RATE REGIMES

4.1. Determinants of the choice of the exchange rate regime

Most of the empirical work regarding the determinants of the exchange rate regime choice concentrates on a particular aspect and a specific group of countries. Special attention has been paid to emerging market economies, in particular within the Mercosur and Asia, and the transition economies[12]. As to topics, the question of partial and full dollarization (the latter mostly in comparison to currency boards) has often been the object of empirical research[13]. However, recently, Levy Yeyati et al. (2002c) and Poirson (2001) have followed a completely new approach, employing models comprising a multiplicity of hypotheses as well as a wider range of countries.

Using their own regime classification, Levy-Yeyati et al. (2002c) test five main approaches concerning the selection of exchange rate regimes. These comprise the OCA theory; real shocks versus nominal shocks tradeoff; the political understanding that fixed exchange rates are a helpful tool for governments with poor nominal and institutional credibility; the impossible trinity view; and the implications of balance sheet effects on the costs of exchange rate variability in financially dollarized economies. Their results confirm that all these approaches, from the traditional to the more recent contributions, are empirically relevant for the choice of regime. Moreover, the fittingness of the underlying theories depends on the countries' characteristics, meaning that there is a difference between industrial and non industrial countries. In this sense, perceiving the role played by the countries' specific factors becomes fundamental before recommending the adoption of a particular exchange rate regime. In fact as they summarized "whatever the ultimate relevance of exchange rate regimes on economic performance is, ignoring or not fully understanding the role played by these variables and relying on fix-all recommendations may induce ill advised policies".

Poirson (2001), using the post-1999 IMF classification of regimes (see appendix), resort to a large number of explanatory variables to assess three different theoretical criteria considered to be behind the choice of regimes: the OCA theory, political economy issues and the "fear of floating" view[14]. The results confirm that recently highlighted criteria, such as political uncertainty, dollarization and exchange rate risk exposure weigh significantly on exchange rate decisions. For the traditional arguments, criteria like economic size, inflation, capital mobility, product diversification, adequacy of foreign reserves and external vulnerability all matter for the choice of exchange rate regimes; factors such as geographic trade concentration and economic development level, do not appear relevant to the choice of the exchange rate regime, or have only a small effect as in the case of trade openness. In the case of capital mobility, the findings confirm the view that increased financial integration tends to promote more flexible exchange rate regimes. The results are consistent with the "fear of floating" view, in the sense

(12) Given the accession of the new Member States to the European Union in May 2004, the IMF decided to drop the category of "transition economies" in the World Economic Outlook issue of April 2004. Formerly this group consisted of Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovak Republic, Slovenia and also Albania, Bosnia Herzegovina, Bulgaria, Croatia, former Yugoslav Republic of Macedonia, Romania, Serbia and Montenegro and the Commonwealth of Independent States and Mongolia.

(13) See for instance Berg and Borensztein (2000a, 2000b) or Calvo and Reinhart (1999, 2000). Winkler *et al*. (2004) focus on the sustained cases of euroization/dollarisation and also on those in which euroization/dollarisation was abandoned. In Domac et al. (2001) empirical findings suggest that transition economies that are more open to trade, that have lower budget deficits and that have made more progress in private sector entry and internal markets tend to adopt stricter exchange rate regimes. Berg and Borensztein (2000a, 2000b) or Calvo and Reinhart (1999b, 2000) indicate that countries highly integrated with the United States (or other country whose currency is to be adopted) or already highly dollarized "*de facto*" are most likely to find dollarization attractive. According to Bulír (2004) opening financial markets favours exchange rate flexibility by increasing the viability of a floating regime, as well as making it more difficult to maintain a peg.

(14) An akin Levy-Yeyati and Sturzenegger (2002a) approach is followed when calculating an indicator of the exchange rate regime flexibility based on observed volatility of exchange rate and reserves for 164 countries in 1998. The index is the ratio of the average absolute value of monthly nominal exchange rate depreciation to the average absolute value of the monthly change in reserves (normalized by the monetary base in the previous month). The results of this index are then compared with the new IMF classification of exchange rate regimes in January 1999 and used to evaluate the determinants of regimes.

that a high exchange rate risk exposure (measured by the existence of unhedged foreign currency liabilities) tends to be associated with less flexible exchange rate regimes. Also, countries with a high degree of partial dollarization (understood as currency substitution) are more likely to choose a more rigid exchange rate regime. Finally, both political uncertainty and a low level of foreign reserves appear to favour the selection of more flexible exchange rate regimes.

4.2. Exchange rate regimes and macroeconomic performance

In contrast to the large number of theoretical and conceptual discussions, few (and much less successful) studies have empirically investigated the links between macroeconomic performance and exchange rate regimes. One of the reasons for this incapability of data to provide a systematic analysis stems from the problems posed by the classification of the exchange regimes, although this might be too simplistic. Below we present some of the most conclusive works in this area. All studies are similarly comprehensive as to country coverage and period length.

Gosh et al. (1997) and Gosh *et al*. (2003) examine the links between exchange rate regimes, inflation and output growth[15]. The authors use the IMF "*de jure*" classification but combine it with a classification based on the real exchange rate behaviour so to differentiate between official and actual policies. The results are drawn using the broad three-way classification of regimes (pegged, intermediate and floating exchange rate regimes), as well as a more detailed one. The authors analyse inflation (measured by the yearly average inflation rate) and growth performance (measured by real GDP per capita growth), and also inflation and output volatility. Additional control variables such as broad money growth, short term nominal interest rates, employment and investment to GDP ratio, dollar imports and exports and the terms of trade were included. To control regime choice endogeneity they rely on a set of proxies for central bank independence, namely the turnover rate of the central bank governor. Empirically, the results are conclusive as to inflation (both in performance and volatility), while for GDP conclusions can only be taken in terms of volatility and not in terms of the growth rate. Inflation is both lower and more stable under pegged regimes than for the intermediate and floating regimes. The anti-inflationary benefits of pegging the exchange rate arise both from a slower money supply growth (that is the disciplinary effect) and a credibility effect. There are, however, two exceptions: in countries with very low inflation rates (generally high income countries) where credibility is gained from other mechanisms such as the absence of capital controls, and in countries frequently changing their parities, where credibility is low, it seems the choice of the nominal exchange rate regime seems to have only a small marginal effect. Evidence also seems to point to higher real GDP growth volatility and real GDP volatility under pegged exchange rate regimes than under intermediate or floating regimes, particularly in the case of higher-income countries (where nominal rigidities are likely to be more prevalent). Finally, regarding economic growth performance findings are not straightforward. In fact, per capita growth rates do not vary much across exchange rate regimes, although there is some evidence that intermediate regimes perform better than pegged regimes and floating regimes. All in all, the authors conclude by saying "perhaps the best one can say is that the growth performance of pegged exchange rate regimes is not worse than that of floating regimes". In a specific study on currency boards, Gosh *et al*. (2000) find out that in general, currency boards seem to exhibit better growth performance than other pegged regimes, but there is little evidence that this could be attributed to the exchange rate regime alone. Also, as expected, currency boards outperform other pegged regimes in terms of inflation (both in volatility and performance).

Domaç *et al*. (2001) findings on transition economies over the 1991-98 period are in line with Gosh et al. (1997) results, i.e., the exchange rate regime does make a difference for inflation performance, although it is not possible to take any con-

(15) The first study applies to 136 countries over the 1960-1990 period, while the second covers 165 countries over the 1970-1999 period.

(16) The transition economies in Domaç *et al*. (2001) correspond more or less to the group of "transition economies" defined in World Economic outlook prior to the April 2004 issue.

clusions as to which particular regime is superior, in terms of growth performance[16]. Even so, the results suggest that policy variables as well as other variables influencing economic activity do have different effects on economic growth depending on the exchange rate regime.

Levy-Yeyati and Sturzenegger (2001, 2002b) using a "*de facto*" classification of exchange rate regimes that reflects actual policies and distinguishing between long and short pegs (where a peg is defined as long if lasts for five or more years and as short if lasting less than five years), found a robust association between fixed exchange regimes and lower inflation rates, but only in the case of long pegs (where the regime has been in place for a period long enough to earn its credibility)[17]. In addition, they found that hard peg regimes deliver better inflation results than other types of pegs. In terms of economic growth, this study concludes that the exchange regime is only relevant for non industrial countries[18]. For these countries, floating exchange rate regimes display significantly higher growth rates than hard peg regimes. Moreover, floating exchange rate regimes also outperform short pegs. In fact, short pegs yield slower economic growth without providing significant gains in terms of inflation. Finally, compared to "*de facto*" floating exchange rate regimes, "*de facto*" pegs that discard the legal commitment to a fixed exchange rate benefit from higher growth performance (which could provide a justification for what the authors labelled as "fear of pegging").

Finally, Rogoff *et al*. (2003) using the classification proposed in Reinhart and Rogoff (2004) examine the performance of exchange rate regimes in terms of inflation and business cycles[19]. Results indicate that in developing countries, where there is low exposure to international capital movements, pegs and intermediate flexibility arrangements seem to be superior in terms of policy credibility and thus more suitable to achieve lower inflation. Additionally, it appears that this is accomplished with little cost in terms of growth, volatility, or more frequent crises. On the other hand, for emerging market countries where the exposure to international capital flows is higher, rigidity of regimes does not appear to deliver obvious gains in terms of lower inflation or higher growth[20]. In developed economies, free floats record faster growth than other regimes without incurring higher inflation. Based on these results the authors draw two main conclusions. First, the value of exchange rate flexibility is found to increase with financial maturity[21]. Second, the performance of any exchange rate regime can be enhanced with the consistent macroeconomic management.

To sum up, the abovementioned studies suggest that there is no straightforward relation between macroeconomic performance and the ex-

(17) Their classification of regimes, for a data set covering 183 countries that reported to the IMF over the period from 1974-2000, is derived using a cluster analysis technique through which homogeneous groups of observations were identified according to the similarity in the behaviour of three reference variables: exchange rate volatility, the volatility of changes in the exchange rate and the volatility of international reserves. The authors end up with four different groups comprising fixed exchange rate regimes (associated with changes in international reserves aimed at reducing the volatility in the nominal exchange rate), flexible exchange rate regimes (characterized by substantial volatility in nominal exchange rates with relatively stable reserves), crawling pegs (the case where changes in the nominal exchange rate occur with stable increments, i.e., a low volatility in the rate of changes of the exchange rate, together with active intervention in the foreign exchange reserves) and lastly, a dirty float (associated to the case where volatility is considerably high across all variables, with intervention only partially smoothing exchange rate fluctuations).

(18) The 22 industrial countries defined in Levy-Yeyati and Sturzenegger (2001, 2002b) are included in Table II A of the appendix. Non-industrial countries with some exceptions refer to Tables II B and C.

(19) The classification is more expanded (than the IMF's) and incorporates information on dual/parallel market exchange rates. This is important because by failing to look at market determined exchange rates, one often gets a false picture of the underlying monetary policy and the ability of the economy to adjust imbalances. Moreover, it separates the episodes of severe macroeconomic instability, identifying cases of "freely falling" and "hyperfloats": the first, equivalent to the independently floating category in the IMF terminology is applied for countries whose twelve month rate of inflation is above 40 per cent and accounts for episodes when, almost always due to high inflation, large downward shifts in the exchange rate occur on a routine basis for extended periods of time; the second, a special subcategory of "freely falling" accounts for episodes when inflation is over 50 per cent per month. This is also important because when countries experience situations of macroeconomic instability they often have very high inflation rates and this can be reflected in high and frequent exchange rate depreciations. Hence, not excluding the "freely falling" episodes may lead to distortions in any fixed versus flexible exchange rate regime comparisons.

(20) It also appears that more rigid systems were associated with more frequent banking and, especially, costly "twin" crises that included both financial sector and balance-of-payments turbulence.

change rate regime. While, in may cases, pegged exchange rate regimes appear to be associated with better inflation results, it is not possible to establish a clear link between economic growth and the exchange rate regime.

5. CONCLUSION

In the aftermath of the Asian and Latin American crises there was a strong belief that only fixed or floating exchange rate regimes would be appropriate for emerging market countries. Furthermore, it seemed that floating exchange rates would be preferable to hard peg exchange rate regimes, since the latter were seen as too constraining for most emerging market countries. Later on, these views have "softened" somehow, following the recognition that intermediate exchange rate regimes are viable and can be useful under particular circumstances, and also the observation that sometimes countries appear to "fear floating".

In the recent literature, the theoretical criteria presiding the choice of exchange rate regimes have gone beyond those emphasised in the "Optimum Currency Areas" theory, or those related with the nature of shocks affecting the economy. Recent contributions comprise political economy considerations and the "fear of floating" approach. Political economy theories show that politically unstable countries are more likely to choose a flexible exchange rate regime because they lack the political support and ability for taking the necessary measures to defend a peg. The "fear of floating" approach argues that countries facing a high exchange rate risk exposure due to a highly dollarized domestic financial system have an incentive to "*de facto*" peg their currencies, even if they officially have a floating exchange rate regime. Empirical studies suggest that both the more traditional arguments and the more recent criteria, such as those that put emphasis on the influence of political factors, are empirically relevant for the choice of the exchange rate regime.

The empirical literature has failed to establish a clear link between macroeconomic performance and the exchange rate regimes. This should not be surprising. Indeed, the exchange rate regime is part of a country's policy package and thus its performance and functioning crucially depend on the circumstances of the particular country in a particular moment. In other words, similar macroeconomic results can be achieved following completely different policy frameworks, within which the exchange rate regime is only one element. All exchange rate regimes are potential options provided compatibility with a wider policy framework is ensured. So, it seems that there are no clear-cut recommendations, nor any "straight jacket" solutions regarding the choice of a particular exchange rate regime.

(21) The advantage may reflect the fact that nominal rigidities are more pronounced as economies mature, giving an important role for flexible exchange rates in reallocating resources following real shocks. Moreover they add that with financial maturity, widespread availability of debt denominated in domestic currency and hedging instruments reduces the adverse consequences from currency mismatches that give rise to "fear of floating".

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APPENDIX

The International Monetary Fund classification

The official IMF classification of exchange rate regimes is a milestone in the literature regarding exchange rate regimes. This classification was firstly introduced in 1975, when following the collapse of the Bretton Woods system in 1973, member countries adopting the second amendment of the IMF's Articles of Agreement, were formally given freedom to choose their own form of exchange rate arrangements while accepting that their exchange rate and macroeconomic policies would foster balance of payments adjustments. The IMF would then keep countries' exchange rate policies under scrutiny and, on the other hand, countries were expected to provide the IMF with the information necessary for such surveillance. Countries were obliged to notify the IMF, within 30 days of becoming a member, of the adopted exchange rate arrangement and thereafter whenever there were changes. Based on these notifications and according to the degree of flexibility of the arrangements, the IMF drew the exchange rate classification scheme. This official or "*de jure*" classification comprised three major categories: pegged exchange rate arrangements, limited flexibility and more flexible arrangements[1]. The classification remained broadly unchanged between 1983 and 1998. However, in the context of the debate on the appropriateness of the so called bipolar choices vis-à-vis intermediate regimes it became apparent that several countries were following regimes that were completely different from the ones formally announced, which in turn reduced the transparency of members' policy actions, and complicated IMF surveillance over their exchange rate policies. Against this background and following an exhaustive examination of the "*de facto*" country practices for the period between 1994 and 1997, the IMF decided to alter its official exchange rate classification scheme in 1999[2].

This "*de facto*" classification has been official since January 1999 and includes eight categories (see, IMF (1999) and IMF (2003)). The system ranks exchange rate regimes on the basis of the degree of flexibility of the arrangement or formal or informal commitment to a given exchange rate path. The arrangements span from the more rigid regimes or hard pegs, to the more flexible or floating regimes, while the remaining categories are called soft pegs[3]. In addition to the exchange rate regimes, countries are also classified according to the monetary policy framework followed. This provides greater transparency in the classification scheme and illustrates that different types of exchange rate regimes are compatible with similar monetary policy frameworks. For the monetary policy framework the IMF distinguishes five alternatives: exchange rate anchor, monetary aggregate anchor, inflation targeting framework, IMF supported or other monetary programme and other[4]. The IMF also provides additional specific information, namely when the regime operating "*de facto*" in the country is different from its "*de jure*" regime or when the country maintains an exchange arrangement involving more than one market, or has adopted multiple nominal anchors in conducting

(1) The first group included regimes where the exchange rate was fixed against either a single currency, usually a major currency as the US dollar and the French franc, or a currency composite, described as a weighted composite from the currencies of major trading or financial partners. The second group referred to regimes where the exchange rate was allowed to move within certain bands vis-à-vis a single currency or within a cooperative arrangement (specifically applied to countries in the Exchange Rate Mechanism (ERM) of the European Monetary System (EMS)). The third group included both managed floating and independently floating exchange rate regimes, depending on whether there was limited or full market determination of the exchange rate (see IMF (1999)).

(2) In particular, the IMF (1999) analysed changes in the exchange rate arrangements that affected the official classification and other currency adjustments, namely devaluations in exchange rates, changes in bands, the adoption of new currencies and multiple currency practices.

(3) Hard pegs comprise exchange arrangements with no separate legal tender and currency board arrangements. Soft pegs include other conventional fixed peg arrangements, pegged exchange rates within horizontal bands, crawling pegs, exchange rate within crawling bands and also tightly managed floats (a particular case of the managed floating regimes). Floating regimes consist of other managed floating with no pre-determined path for the exchange rate (excluding tightly managed floating) and independently floating.

monetary policy. Hence, the new "de facto" IMF classification combines available information on the exchange rate and monetary policy framework and on the authorities' formal and informal policy intentions with data on actual exchange rate and reserves movements to reach a judgment about the actual exchange rate regime.

The evolution of exchange rate regimes in the last decade, 1990-2001, under the IMF "*de facto*" classification shows that there has been a trend away from soft pegs towards floating regimes, and to a lesser extent, hard pegs (Table I). This trend might give some support to the "bipolar view" idea that intermediate regimes will eventually disappear. Indeed, the share of soft pegs decreased from 64 per cent in 1990 to 30 per cent in 2001, which corresponds to increases in the floating regimes from 20 to 44 per cent and from 16 to 26 per cent in the hard pegs(5). Also, the new information regarding the monetary policy framework indicates that as countries move towards greater exchange rate flexibility they tend to adopt additional anchors to ensure price stability(6). The supplementary information also suggests that excluding the euro area countries, all other countries with pegged exchange rate regimes use the exchange rate as nominal anchor in the monetary policy framework. Finally, "*de facto*" exchange rate classification indicates that the shift away from intermediate regimes has been more pronounced in countries that have already gained access to capital markets, i.e. developed and emerging market countries, and less evident in the other IMF members.

The classification of the exchange rate regime for 187 countries covered in the 2003 edition of the Annual Report on Exchange Arrangements and Exchange Restrictions is provided in Table II where countries are listed in three groups: advanced economies, emerging market economies and all other economies.

(4) The IMF (2003) describes these IMF-supported or other monetary programme as involving the implementation of monetary and exchange rate policy within a framework that establishes floors for international reserves and ceilings for net domestic assets of central bank. United States, Switzerland and Japan or the euro area countries are examples of countries included in "Other" category.

(5) In the case of hard pegs this increase is to a large extent explained by the creation of the euro area.

(6) For a description of the issues and the recent experience in inflation targeting emerging market economies under flexible exchange rates see Ho and McCauley (2003).

Table I

EXCHANGE RATE ARRANGEMENTS

Percent

	1990	1998	2001
"*De Facto*" classification			
Hard pegs	16	18	26
Soft pegs	64	46	30
Floating regimes	20	36	44
Total	100	100	100
"*de jure*"classification[a]			
Pegged regimes[b]	65	45	-
of which: limited flexibility	9	9	-
Floating regimes	35	56	-
of which: managed floating	16	25	-
of which: independently floating	18	31	-
Total	100	100	-

Sources: IMF, World Economic and Financial Surveys (2003).
(a) Not updated since 1998.
(b) Includes arrangements with no separate legal tender, currency boards, conventional fixed pegs and horizontal bands, regimes with limited flexibility within a band and the European Monetary System's (EMS) Exchange Rate Mechanism (ERM).

Table II A

ADVANCED ECONOMIES[a], [b]

Exchange arrangement			
Euro area		Other	
Germany	With no separate legal tender	Australia	Independently floating
Austria	With no separate legal tender	Canada	Independently floating
Belgium	With no separate legal tender	Cyprus+	Pegged exchange rate within horizontal bands
Spain	With no separate legal tender	Denmark	Pegged exchange rate within horizontal bands (ERM II)
France	With no separate legal tender	Hong Kong SAR	Currency board arrangement
Greece	With no separate legal tender	Iceland	Independently floating
Ireland	With no separate legal tender	Japan	Independently floating
Luxembourg	With no separate legal tender	New Zealand	Independently floating
Italy	With no separate legal tender	Norway	Independently floating
Portugal	With no separate legal tender	Singapore	Managed floating
		Sweden	Independently floating
		Switzerland	Independently floating
Netherlands	With no separate legal tender	United Kingdom	Independently floating
Finland	With no separate legal tender	United States	Independently floating

Sources: IMF (World Economic Outlook (2004), Annual Report on Exchange Arrangements and Exchange Restrictions (2003).
(a) Economies listed according to the IMF World Economic Outlook (2004), of which, Canada, France, Germany, Italy, Japan, United Kingdom and the United States correspond to the major advanced economies.
(b) The new Member States to the European Union are marked with a +.

Table II B

EMERGING MARKET ECONOMIES (a)

Exchange arrangement			
Africa		Asia	
South Africa	Independently floating	China	Other conventional fixed peg arrangement
		India	Managed floating
		Indonesia	Managed floating
Morocco	Other conventional fixed peg arrangement	Korea[b]	Independently floating
		Malaysia	Other conventional fixed peg arrangement
		Pakistan	Managed floating
Nigeria	Managed floating	Philippines	Independently floating
		Sri Lanka	Independently floating
		Thailand	Managed floating

Exchange arrangement			
Europe & Middle East (c)		Latin America	
Bulgaria	Currency board arrangement	Argentina	Managed floating
Egypt	Pegged exchange rate in horizontal bands	Brazil	Independently floating
Hungary+	Pegged exchange rate in horizontal bands	Chile	Independently floating
Israel[b]	Exchange rates within crawling bands	Colombia	Independently floating
Jordan	Other conventional fixed peg arrangement	Ecuador	With no separate legal tender
Poland+	Independently floating	Mexico	Independently floating
Czech Republic+	Managed floating	Panama	With no separate legal tender
Russian Federation	Managed floating	Peru	Independently floating
Turkey	Independently floating	Venezuela	Independently floating

Sources: Annual Report on Exchange Arrangements and Exchange Restrictions (2003).

(a) As in Fischer (2001), the criterion used was to choose economies listed in the Morgan Stanley Capital International (MSCI) for "Emerging Markets" and/or JP Morgan Emerging Markets Bond Index (EMBI+) indices.

(b) According to the classification in the IMF World Economic Outlook (2004), Israel and Korea are included in the subgroup "other advanced economies".

(c) The new Member States to the European Union are marked with a +.

Table II C

ALL OTHER ECONOMIES[a]

	Exchange arrangement
Antigua and Barbuda, Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Republic of Congo, Côte d'Ivoire, Dominica, El Salvador, Equatorial Guinea, Gabon, Grenada, Guinea-Bissau, Kiribati, Mali, Marshall Islands, Federal States of Micronesia, Niger, Palau, San Marino, Senegal, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Timor-Leste and Togo.	With no separate legal tender
Bosnia and Herzegovina, Brunei Darussalam, Djibout, Estonia+[b] and Lithuania+[b].	Currency board arrangement
Aruba, Bahamas, Kingdom of Bahrain, Bangladesh, Barbados, Belize, Bhutan, Botswana, Cape Verde, Comoros, Eritrea, Fiji, Guinea, Kuwait, Latvia+, Lebanon, Lesotho, Lybian Arab Jamahiriya, Macedonia, Maldives, Malta+[c], Namibia, Nepal, Netherlands Antilles, Oman, Qatar, Samoa, Saudi Arabia, Seychelles, Sudan, Suriname, Swaziland, Syrian Arab Republic, Turkmenistan, Ukraine, United Arab Emirates, Vanuatu and Zimbabwe.	Other conventional fixed peg arrangement
Tonga.	Pegged exchange rate within horizontal bands
Bolivia, Costa Rica, Nicaragua, Solomon Islands and Tunisia.	Crawling peg
Belarus, Honduras, Romania[c] and Slovenia+[b].	Exchange rates within crawling bands
Afghanistan, Algeria, Angola, Azerbaijan, Burundi, Cambodia, Croatia, Dominican Republic, Ethiopia, Gambia, Ghana, Guatemala, Guyana, Haiti, Iran, Iraq, Jamaica, Kazakhstan, Kenya, Kyrgyz Republic, Lao PDR, Mauritania, Mauritius, Moldova, Mongolia, Myanmar, Paraguay, Rwanda, Serbia and Montenegro[d], São Tomé and Príncipe, Slovak Republic+, Tajikistan, Trinidad and Tobago, Uzbequistan, Vietnam and Zambia.	Managed floating
Albania, Armenia, Democratic Republic of Congo, Georgia, Liberia, Madagascar, Malawi, Mozambique, Papua New Guinea, Sierra Leone, Somalia, Tanzania, Uganda, Uruguay, and Republic of Yemen.	Independently floating

Source: IMF Annual Report on Exchange Arrangements and Exchange Restrictions (2003).

(a) The new Member States of the European Union are marked with a +.

(b) The currencies of these countries, the Estonian kroon, the Lithuanian litas and the Slovenian tolar, participate in the Exchange Rate Mechanism II (ERM II) since June 2004.

(c) Malta pegs to a basket of currencies with heavy weight on the euro. Romania operates a "*de facto*" regime different from the "*de jure*" regime.

(d) The Federal Reserve of Yoguslavia was renamed Serbia and Montenegro on February 4, 2003.