Classifying Exchange Rate Regimes: Deeds vs. Words[1]

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Abstract

Most of the empirical literature on exchange rate regimes uses the IMF *de jure* classification based on the regime announced by the governments, despite the recognized inconsistencies between reported and actual policies in many cases. To address this problem, we construct a *de facto* classification based on data on exchange rates and international reserves from all IMF-reporting countries over the period 1974-2000, which we believe provides a meaningful alternative for future empirical work on the topic. The classification sheds new light on several stylized facts previously reported in the literature. In particular, we find that the *de facto* pegs have remained stable throughout the last decade, although an increasing number of them shy away from an explicit commitment to a fixed regime, a phenomenon we call "fear of pegging." We confirm the hollowing out hypothesis and show that, as expected, it does not apply to countries with limited access to capital markets. We also find that pure floats are associated with only relatively minor nominal exchange rate volatility and that the recent increase in the number of *de jure* floats goes hand in hand with an increase in the number of *de facto* dirty floats ("fear of floating").

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1. Introduction

The analysis of the implications of alternative exchange rate regimes is arguably one of the most important questions in international economics. However, our knowledge of this issue from a theoretical point of view, which comprises an extensive literature starting with Mundell's (1961) theory of optimal currency areas, contrasts with the relatively weak empirical findings relating exchange rate regimes with macroeconomic performance. One potential explanation for this weakness relates to the way in which countries are grouped according to their exchange rate arrangements.

Most of the empirical discussion on exchange rate regimes has used the *de jure* (legal) regime as compiled by the IMF, which is based on the regime the country declares to be running.[3] However, many countries that *in theory* have a flexible rate intervene in exchange markets so pervasively that *in practice* very little difference exists (in terms of observable performance) with countries that have explicit fixed exchange rate regimes. Conversely, periodic devaluations of pegs in inflation-prone countries are the result of the implementation of monetary policies that are inconsistent with fixed exchange rates and that make the effective regime resemble a flexible arrangement.[4] Moreover, countries that appear to behave according to the declared regime during tranquil times may be tempted to change their course of action once the regime is under stress. Thus, a very different picture of exchange rate regime choices may appear once the international context becomes more volatile.[5]

In this paper, we address these problems by proposing a new *de facto* classification of exchange rate regimes that reflects actual rather than announced policies, which we believe provides an alternative as well as a complement to the standard *de jure* approach.[6] More precisely, we define exchange rate regimes according to the behavior of three classification variables: changes in the nominal exchange rate, the volatility of these changes, and the volatility of international reserves. Underlying the selection of these variables is a textbook definition of exchange rate regimes, where fixed exchange rate regimes are associated with changes in international reserves aimed at reducing the volatility in the nominal exchange rate, and flexible regimes are characterized by substantial volatility in nominal rates with relatively stable reserves. Thus, the combined behavior of these three classification variables

[3] See the IMF's *Exchange Arrangements and Exchange Restrictions*. An example of the IMF *de jure* classification can be found in any issue of the *International Financial Statistics*.

[4] As Frankel (1999) points out: *"Out of 185 economies, the IMF classifies 47 as independently floating and 45 as following rigid pegs... Most of those classified as fixed have in fact had realignments within the last ten years.... Similarly, most of those listed as floating in fact intervene in the foreign exchange market frequently."*

[5] Indeed, the relatively new literature on the impact of currency unions on economic performance (Frankel and Rose, 2000 and Rose, 2000), where exchange rate misclassifications are virtually nil, has tended to deliver stronger results.

[6] Ghosh *et al.* (1997) move in this direction when they do not consider as "fixers" countries that experienced substantial adjustments of their exchange rates. Frieden *et al*. (2001) also modify the standard IMF classification to account for frequent adjusters and for different types of crawls for a group of selected countries. The distinction between *de jure* and *de facto* regimes has been as of late recognized by the IMF: The exchange rate regime grouping reported in the IFS in recent years tries corrects in an ad-hoc manner for some obvious misclassifications.

should be sufficient to determine the regime to which each country should be assigned at any point in time.

To construct the classification we use a cluster analysis methodology that, once the number of exchange rate regimes to be identified from the data is defined, groups the cases according to similarity in the behavior of the three variables of reference. For example, the cluster with high volatility of reserves and low volatility in the nominal exchange rate identifies the group of fixers. Conversely, the cluster with low volatility in international reserves and substantial volatility in the nominal exchange rate corresponds to countries with flexible arrangements. The procedure allows us to classify most country-years since 1974. In addition, we extend the classification to include cases for which data on some of the classification variables are not available but may still be classified in an uncontroversial manner, either because the country did not have a separate legal tender (e.g., Panama) or because the *de jure* regime was readily verifiable (e.g., Hong Kong).

To illustrate the differences between the *de jure* and *de facto* classifications, we address three stylized facts related to exchange rate regimes recently highlighted by the literature. First, there is consensus that there has been an increase in the use of floats throughout the post-Bretton Woods period. Second, that intermediate regimes (including conventional pegs) are inherently vulnerable to capital flows and thus bound to disappear in a world with increasingly integrated capital markets, a fact dubbed by Eichengreen (1994) as "hollowing-out hypothesis" and by Fischer (2001) as the "bipolar view".[7] Third, that many countries that claim to float do not allow their nominal exchange rate to move freely, a pattern that Calvo and Reinhart (2000) have referred to as "fear of floating."

All of these three facts are in principle partially supported by the evidence. A glance at exchange rate regimes as classified by the IMF shows a substantial decline in the number of fixers relative to floats. In fact, in a study on exchange rate regimes for developing countries, IMF (1997) reports that the number of pegs dropped from 86 in 1976 to 45 in 1996, while flexible exchange rate arrangements increased from 11 to 52 over the same period.[8] Eichengreen's (1994) hollowing-out hypothesis seemed to be confirmed by the collapse of pegs in South East Asia and Latin America, the swift move to monetary integration in Europe in the aftermath of the EMS crisis of 1992, and the recent adoption of the U.S. dollar as legal tender in Ecuador and El Salvador. Finally, Calvo and Reinhart (2000) show that exchange rate and foreign reserves volatility for many alleged floats differ significantly (indicating sizable stabilizing intervention) from that corresponding to undisputed floats.[9]

When we revisit the aforementioned "stylized facts" in light of our *de facto* classification, we find somewhat different results. First, while there has been a decline in the number of fixers in the first two decades after the demise of Bretton Woods, the use of fixed rates appears to have been relatively stable during the 90s, in contrast with what can be inferred from the IMF classification. In fact, this comparison reveals that during the 90s many countries that in

[7] See also, Summers (2000) and Obstfeld and Rogoff (1995).
[8] This evidence is further discussed in Edwards and Savastano (1999) and Reinhart (2000).
[9] This pattern has been frequently used by advocates of hard pegs and unilateral dollarization. See for example, Calvo (1999, 2000a, 2000b) and Hausmann *et al.* (2000).

practice behave as fixers declare a more flexible regime, possibly in an attempt to reduce the exposure to speculative attacks associated with explicit commitments. Paraphrasing Calvo and Reinhart, we label this phenomenon as "fear of pegging."

Second, we find evidence supporting the claim that intermediate regimes such as conventional and crawling pegs have become increasingly uncommon. However, in contrast to the *de jure* approach, the *de facto* classification reveals that the hollowing-out hypothesis does not hold for non-emerging non-industrial countries, confirming that exposure to strong capital flows may be necessary for the pattern to develop, in line with the bipolar view argument.

Third, we find that *de facto* floats are associated with only small exchange rate variability and that among the countries that claim to float, a large number intervene recurrently to stabilize their exchange rates, providing support for Calvo and Reinhart´s "fear of floating" hypothesis. Interestingly, contrary to what is usually assumed, fear of floating appears to be a relatively common phenomenon dating back to the early 70s.

The paper proceeds as follows. In section 2, we discuss in detail the methodology and present a first glance at the new classification. In section 3, we compare it with the standard *de jure* classification obtained from the IMF, and revisit the main stylized facts discussed above. Section 4 discusses some potential caveats and concludes. In Appendix 2 we report the classification of exchange rate regimes.

2. Methodology

Cluster analysis

Cluster analysis is a technique used to identify homogeneous groups of observations.[10] While the standard discriminant analysis starts from a known classification of the sample to derive a classification rule to be applied to out-of-sample cases, cluster analysis works in the opposite direction, constructing groups according to similarities (distances) between the sample elements.

Hierarchical Cluster Analysis (HC), typically used for small samples, allows for some discretionality on the part of the researcher in determining the way distances are measured, in the order the sample is introduced and in how the classification itself is realized. In all cases they start from a matrix of distances between pairs of elements (the two closest are grouped in one cluster), but differ in how they estimate distances between clusters *at successive steps*. Thus, in the nearest neighbor method (single linkage) the first two cases combined are those with the smallest distance between them. The distance between the new cluster and other individual cases is then computed as the minimum distance between an individual case and a

[10] The most common examples of the use of this technique come from the areas in which it is most frequently used: numerical taxonomy of animals and plants (biology), distinct pathological groups (medicine), people with similar buying habits (marketing), etc.

case in the cluster. At every step, the distance between two clusters is taken to be the distance between their two closest points. Other variants include the complete linkage (furthest neighbor), the average linkage, or the centroid methods.

Alternatively, in K-means cluster analysis (KMC), based on *nearest centroid sorting* (Anderberg, 1973), a case is assigned to the cluster with the smallest distance between the case and the center of the cluster (centroid). The number of clusters is specified *ex-ante* by the user, and cluster centers are iteratively estimated from the data. This method requires the least intervention from the researcher: just a definition of the numbers of clusters to be generated by the algorithm. Since it is crucial to our work that the resulting classification entails as minimal a manipulation of the classification criteria as possible, we choose KMC as our classification method.[11]

Classification Variables

According to the textbook description, flexible exchange rates are characterized by little intervention in the exchange rate markets together with unlimited volatility of the nominal exchange rate. Conversely, a fixed exchange rate regime occurs when the exchange rate does not move while reserves are allowed to fluctuate. A crawling peg corresponds to the case where changes in the nominal exchange rates occur with stable increments (i.e. low volatility in the rate of change of the exchange rate) while active intervention keeps the exchange rate along that path. Finally, a dirty float should be associated to the case in which volatility is relatively high across all variables, with intervention only partially smoothing exchange rate fluctuations.[12]

With this in mind we chose the volatility of the nominal exchange rate, the volatility of its rate of change and the volatility of international reserves as our three classification variables.

Exchange rate volatility (σ_e), was measured as the average of the absolute monthly percentage changes in the nominal exchange rate during a calendar year.[13] The *volatility of*

[11] We use SPSS 8.0 as our computational device. The algorithm for the K-means classification proceeds as follows: "The first k cases in the data file, where k is the number of clusters requested, are selected as temporary centers. As subsequent cases are processed, a case replaces a center if the smallest distance to a center is greater than the distance between the two closest centers. The center that is closer to the case is replaced. A case also replaces a center if the smallest distance from the case to a center is larger than the smallest distance between the center and all other centers. Again, it replaces the center closest to it" (Norusis, 1993).

[12] Frankel (1999) identifies nine exchange rate regimes: currency union, currency board, "truly fixed" exchange rates, adjustable peg, crawling peg, basket peg, target zone or band , managed float and free float. These nine groups can be broadly mapped into the four categories identified in our work, with the first three groups corresponding to a fix, the next three to a crawling peg, and the last two to a dirty and a pure float. Exchange rate bands may behave either as a crawling peg (when the exchange rate hits one of the bounds), as a float (when it fluctuates within the band) or as a dirty float (in the presence of intramarginal intervention). At any rate, it is interesting to stress that an increase in the number of clusters in our specification did not lead to the appearance of a new and clearly identifiable group, suggesting that, from the point of view of the observed behavior of the data, there is no much information to be gained by going beyond our four-way classification.

[13] Choosing a calendar year as unit of account implies that in years where the exchange rate regime changes, the yearly number will reflect a combination of both regimes. Argentina, for example, implemented a fixed exchange rate in April of 1991. Our yearly data takes into account the strong movements in the nominal

exchange rate changes ($\sigma_{\Delta e}$), was computed as the standard deviation of the monthly percentage changes in the exchange rate.

In order to compute these variables we need to find the appropriate currency of reference for each country. In some cases the answer seemed to pose no problem (for example, we use the U.S. dollar for Mexico or the DM for Italy). But the currency of reference is not clearly identifiable in all cases. For example, for the UK or for Switzerland, the US dollar and the German DM are, apparently, equally good candidates. To resolve these cases we use the following procedure. For countries that report a fixed exchange rate regime we use the legal peg currency. For the rest, we use the currency against which their exchange rate exhibits the lowest volatility.[14] Countries that pegged their currency to a basket, were eliminated from the sample unless the central peg parity or the basket weights were known. The reference currency for each country is presented in Appendix 1.

Reserves are notoriously difficult to measure and there is usually a large difference between changes in reserves and interventions. Thus, our measure of the third classification variable, the *volatility of reserves* (σ_r) requires particular care. To approximate as closely as possible the change in reserves that reflects intervention in the foreign exchange market we subtracted government deposits at the central bank from the central bank's net foreign assets.[15] More specifically, we define net reserves in dollars as:

$$R_t = \frac{ForeignAssets_t - ForeignLiabilities_t - CentralGov.Deposits_t}{e_t},$$

where *e* indicates the price of a dollar in terms of local currency. All Central Bank items are denominated in local currency and the time period for all variables corresponds to the end of period for a specific month. Our measure of monthly intervention in the foreign market r_t, is defined as:

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exchange rate during the first three months of the year and, as a result, the country is classified as a dirty float. Similarly Ecuador, which dollarized in late January 2000 is classified as crawling peg for that year. This improves upon IMF (1997) and Ghosh *et al.* (1997), which use the legal regime as of the end of each year, thus assigning the country to an ex-post regime that may be, to a large extent, endogenous. See Edwards and Savastano (1999).

[14] For this exercise we considered the US dollar, the French franc, the German marc, the British pound, the SDR, the ECU and the Japanese yen. For some small countries the currency of a large neighbor was also considered.

[15] Oil producing countries and countries with important privatization programs are examples of cases where the latter correction matters. Calvo and Reinhart (2000) indicate other reasons (hidden foreign exchange transactions, use of credit lines, derivative transactions, or issuance of debt in foreign currency) that make it difficult to compute the real movement in reserves. To these one could add coordinated intervention by other central banks (though this should be limited to G-3 economies) and the measurement error introduced by the fact that all accounts are transformed to dollar units: If the Central Bank holds a portfolio of assets with several currencies, changes in the parities between the reserve currencies can be mistaken for foreign exchange interventions. We believe this measurement error problem to be minor as most of the reserves are in dollar denominated assets.

$$r_t = \frac{R_t - R_{t-1}}{\frac{MonetaryBase_{t-1}}{e_{t-1}}} = \frac{\Delta R}{\frac{MonetaryBase_{t-1}}{e_{t-1}}}.$$

Our measure of volatility is the average of the absolute monthly change in *r*, i.e. the average of the absolute monthly change in net dollar international reserves relative to the monetary base in the previous month, also in dollars. [16]

We compute a yearly figure for each classification variable for all 183 countries that report to the IMF.[17] The period of analysis is 1974-2000. In all, for this period there are 4604 classifiable country-year data points. Of these 553 are left out as they belong to undisclosed basket pegs (which precludes the computation of a meaningful exchange rate) and 1062 lack data for at least one of the classifying variables. For the remaining 2989 observations we construct our data set, which corresponds to the number of cases in which country-year data for the three reference variables could be computed.

The Exchange Rate Regime Classification

Once the three classification measures are computed for our universe of countries, we use *cluster analysis* as a way of assigning the data to different groups. We consider each cluster as representing a distinct exchange rate regime, independently of the "legal" regime stated by the country that is assigned to this group. Table 1 presents our prior as to how the three classification variables described above map into exchange rate regimes.

Note that observations that display little variability along the three variables cannot be meaningfully assigned to any particular type of regime, and are thus labeled "inconclusives." The wording is not arbitrary: if neither the nominal exchange rate nor reserves move, the exchange rate regime that the country is actually implementing is not obvious from direct comparison with the rest of the sample.[18]

[16] In practice we use line 11 from the IFS for foreign assets, line 16c for foreign liabilities and 16d for central government deposits. Line 14 (or 14a if line 14 was not available) lagged one month is used as a measure of the monetary base. *Contrary* to Calvo and Reinhart (2000) we use the changes relative to the monetary base rather than the percentage change in reserves. We believe this is a better measure, as a given percentage change in reserves in countries with low monetization implies a larger relative intervention in forex markets.

[17] This still excludes some fixed exchange rate countries that are not IMF country members such as Andorra, Liechenstein, Monaco, Nauru, Tuvalu and Vatican City, all of them fixed throughout the post Bretton Woods period (Tuvalu since 1979). See Obstfeld and Rogoff (1995). We also exclude many semi-independent countries, dependencies or territories. On these see Rose (2000). All other countries are included.

[18] Moreover, one may argue that, given the magnitude of the changes involved, the experience of these countries may not tell us much about the specific impact of the exchange rate regime on the behavior of the economy.

Table 1

	σ_e	$\sigma_{\Delta e}$	σ_r
Inconclusive	Low	Low	Low
Flexible	High	High	Low
Dirty Float	High	High	High
Crawling Peg	High	Low	High
Fixed	Low	Low	High

The classification procedure is depicted in the diagram of Figure 1. Because KMC relies on the relative distance between points it is important that measures be comparable in order to obtain a relevant classification along all dimensions. Therefore, we first eliminate the two percent-upper tail of observations for each of the three classification variables, which in practice leave 129 outliers (out of 2989 data points) out of the sample.[19] We then z-normalize the remaining 2860 observations. Next, we use the K-means algorithm to classify the data into the 5 clusters described in Table 1. We call this first pass at the data the 1st round classification.[20] The clusters are shown in Figure 2.

This initial classification assigns a regime to 1062 data points but allocates a high number of countries within the "inconclusive" category (1798 out of 2860 cases). However, while variations in the classification variables within this group may be small relative to the data points clustered in the 1st round, the data still displays enough volatility to identify exchange rate regimes among these observations. In order to unveil these, while maintaining the distinction between high and low variability cases, we reclassify the "inconclusives" using the same methodology used in the 1st round. More precisely, we re-normalize the data for these 1798 observations, and apply the K-means algorithm on the new values, again allowing for five groups. We call the resulting grouping of the "inconclusive" sub-sample the 2nd round classification.[21] The 2nd-round procedure assigns an exchange rate regime to 1100 of the 1798 data points, with only 698 observations left unclassified. Again, the clusters can be seen in Figure 2.

The distinction between first and second round, which mirrors observations with high and low variability, provides an additional refinement in the classification. By introducing this variability dimension, this methodology allows to discriminate, albeit in a crude manner, the

[19] Because these outliers do not present classification problems, we re-classify these observations ex-post, by assigning them to the cluster with the nearest centroid. In the table countries classified according to this criterion are identified by the indicator (3). The 2% threshold was chosen arbitrarily. Alternative values for this threshold delivered virtually identical classifications.

[20] We start with a number of clusters that we believe should describe all exchange rate regimes. We check robustness of our exchange rate regimes prior by increasing the number of clusters beyond the original five. However, we found that by doing this we simply partition an existing cluster adding no richness to the description of the data. In this sense, the methodology helps identify the right number of regimes that can be distinguished in the data.

[21] In the table, the countries that are classified in this second round are denoted by the indicator (2), to keep track of low variability countries within each category.

intensity of the shocks to which the regime is subject, something that qualitative indexes previously used did not allow for. This may turn out to be crucial for empirical work, if, as we suspect, policy responses under different exchange rate regimes, and the impact of the regime on other economic variables, depend on the relative magnitude of the underlying shocks.

Table 2 shows, for each cluster, the central values as well as the upper and lower bounds of the classification variables. Comparing the centroid values, fixed regimes are characterized by relatively low nominal exchange rate volatility (with an average absolute change of 0.20% per month as opposed to 2.31% in the case of floats), and high volatility in reserves (14.68% against 4.59% for floats). The two intermediate groups, on the other hand, exhibit not only substantial intervention in the exchange rate market but also the highest exchange rate volatility. This evidence suggests the following important point: *Pure floats appear to tolerate relatively minor fluctuations in the exchange rate.* Conversely, as a rule, countries with substantial movements in the nominal exchange rate usually intervene actively.

Table 2 also shows that 2nd-round groups present less overlap between fixers and floaters. While the former exhibit an absolute monthly volatility of the nominal exchange rate that ranges from zero to 0.63%, the minimum exchange rate volatility for the latter is 0.72%. Regarding international reserves, floaters display an average absolute change ranging between 0.25% and 6.46% of the monetary base, in contrast with a minimum reserve variability of 5.65% for fixers.

An extended classification

While the methodology proposed successfully assigns an exchange rate regime to most data points in our sample, 698 2nd-round inconclusives remain unclassified. Additionally, our sample includes 1062 country-years for which some of the classification variables were not available and that were thus excluded from the classification procedure. However, the regime for many of these observations (e.g., Panama's unilateral dollarization or Hong-Kong´s currency board) can still be identified in an uncontroversial fashion. To include as many observations as possible, we extend the classification using additional information on specific countries left unclassified by the previous methodology.

Not surprisingly, most of the 698 2nd round inconclusives can be easily characterized as fixed arrangements. In particular, a fixed exchange rate regime was assigned to all data points within this group that satisfied one of these two conditions: i) exhibited zero volatility in the nominal exchange rate, or ii) were identified as fixers by the IMF and had an average volatility in the nominal exchange rate smaller than 0.1% (placing them safely off-limits from the 2nd round floats and dirty floats clusters).[22] As this criterion classified 625 of the 698 cases, we decided that no additional iterations of the cluster analysis methodology were necessary. In the end, only 73 cases (2.4%) out of the original 2989 data points were left unclassified.

[22] The cases identified in the data base through this methodology are identified with a *.

The same criterion was used to identify fixed arrangements among the 1062 country-years excluded from the procedure (including those countries without a separate legal tender),[23] which adds a total of 419 new observations to the database.[24] Extending the classification in this way brings up the question about how to consider countries currently within the Euro zone. As none of these countries have an independent legal tender we choose to classify them as uncontroversial fixes, in line with Fischer (2001). While this entails no regime switch for most countries, it does imply a change for Germany: To the extent that it cannot unilaterally change its parity relative to other members of the Euro zone, Germany moves from float to fix starting in 1999.[25]

In the end, unclassified observations comprise pegs to undisclosed baskets (553), and inconclusive observations and countries with missing data (73 and 643, respectively) that cannot be uncontroversially assigned to a particular regime, which adds to a total of 1269 observations for which we cannot improve on the existing IMF *de jure* classification.

Table 3 shows the three-way distribution of observations into floaters, fixers, and intermediate regimes (the latter merging both crawling peg and dirty floats). The distribution of the IMF classification *for the same sample* is presented for comparison. As can be seen, while fixed exchange rates still represent more than half of the sample, we find, somewhat surprisingly, more *de facto* than *de jure* floaters. [26] [27]

The aggregate grouping masks a larger share of floaters in 1st round observations and a larger number of fixers among 2nd round observations. As the latter correspond to countries that are not subject to substantial volatility in either of the classifying variables, the finding could be interpreted as an indication that, as volatility increases, most countries (are forced to) edge towards more flexible exchange rate arrangements. Conversely, inverting the direction of causality, the result may be interpreted as suggesting that fixed exchange rate regimes are more often associated with greater stability.[28]

[23] A list of the latter can be found in Rose (2000) and several issues of the IFS. Note that countries like China, which are not assigned a *de jure* fixed regime but show very small but positive exchange rate volatility were left unclassified.

[24] These countries are identified in the database by the symbol †.

[25] A priori, the question of assigning an exchange rate regime to an EMU country resembles that of assigning a regime to any of the 50 states of the US. If we agree that European states today should be classified as having a fixed exchange rate, by analogy one should suggest a fixed exchange rate as the natural regime for any individual state in the US. However, this would imply that the US should be classified as having a fixed exchange rate, whereas it is standard to classify the US as a float. This interdependence between size and exchange rate regime remains an interesting question for future research.

[26] Among the 1269 observations not included in our classification, 553 correspond to basket pegs (which the IMF classifies as *de jure* pegs). The rest of the cases are evenly distributed between *de jure* fixed, float and intermediate.

[27] Note that this does not contradict Calvo and Reinhart's (2000) fear of floating argument, since they focus their discussion only on *de jure* floats.

[28] The discussion of this point is beyond the scope of this paper and certainly deserves a careful econometric analysis.

In what follows, we use the extended database to discuss the evolution of exchange rate regimes and revisit its main stylized facts.[29]

An informal test of the theory

An informal way of testing the validity of our classification is to track the regime followed by particular countries over time according to the new classification.

As can be seen, developed economies (e.g. US, Germany through 1998, and Japan) usually associated with flexible exchange rate regimes, are identified as such in our classification. Indeed, the fact that the regime is identified as float in the 1st round indicates that these countries have allowed for a non-negligible degree of volatility in the exchange rate, relative to their degree of intervention. However, conventional wisdom cannot be taken for granted. New Zealand, for example, is classified as a 1st round fix since 1992 in spite of significant long term swings in the nominal exchange rate, reflecting the fact that it has intervened heavily in forex markets to the extent that movements in the relevant variables resemble more closely those likely to be found under a peg. Not surprisingly, the responsiveness of New Zealand's monetary authorities to variations in the nominal exchange rate throughout the 90's is a well-documented fact.[30]

EMS economies show the expected pattern displaying decreasing degrees of exchange rate flexibility vis à vis the DM during the convergence towards EMU. However, while France intervened actively to keep its parity in line with the DM after the EMS crisis of 1992 (thus being classified as a fix), both Italy and Spain allowed for greater exchange rate flexibility in the aftermath of the crisis. An interesting exception within this group is Ireland, which classifies as a fixed exchange rate regime even in 1992 when the Irish pound was substantially devalued. Underscoring this finding is the massive intervention with which the Irish Central Bank defended its currency before the collapse.[31] Denmark, on the other hand, is interesting in that, while having remained outside EMU, has consistently fixed to the DM.

Emerging economies, particularly when under stress, are the ones for which the *de facto* and *de jure* classifications are most likely to differ.[32] According to our classification both Mexico and Chile were floating by 1999. Interestingly, in the case of Chile the classification indicates that is has virtually run a pure float since the early 80's, in spite of a complex system of crawling pegs and exchange rate bands that were finally discontinued in 1999. This is consistent with the perception that the Chilean pegs and bands were managed so that the central parity closely followed market conditions in order to minimize exchange rate

[29] The complete database, presented in Appendix 2, is available from http://www.utdt.edu/~ely or http://www.utdt.edu/~fsturzen.
[30] See Zettelmeyer (2000).
[31] The same argument can be applied to collapsing pegs in emerging economies. A strong defense of the parity may place a country within the fix or intermediate groups even if the currency eventually collapses.
[32] By emerging economies we understand middle income countries with a minimal degree of financial sophistication. We refer to developing countries as all those that are not classified as industrial countries. Industrial and emerging countries are identified in Appendix 2.

intervention.[33] On the other hand, Brazil appears not to have changed its exchange rate regime substantially after the devaluation of January 1999. In fact, intervention in 2000 was so intensive that the country is classified as a fixed. A similar conclusion can be drawn for the case of Korea that, in spite of the strong exchange rate realignment of 1997-1998, had *de facto* fixed by 1999. This contrasts with the case of Thailand, which moved to a *de facto* float in 1999, after sustaining a crawling peg even through the devaluation of 1997.

Finally, small open economies have characteristically fixed their exchange rates to the currencies of their main partner(s), something to be expected given their rather limited range for an independent monetary policy.[34] Belize, Bahamas and Lesotho illustrate this pattern. Cote d'Ivoire, as expected, displays a behavior common to all its partners in the WAEMU (West Africa Economic and Monetary Union) zone. These countries are classified as fixes except in 1994, when the 100% devaluation of the currency against the French Franc places these countries within the group of intermediate regimes.[35]

3. A review of the stylized facts on exchange rate regimes

The prevalence of floats

The first stylized fact mentioned in the introduction points to a steady decline in the number of fixes since the demise of Bretton Woods.[36] This may reflect the fact that increasingly global capital markets may have weakened even the strongest pegs, forcing a steady movement to more flexible arrangements,[37] and is reflected in an increase in the float-to-fix ratio obtained from the IMF regime classification, as shown in Figure 3.[38] According to the IMF classification the number of countries choosing fixed rates falls from 75% in 1974 to less than 50% in 2000.[39] The distribution of exchange rate regimes according to our classification (Figure 4) shows that, although the long term trends are similar, the composition of *de facto* regimes appear somewhat more stable than that of the IMF's. Particularly contrasting is the stability in the use of fixed rates since the early 90´s, a point that challenges the view that increasing capital market mobility has gradually induced the abandonment of fixed arrangements. The difference underscores a significant finding: the number of countries which run a fixed exchange rate regime without explicitly stating that they do, a phenomenon which we call "fear of pegging," has increased remarkably over the last decade.

[33] This view was confirmed in informal communications to the authors by Roberto Zahler, then President of the Central Bank of Chile.
[34] It is interesting to note that most of the pegs to currency baskets with undisclosed weights that had to be excluded from the sample belong to this group.
[35] As noted in the introduction, the methodology interprets (we believe correctly) the realignment as an indication of a monetary policy that is inconsistent with the preservation of the *de jure* peg.
[36] See, for example, IMF (1997), Edwards and Savastano (1999), Broda (2000) and Reinhart (2000).
[37] On this, see Obstfeld and Rogoff (1995).
[38] For the sake of comparison, Figures 3 and 4 merge our two intermediate regimes in a single group and include only the 3335 *de facto* classified observations..
[39] Results are similar when only non industrial countries are included.

The bipolar view

The second stylized fact relates to the disappearance of intermediate regimes, the so-called "hollowing-out" hypothesis or bipolar view. This discussion, however, has been framed in terms slightly different than those used in this paper. The bipolar view highlights the benefits of super-fixed arrangements or "hard pegs" (such as currency boards or unilateral dollarization) as a way of buying the credibility needed to avoid speculative attack on the currency. Accordingly, the distinction it makes between hard and conventional pegs, assimilating the latter with the group of intermediate regimes, becomes essential to the debate.[40] While our classification does not distinguish between hard pegs and conventional pegs, the former are readily verifiable and thus can be easily identified from different sources.[41] Once conventional pegs are separated from hard pegs and added to the intermediate group, our *de facto* classification also reveals a "hollowing-out" pattern during the 90s. Figure 5, similar to those in Fischer (2001), indicates that the phenomenon has been present for developed and emerging economies alike. In fact, intermediate regimes fall to about half during the decade. On the other hand, Figure 6 shows a different pattern for other non-industrial non-emerging economies, indicating that floats are less prevalent among this group and that the movement towards the extremes is almost inexistent in this case. This is consistent with the view that limited access to capital markets has spared these countries the need to move to extreme regimes in order to avoid speculative attacks.

Deeds vs. words: fear of floating and fear of pegging

Table 4 compares our *de facto* classification with the *de jure* classification used by the IMF. As expected, while we find a high degree of coincidence between both classifications (roughly two thirds of the observations are classified identically), there are also a substantial number of mismatches. The number of mismatches remains relatively stable throughout the years, but they are consistently more frequent for countries classified in the first round (58% vs. 32%). This, in turn, suggests that, when subject to relatively mild shocks, countries are more likely to behave as they claim.

Table 4 also provides a first pass at the nature of the discrepancies. We can compute the number of countries which claim to be fixers while showing substantial movement in their exchange rates, and similarly, the number of countries that claim to be floaters but actively intervene in exchange rate markets to limit the volatility of the nominal exchange rate. The latter are particularly interesting as they broadly correspond to what Calvo and Reinhart (2000) refer to as "fear of floating".[42] Figure 6 shows that the number of countries in this category has grown dramatically over the 90s in absolute numbers, increasing hand in hand with the use of floating exchange rate regimes. Table 4 shows, however, that fear of floating, appears to have applied to a relatively large fraction of floats even when going back to the early 70s, indicating that it is not, as sometimes is suggested in the literature, a recent phenomenon.

[40] Some authors consider as one the group of managed and pure floats, something we believe is inconsistent with an appropriate definition of the bipolar view. Accordingly, in the following, we leave managed floats within the intermediate group.
[41] See references in footnote 22.
[42] See also Reinhart (2000).

While our results are similar in nature to those in Calvo and Reinhart (2000), there are three basic differences in our methodology to identify fear of floating. First, we normalize the reserves data by the monetary base to control for the fact that, for countries with different degrees of monetization, a given percentage change in reserves may imply different intervention intensities in foreign exchange markets. Second, by implicitly using exchange rate volatility relative to foreign exchange intervention, our measure avoids the potential ambiguities that may arise from comparing these variables separately. In Reinhart (2000), for example, while exchange rate movement for post-Tequila Mexico resembles that of floating exchange rate regimes, reserve behavior does not, leaving the answer to the question to the discretion of the reader. In contrast, our methodology considers both variables simultaneously, naturally weighting the variability of one variable vis à vis the other to provide a unique characterization that allows us to infer whether the country is exhibiting fear of floating. Third, our metric evaluates the deviations in the classifying variables relative to the "world" norm, rather than to some ad hoc reference cases. As a result, we expect to find a slightly weaker fear of floating evidence than if the behavior of a particular country was compared with that of uncontested floats. Thus, while according to our measure Mexico exhibited fear of floating in 1995 and 1996, it resembled a standard floating regime thereon. Canada, on the other hand, floated throughout most of the period: Despite the fact that its exchange rate volatility was smaller than that of the US dollar against the DM or the yen (which taken in isolation may suggest the presence of fear of floating), it did not intervene in the exchange rate market to smooth out this volatility.

Another aspect revealed by the comparison between *de facto* and *de jure* regimes is an increasing number of countries that, although in practice display a policy that closely resembles a peg, avoid reporting a fixed exchange rate as their official policy. This "fear of pegging" may be related (once again) with the fact that, as capital mobility increases, official pegs are more likely to be targets of speculative attacks that, given the economic (and political) cost of a currency crisis, may discourage governments from overtly assuming a commitment with a predetermined parity. Figure 7 shows how that the proportion of *de facto* pegs that reported either an intermediate or a flexible regime increased from 15% at the beginning of the 80s to about 40% throughout the 90s.

Both fear of floating and fear of pegging qualify the empirical findings based on the standard IMF classification. On the one hand, the former casts doubts on the view that countries tend to move towards more flexible arrangements in a context of increasingly unstable international markets, inasmuch as a growing fraction of those alleged floats regimes are characterized by heavy intervention. On the other hand, the latter strengthens the increasing awareness of speculative attacks, particularly among small open economies. In fact, while many countries still use the exchange rate as a nominal anchor, they tend to shy away from an explicit commitment to avoid unwarranted vulnerability.

4. Discussion and future research

Several researches have acknowledged the inadequacy of the *de jure* classification. As Fischer (2001) concisely states:

"… authorities own descriptions of exchange rate regimes in *Exchange Arrangements and Exchange Restrictions* is patently inaccurate for some countries…"

Aware of this problem, Frieden et al. (2001) and Gosh et al. (1997), to cite two recent examples, have used ad hoc adjustments to the *de jure* classification in their work on exchange rate regimes. We believe that our classification provides an improvement relative to these partial exercises. First, our approach is less arbitrary as our only classification input is the number of clusters to be identified. Second, our classification provides a comprehensive database readily available for future empirical work. Third, the classification provides a very realistic assessment of exchange rate regimes. Finally, it also contains more information than previous classifications by providing a distinction between first and second round which allows to discriminate, albeit in a crude manner, the *intensity* of the shocks to which the regime is subject, something that qualitative indexes previously used did not allow. More in general, the intensity dimension should help avoid a bias towards the irrelevance hypothesis, particularly likely if the effect of the regime on other variables is significant only at high volatility levels.

However, a classification as the one proposed in this paper is bound to have some, arguably minor, caveats. An important question related to our facts-based approach is the role played by variables other than reserves in the evolution of exchange rates. For example, it could be argued that interest rates, rather than outright foreign exchange intervention, has been used in some cases to reduce exchange rate pressure.[43] Several reasons move us to leave interest rates out of the classification process. First, if exchange rate swings are persistent, a positive correlation may be simply reflecting increased devaluation expectations incorporated in the nominal interest rate even if monetary policy is not subordinated to an exchange rate target.

In addition, we believe that the scope for interest rate policy to alter exchange market conditions *without a concomitant movement in reserves* is quite limited, both in duration and strength, as indicated by the lack of success of interest rate defenses against speculative attacks during our sample period. More importantly, whether a positive correlation between interest rates and market pressure should be directly associated with a dirty floating regime is not obvious. While it is true that countries tend to use interest rate policy to stabilize the nominal exchange rate at high frequencies, this can be regarded as just one of the available instruments for the conduct of an active monetary policy. Countries with inflation targeting and significant pass-through coefficients provide a useful illustration of the point.[44] While these questions certainly deserve a more careful look, we could note here that the problem is intimately related with that of the endogeneity of exchange rate regimes: Countries with high pass-through coefficients and an inflation objective are likely to prefer a stable exchange

[43] We are grateful to Ricardo Haussman for bringing up this point to us.

[44] For example, inflation targetters such as Mexico and Canada, which according to our classification have recently behaved as floats, exhibit a positive correlation between the exchange rate and the interest rate that may be entirely motivated by the negative impact of an exchange rate depreciation on the inflation rate.

rate, even though the exchange rate is not the final target. Whether or not we choose to associate this behavior with fixed exchange rate regimes is still under debate.[45] [46]

An additional shortcoming relates to countries that peg to undisclosed baskets: Without a concrete knowledge of the "target" for monetary policy, it becomes difficult to assess whether such target is imposing a constraint on macro policy or not. Thus, whereas we identify these cases (based on a *de jure* criterion), we leave them unclassified. While for these cases the *de jure* information can still be used, our work does not improve upon the existing classification.

The main contribution of the paper is to present an exchange rate regime classification which relies heavily on facts rather than on the legal characteristic of the regime. We believe it may become an important starting point for future empirical work in the area. Although some basic findings already emerged from the simple inspection of the new classification, only further empirical research will reveal its real usefulness. In fact, research on exchange rate regimes has so far revealed a relatively minor impact of the choice of regime on economic performance.[47] We believe that many of these "irrelevance" results may change in light of the *de facto* classification reported here, as some preliminary work using this database already seems to suggest. [48]

[45] An alternative classification could be conceived that assigns regimes according to the (non-observable) targets of the monetary authorities. There, both Canada and (particularly) Mexico would be deemed managed floats, as will be any country that keeps the exchange rate in check to limit inflationary pressures. However, the previous discussion highlights the non trivial problems involved in defining classification variables that accurately capture the latent objective function of the central bank.

[46] A more serious criticism, also applicable to *de jure* classifications, is the potential use of capital control restrictions, dual exchange rates or even financial sector interventions, rather than unsterilized intervention, as mechanisms for controlling the nominal exchange rate. Unfortunately, there are no easy ways of measuring these policies.

[47] See, e.g., Baxter and Stockman (1989), Flood and Rose (1995), and Gosh *et al.* (1997).

[48] A previous version of this classification, covering the period 1990-1998, has already been used in Masson (2000), Broda (2000), Hausmann *et al.* (2000), Domac and Martinez Pería (2000) and Levy Yeyati-Sturzenegger (2000, 2001), among others.

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Appendix 1: Currencies of Reference

To the US dollar

Afghanistan, Algeria, Angola, Antigua and Barbuda (77-), Argentina, Armenia, Aruba, Australia, Azerbaijan, Bahamas, Bahrain, Bangladesh (89), Barbados (75-), Belarus (95-), Belize (77-), Bolivia, Brazil, Brunei, Bulgaria (94-95), Burundi (74-83;92-), Cambodia, Canada, Chile (74-89;99-), China, Colombia, Democratic Republic of Congo, previously Zaire, (74-75;83-), Costa Rica, Djibouti, Dominica (79-), Dominican Republic, Ecuador, Egypt, El Salvador, Ethiopia, The Gambia (86-), Georgia, Germany, Ghana, Grenada (77-), Guatemala, Guinea (86-), Guyana (76-), Haiti, Honduras, Hong Kong, Hungary, India (75-), Indonesia, Iran (74-80, 93-), Iraq, Israel, Jamaica, Japan, Jordan (88-), Kenya (74;87-), Korea, Kyrgyz Republic, Lao PDR, Lebanon, Liberia, Libya (74-86), Lithuania, Malawi (74; 84-), Malaysia, Maldives, Marshall Islands, Mauritania, Mauritius (83-), Mexico, Micronesia, Mongolia, Mozambique, Nepal, Netherlands Antilles, New Zealand, Nicaragua, Nigeria, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, Poland (74-79), Qatar, Romania, Russia, Rwanda (74-82;94-), Sao Tomé and Príncipe, Saudi Arabia, Seychelles (96-), Sierra Leone (83-), Singapore, Solomon Islands, Somalia, South Africa, Sri Lanka, St. Kitts and Nevis (77-), St. Lucia (77-), St. Vincent and the Grenadines (77-), Sudan, Suriname, Syrian Arab Republic, Tajikistan, Tanzania (74; 79-), Thailand, Trinidad and Tobago (76-), Turkey, Turkmenistan, Uganda (74-78; 81-), Ukraine, United Arab Emirates, United Kingdom (74-86; 95-), Uruguay, Venezuela, Yemen, Zambia (74-75; 83-), Zimbabwe.

To the British Pound

Antigua and Barbuda (74-76), Bangladesh (74-78), Barbados (74), Belize (74-76), Dominica (74-78), The Gambia (74-85), Grenada (74-76), Guinea (74-85), Guyana (74-75), India (74), Ireland (74-78), Seychelles (74-78), Sierra Leone (74-77), St. Kitts and Nevis (74-76), St. Lucia (74-76), St. Vincent and the Grenadines (74-76), Trinidad and Tobago (74-75).

To the German Mark

Albania, Austria, Belgium, Bosnia and Herzegovina, Bulgaria (96-), Croatia, Czech Republic, Denmark, Estonia, Finland, France, Greece, Iceland, Ireland (79-), Italy, Macedonia FYR, Moldova, Netherlands, Norway, Poland (80-), Portugal, Slovak Republic, Slovenia, Spain, Sweden Switzerland, United Kingdom (87-94), United States.

To the French Franc

Benin, Burkina Faso, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Republic of Congo, Cote d'Ivoire, Equatorial Guinea, Gabon, Guinea Bissau, Madagascar, Mali, Morocco, Niger, Senegal, Togo, Tunisia.

To the SDR

Burundi (84-91), Democratic Republic of Congo, previously Zaire, (76-82),Iran (81-92), Jordan (74-87), Kazakhstan, Kenya (75-86), Latvia, Libya (87-), Malawi (75-83), Mauritania, Mauritius (74-82), Myanmar, Rwanda (83-93), Seychelles (79-95), Sierra Leone (78-82), Tanzania (75-78), Zambia (76-82).

Other

Bhutan, Indian Rupee
Botswana, South African Rand
Chile, Central band parity as published by the Central Bank of Chile (90-98)
Cyprus, ECU/Euro
Kiribati, Australian Dollar
Lesotho, South African Rand
Luxembourg, Belgium Franc
Malta, Italian Lira/Euro
Namibia, South African Rand
San Marino, Italian Lira/Euro
Swaziland, South African Rand
Tonga, Australian Dollar

Appendix 2: Regimes for all countries

Country	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
AFGHANISTAN, I.S. OF	Fix*	Fix*	Fix*	Fix*	Fix*				Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*				Fix*	Fix*	Fix*	Fix*
ALBANIA																						Float	Float	Interm*	Float	Float	Float [2]
ALGERIA**																					Interm*	Float	Interm* [2]	Interm [2]	Float [2]	Float	Float
ANGOLA																							Interm [3]	Fix [3]	Interm*	Interm [3]	Interm* [3]
ANTIGUA AND BARBUDA	Fix*	Fix*	Fix*	Fix*	Fix*	Fix [2]	Fix [2]	Fix	Fix	Fix	Fix [2]	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix [2]	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †
ARGENTINA**	Fix †	Interm [3]	Interm	Float	Float	Float	Float	Interm	Interm [3]	Interm*	Interm* [3]	Interm [3]	Float	Interm*	Interm*		Interm [3]	Interm	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix †	Fix †	Fix †	Fix [2]	Fix [2]
ARMENIA																					Interm [3]	Interm [2]	Fix	Float	Fix	Fix	Interm [2]
ARUBA														Fix [2]	Fix [2]	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †
AUSTRALIA*											Float	Float	Float	Float	Float	Float	Float	Float [2]	Float	Float	Float	Float	Float [2]	Float	Float	Float	Float
AUSTRIA*								Incon	Fix †	Incon	Fix [2]	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix [2]	Fix †	Fix †	Fix †	Fix †	Fix †	Incon	Incon	Fix*	Fix*
AZERBAIJAN																						Fix	Interm* [2]	Interm* [2]	Fix	Interm [2]	Interm* [2]
BAHAMAS, THE	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix †	Fix †
BAHRAIN	Fix*	Fix	Fix [2]	Fix [2]	Fix	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix †	Fix [2]	Fix †	Fix †	Fix [2]	Fix	Fix [3]	Fix [2]	Fix	Fix	Fix	Fix	Fix [3]	Fix	Fix [2]	Fix [2]	Fix †
BANGLADESH	Fix †	Interm	Float	Interm [2]	Float											Fix †											
BARBADOS	Fix [2]	Fix	Fix [2]	Fix †	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix †	Fix †	Fix †	Fix †	Fix †	Fix [2]	Fix †	Fix †	Fix †	Fix [2]	Fix [2]	Fix [2]	Fix †	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix †
BELARUS																						Float	Float	Interm*	Interm [3]	Float	Interm*
BELGIUM*	Float [2]	Interm* [2]	Interm* [2]	Interm* [2]	Interm* [2]	Interm* [2]	Fix [2]											Incon	Fix [2]	Float [2]	Incon	Incon	Incon	Incon	Incon	Fix*	Fix*
BELIZE				Fix [2]	Fix	Fix	Fix	Fix	Fix [2]	Fix [2]	Fix [2]	Fix †	Fix [2]	Fix †	Fix [2]	Fix [2]	Fix †	Fix [2]	Fix [2]	Fix	Fix †	Fix [2]	Fix [2]	Fix †	Fix †	Fix †	Fix [2]
BENIN	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix	Fix [2]	Fix	Fix	Fix [2]	Fix [2]	Fix [2]	Fix	Fix [2]	Fix [2]	Fix	Fix [2]	Fix †	Fix †	Fix †	Fix †	Interm [3]	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix	Fix [2]
BHUTAN	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix †	Fix [2]	Fix †	Fix	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix †	Fix †
BOLIVIA	Fix †	Fix †	Fix †	Fix [2]	Fix †	Float	Fix [2]	Fix [2]	Interm [3]	Interm	Interm [3]	Interm [3]	Interm*	Fix [3]		Float	Interm [2]	Interm* [2]	Interm* [2]	Fix	Interm* [2]	Fix [2]	Interm* [2]	Interm* [2]	Interm* [2]	Interm* [2]	Fix [2]
BOSNIA																									Fix*	Fix*
BOTSWANA	Fix*	Fix*	Fix*																								
BRAZIL**	Interm [2]	Float	Float	Float	Float	Interm*	Float	Interm*	Interm*	Interm*	Interm*	Fix [3]	Fix [3]	Interm* [3]	Interm* [3]	Interm [3]	Interm [3]	Interm* [3]	Interm* [3]	Interm* [3]	Interm [3]	Float	Interm* [2]	Interm* [2]	Fix [2]	Interm*	Fix
BRUNEI DARUSSALAM											Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*
BULGARIA**																					Interm*	Float [2]	Interm [3]	Interm [3]	Fix [2]	Fix [2]	Fix [2]
BURKINA FASO	Fix †	Fix †	Fix †	Fix [2]	Fix [2]	Fix [2]	Fix †	Fix †	Fix †	Fix [2]	Fix †	Fix [2]	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Interm [3]	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †
BURUNDI	Fix [2]	Fix [2]	Fix	Fix	Fix [2]	Fix	Fix [2]	Fix [2]	Fix †	Fix [2]	Float [2]	Fix †	Float	Interm* [2]	Float	Float	Interm* [2]	Float									
CAMBODIA																						Float	Float [2]	Float	Float	Interm* [2]	Interm* [2]
CAMEROON	Fix †	Fix †	Fix †	Fix [2]	Fix †	Fix †	Fix †	Fix [2]	Fix †	Fix	Fix	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix †	Fix †	Fix †	Fix †	Interm [3]	Fix [2]	Fix	Fix [2]	Fix †	Fix †	Fix [2]
CANADA*	Interm* [2]	Interm* [2]	Float [2]	Float [2]	Float [2]	Float [2]	Float [2]	Interm* [2]	Float [2]	Interm* [2]	Float [2]	Float [2]	Interm* [2]	Float [2]	Float [2]	Interm* [2]	Float [2]	Interm* [2]	Float [2]	Float [2]	Float [2]	Float [2]	Float [2]	Float [2]	Float [2]	Float [2]	Float [2]	Float [2]
CAPE VERDE																											
CENTRAL AFRICAN REP.	Fix [2]	Fix [2]	Fix †	Fix [2]	Fix [2]	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Interm [3]	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †
COLOMBIA**	Float [2]	Interm* [2]	Interm* [2]	Interm* [2]	Interm* [2]	Interm* [2]	Interm* [2]	Interm* [2]	Interm* [2]		Float				Float	Float	Float	Float	Interm* [2]	Interm* [2]	Float	Float	Float	Float	Float	Float	Float
COMOROS					Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix*		Fix [2]	Fix [2]	Fix †	Fix [2]	Fix [2]	Fix [2]
CONGO	Fix [2]	Fix †	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix	Fix	Fix	Fix [2]	Fix	Fix [2]	Fix [2]	Fix [2]	Fix †	Fix [2]	Fix †	Fix [2]	Fix [2]	Interm [3]	Fix †	Fix †	Fix [2]	Fix †	Fix [2]	Fix
COSTA RICA	Float	Fix †	Fix †	Fix †	Fix †	Fix [2]	Fix [2]	Interm [3]				Interm [2]	Interm* [2]	Interm [2]	Float [2]	Interm* [2]	Float	Float	Float	Interm* [2]	Interm* [2]	Interm* [2]	Interm* [2]	Interm* [2]	Interm* [2]	Interm* [2]	Interm* [2]
CÔTE D'IVOIRE**	Fix †	Fix [2]	Fix †	Fix [2]	Fix	Fix †	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix †	Fix †	Fix †	Fix †	Fix [2]	Fix †	Fix †	Fix [2]	Fix [2]	Interm [3]	Fix †	Fix [2]	Fix [2]	Fix †	Fix [2]	Fix [2]
CROATIA																					Interm [2]	Interm* [2]	Interm* [2]	Float	Interm* [2]	Interm [2]	Fix [2]
CYPRUS																	Interm* [2]	Float [2]	Float [2]	Incon	Incon	Interm* [2]	Interm* [2]	Fix [2]	Interm* [2]	Fix [2]	Incon
CZECH REPUBLIC**																						Interm [2]	Interm* [2]	Float	Float	Float	Float [2]
CHAD	Fix [2]	Fix [2]	Fix [2]	Fix †	Fix [2]	Fix †	Fix †	Fix [2]	Fix †	Fix [2]	Fix [2]	Fix †	Fix †	Fix †	Fix [2]	Fix †	Fix [2]	Fix †	Fix [2]	Fix †	Interm [3]	Fix	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix †
CHILE**	Interm [3]	Interm [3]	Interm*			Float	Fix [2]	Fix †	Interm*	Float	Float	Float	Float [2]	Float [2]	Float [2]	Float	Float [2]	Interm* [2]	Float	Float	Float	Float	Float [2]	Float [2]	Float [2]	Float	Float
CHINA,P.R.: MAINLAND**														Fix*	Fix*												
DENMARK*	Fix	Fix	Fix	Interm [2]	Fix	Fix	Fix [2]	Fix	Fix	Fix	Fix	Fix [3]	Fix	Fix	Fix [2]	Fix	Fix [2]	Fix	Fix	Fix	Fix	Fix	Fix	Fix	Fix	Fix	Fix [2]	Fix [2]
DJIBOUTI	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix †	Fix †	Fix †	Fix †	Fix	Fix [2]	Fix [2]	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †
DOMINICA	Fix*	Fix*	Fix*	Fix*	Fix*	Fix [2]	Fix	Fix	Fix	Fix [2]	Fix	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix †	Fix †	Fix †	Fix [2]	Fix †	Fix †	Fix †	Fix †	Fix [2]	Fix †
DOMINICAN REPUBLIC	Fix [2]	Fix †	Fix [2]	Fix †	Fix †	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix †	Fix †	Interm [3]	Fix	Interm*	Interm*	Fix †	Interm*	Float	Interm* [2]	Incon	Float [2]	Float [2]	Float [2]	Float [2]	Float [2]	Interm* [2]	Interm* [2]
ECUADOR**	Fix †	Fix †	Fix [2]	Fix †	Fix †	Fix †	Fix †	Fix †	Float	Interm*	Float	Interm*	Interm*	Float	Interm	Float	Float	Float	Interm*	Interm [2]	Float [2]	Float	Float	Float	Float	Interm	Interm*
EGYPT	Fix †	Fix †	Fix †	Fix †	Fix [2]	Interm	Fix*	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Interm	Interm	Interm	Incon	Incon	Incon	Incon	Incon	Incon	Fix †	Incon	Float [2]
EL SALVADOR	Fix	Fix [2]	Fix [2]	Fix	Fix	Fix	Fix	Fix [2]	Fix †	Fix †	Fix †	Fix †	Interm	Fix [2]	Fix †	Fix †	Interm*	Interm* [2]	Float [2]	Interm* [2]	Incon	Incon	Fix †	Incon	Fix †	Fix †	Fix †
EQUATORIAL GUINEA	Fix*	Fix*	Fix*	Fix*		Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix	Fix	Fix	Fix [3]	Fix	Fix	Fix [3]	Fix [3]	Fix	Interm [3]	Fix [2]	Fix [2]	Fix	Fix	Fix	Fix
ESTONIA																				Fix [2]	Fix †	Fix †	Fix †	Fix [2]	Fix [2]	Fix	Fix [2]
ETHIOPIA	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Interm [3]	Fix †	Float	Float [2]	Incon	Float [2]	Interm [2]	Float [2]	Incon
FIJI																											
FINLAND*																			Fix	Fix	Fix	Fix	Fix	Fix	Fix	Fix*	Fix*
FRANCE*	Float	Interm [2]	Float	Float	Float	Fix [2]	Fix [2]	Interm [2]	Interm [2]	Interm [2]	Fix [2]	Fix [2]	Interm [2]	Interm [2]	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix	Fix	Fix	Interm [2]	Interm* [2]	Incon	Fix [2]	Fix*	Fix*
GABON	Fix [2]	Fix	Fix	Fix	Fix	Fix	Fix	Fix	Fix [2]	Fix [2]	Fix	Fix	Fix	Fix	Fix	Fix	Fix	Fix [2]	Fix [2]	Fix	Interm [3]	Fix	Fix [2]	Fix	Fix	Fix [2]	Fix
GAMBIA	Fix	Fix	Fix [2]	Fix	Fix	Fix [2]	Fix	Fix	Fix [2]	Fix [2]	Fix	Fix	Fix [3]	Fix	Float	Fix	Float	Fix	Fix	Float	Fix	Fix	Fix [2]	Fix	Fix [2]	Fix	Float
GEORGIA																								Interm* [2]	Float	Interm*	Float [2]
GERMANY*	Float	Float	Float [2]	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Fix*	Fix*
GHANA	Fix †	Fix †	Fix †	Fix †	Interm	Fix [2]	Fix †	Fix †	Fix †	Interm [3]	Interm*	Float	Interm*	Interm	Float	Float	Interm [2]	Fix	Float	Float	Float	Fix	Fix	Float	Fix [2]	Fix [3]	Interm*
GREECE**	Float	Float	Float [2]	Float [2]	Float	Float [2]	Float	Interm* [2]	Fix	Float	Float	Float	Interm [2]	Interm [2]	Interm* [2]	Interm [2]	Interm [2]	Interm [2]	Interm [2]	Fix	Fix	Interm [2]	Fix	Fix	Fix	Fix	Fix
GRENADA	Fix [2]	Fix [2]	Fix	Fix †	Fix †	Fix [2]	Fix †	Fix [2]	Fix [2]	Fix †	Fix [2]	Fix †	Fix †	Fix †	Fix †	Fix [2]	Fix †	Fix †	Fix [2]	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix [2]
GUATEMALA	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix [2]	Fix [2]	Fix †	Fix [2]	Fix †	Fix †	Interm [3]	Fix †	Float [2]	Float	Interm*	Float [2]	Float [2]	Float [2]	Float [2]	Interm* [2]	Float	Float	Interm [2]	Float	Interm [2]
GUINEA			Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*							Float [2]	Interm* [2]	Fix [2]	Fix [2]	Interm [2]	Interm [2]	Interm*		
GUINEA-BISSAU																Fix [3]	Fix	Interm*	Interm*	Float	Float	Float	Float	Fix	Fix [2]	Fix [2]	Fix [2]
GUYANA	Fix	Fix	Fix	Fix [2]	Fix	Fix [2]	Fix	Fix	Fix [2]	Fix [2]	Interm*	Fix	Interm* [2]	Interm	Fix †	Interm [3]	Fix [3]	Interm [3]	Fix [2]	Fix	Interm [2]	Fix [2]	Fix	Fix	Float	Interm [2]	Fix [2]
HAITI	Fix †	Fix	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix*						Float	Float	Float	Float [2]	Float
HONDURAS	Fix [2]	Fix [2]	Fix [2]	Fix	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix [2]	Fix	Fix [2]	Fix	Fix	Fix [2]	Interm [3]	Interm* [2]	Float [2]	Float	Fix	Interm [2]	Float	Fix	Interm* [2]	Float [2]	Incon
HONG KONG											Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix	Fix	Fix [2]	Fix [2]
HUNGARY**																											
ICELAND*	Interm*	Interm*	Float	Float	Interm*	Float	Float	Float	Interm*	Interm*	Float	Float	Float														
INDIA**						Float [2]	Float [2]	Float [2]	Interm* [2]	Interm* [2]	Float [2]	Float	Float [2]	Float [2]	Float	Float [2]	Interm* [2]	Float	Incon	Float	Incon	Float	Float	Float [2]	Float [2]	Incon	Interm* [2]

Country	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
INDONESIA**	Fix †	Fix[2]	Fix †	Fix †	Interm*	Float [2]	Fix[2]	Fix[2]	Interm* [2]	Interm*	Interm [2]	Fix[2]	Interm*	Fix[2]	Fix[2]	Fix[2]	Fix	Fix	Fix	Fix[2]	Incon	Interm* [2]	Interm* [2]	Interm*	Interm [3]	Interm*	Interm*
IRAN, I.R. OF	Fix[2]	Interm* [2]	Fix[2]	Fix[2]		Fix*	Incon	Fix[2]	Fix*	Fix †	Fix*	Fix*	Fix*	Fix †	Fix †	Fix †	Fix †	Fix †	Incon	Interm [3]	Incon	Incon	Incon	Incon	Incon	Incon	Float [2]
IRAQ	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*		Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*
IRELAND*	Fix[2]	Fix[2]	Fix	Fix	Fix	Interm [2]	Fix[2]	Fix	Fix	Fix	Fix	Fix	Float	Fix	Fix	Fix	Fix	Fix	Fix	Fix	Fix	Fix	Fix	Fix	Fix	Fix*	Fix*
ISRAEL**	Interm*	Float		Interm*	Float	Float	Float	Float	Float	Interm*	Interm* [3]	Interm*	Interm* [2]	Float	Float [2]	Float						Interm [2]	Float	Interm [2]	Float	Float [2]	Float [2]
ITALY*	Float	Float [2]	Float	Float	Float [2]	Interm [2]	Fix[2]	Float [2]	Interm [2]	Interm* [2]	Interm* [2]	Float [2]	Incon	Interm [2]	Interm* [2]	Interm* [2]	Interm* [2]	Interm* [2]	Float	Float	Fix	Float	Fix	Interm [2]	Fix[2]	Fix*	Fix*
JAMAICA	Fix[2]	Fix	Fix	Fix	Interm*	Fix	Fix	Fix	Fix [3]	Interm [3]	Fix	Fix	Fix	Fix[2]	Fix[2]	Float	Fix	Interm*	Interm*	Float	Interm [2]	Float	Float	Interm* [2]	Interm* [2]	Interm* [2]	Float
JAPAN*	Float	Float [2]	Float [2]	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float
JORDAN**		Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Float	Float	Float [2]	Interm* [2]	Float [2]	Interm* [2]	Interm* [2]	Interm* [2]	Fix †	Fix †	Fix †	Fix †	Fix †
KAZAKHSTAN																				Interm [2]	Float	Interm*	Fix
KENYA	Interm* [2]	Float	Fix[2]	Fix[2]	Fix[2]	Fix[2]	Fix[2]	Float	Float	Float [2]	Interm* [2]	Float	Float [2]							Interm*	Interm*	Float	Fix	Float	Float	Float	Float
KIRIBATI						Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*
KOREA**	Float	Interm* [2]	Fix †	Fix †	Fix †	Fix †	Float	Interm* [2]	Interm* [2]	Fix[2]	Interm* [2]	Interm [2]	Fix[2]	Fix	Interm [2]	Fix[2]	Interm [2]	Fix[2]	Interm* [2]	Interm* [2]	Fix[2]	Interm [2]	Fix	Interm*	Interm*	Fix	Fix
KUWAIT																											
KYRGYZ REPUBLIC																					Float	Float	Interm*	Interm*	Float [2]
LAO PEOPLE'S DEM.REP																					Incon	Float	Incon	Interm*	Interm*	Interm*	Float
LATVIA																							Fix †	Fix †	Fix †	Fix †	Fix †
LEBANON**	Float			Float [2]	Float [2]	Float [2]	Float	Float	Float	Float	Interm*	Interm	Interm [3]	Interm [3]	Fix [3]	Interm*	Interm	Interm*	Interm [3]	Fix [3]	Fix	Fix[2]	Incon	Incon	Incon	Incon	Fix †
LESOTHO	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix	Fix	Fix	Fix	Fix	Fix	Fix	Fix	Fix	Fix	Fix	Fix	Fix [3]	Fix	Fix [3]	Fix	Fix	Fix	Fix	Fix	Fix
LIBERIA	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*				
LIBYA	Fix	Fix[2]	Fix[2]	Fix[2]	Fix[2]	Fix[2]	Fix[2]	Fix[2]	Fix[2]	Fix[2]	Fix †	Fix †	Fix †	Interm* [2]	Fix †	Fix †	Fix †	Fix †	Float [2]	Float [2]	Float	Fix †	Fix[2]	Fix	Float	Float	Float
LITHUANIA																					Interm* [2]	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †
LUXEMBOURG	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix †	Fix[2]	Fix †	Fix †	Fix †	Fix †	Fix*	Fix*	Fix*
MACEDONIA, FYR																					Fix	Interm [2]	Interm* [2]	Float	Fix[2]	Fix[2]	Fix
MADAGASCAR	Fix[2]	Fix[2]	Float [2]	Interm [2]	Fix †	Fix	Fix[2]	Fix[2]					Fix	Interm*	Fix	Fix	Fix				Interm	Interm*	Float [2]	Float [2]	Float [2]	Float	Float
MALAWI		Fix[2]	Fix[2]	Fix[2]	Fix[2]	Fix	Fix	Fix	Fix	Float										Float	Interm	Fix[2]	Fix[2]	Float	Interm*	Fix	Interm*
MALAYSIA**	Float	Float	Interm* [2]	Interm* [2]	Float [2]	Interm* [2]	Float	Interm [2]	Interm [2]	Float [2]	Interm [2]	Float	Interm [2]	Float [2]	Interm* [2]	Interm [2]	Fix[2]	Interm* [2]	Interm [2]	Interm [2]	Fix	Float [2]	Interm* [2]	Float	Interm*	Fix †	Fix †
MALDIVES	Fix*						Fix*	Fix*	Float [2]	Fix[2]	Fix †		Interm*	Float	Float	Float	Float [2]	Float	Float	Float [2]	Interm* [2]	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †
MALI	Fix[2]	Fix	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix †	Fix †	Fix †	Fix †	Fix[2]	Fix †	Fix †	Fix †	Fix †	Interm [3]	Fix †	Fix †	Fix †	Fix †	Fix	Fix[2]
MALTA																											
MARSHALL ISLANDS														Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*
MAURITANIA																						Interm* [2]	Float				
MAURITIUS	Fix [3]	Fix	Fix[2]	Fix[2]	Fix[2]	Float	Fix	Float	Fix[2]												Float [2]	Float [2]	Interm [2]	Float	Interm [2]	Fix[2]	Interm [2]
MEXICO**	Fix †	Fix †	Interm	Float	Incon	Incon	Incon	Interm* [2]	Interm [3]	Interm*	Float	Interm*	Interm*	Interm*	Fix	Interm [2]	Interm [2]	Fix	Fix	Fix	Fix	Interm	Interm [2]	Float	Float	Float	Float
MICRONESIA, FED.STS.														Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*
MOLDOVA																				Float			Float [2]	Float	Interm [3]	Float	Float
MONGOLIA																				Fix	Interm [3]	Interm [2]	Interm*	Float	Interm [2]	Float	Float
MOROCCO**					Float	Interm* [2]	Interm* [2]	Interm* [2]	Float	Float	Float	Float	Float [2]	Float [2]	Float [2]	Float [2]	Float										
MOZAMBIQUE																				Interm*	Float	Float	Interm* [2]	Fix[2]	Float [2]	Float	Fix
MYANMAR	Interm* [2]	Float	Fix*	Float	Fix †	Fix	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †
NAMIBIA																	Fix*	Fix	Fix [3]	Fix	Fix[2]	Fix[2]	Fix[2]	Fix	Fix †	Fix[2]	Fix[2]
NEPAL	Fix[2]	Float	Fix †	Fix †	Interm* [2]	Fix †	Fix †	Float [2]	Interm [2]										Fix[2]	Float	Fix †	Float [2]		Float [2]	Float [2]	Incon	Interm* [2]
NETHERLANDS*	Float [2]	Interm* [2]	Interm* [2]	Interm* [2]	Fix[2]	Interm* [2]	Fix[2]	Interm* [2]	Interm* [2]	Fix[2]	Fix	Incon	Incon	Fix[2]	Fix[2]	Fix[2]	Incon	Fix[2]	Fix[2]	Fix[2]	Fix[2]	Fix[2]	Fix[2]	Incon	Incon	Fix*	Fix*
NETHERLANDS ANTILLES	Fix †	Fix[2]	Fix[2]	Fix[2]	Fix †	Fix[2]	Fix †	Fix[2]	Fix	Fix[2]	Fix[2]	Fix	Fix †	Fix[2]	Fix[2]	Fix †	Fix †	Fix[2]	Fix[2]	Fix †	Fix[2]	Fix[2]	Fix[2]	Fix †	Fix †	Fix †	Fix †
NEW ZEALAND*												Fix [3]	Fix [3]	Fix	Float	Float	Fix	Fix	Fix	Fix	Fix	Fix	Fix	Fix	Fix	Fix [3]	Fix
NICARAGUA	Fix[2]	Fix[2]	Fix	Fix[2]	Fix[2]		Fix[2]	Fix	Fix[2]	Fix †	Fix*			Fix*		Interm [3]	Interm [3]	Interm [3]	Fix [3]	Interm [3]	Fix [3]	Fix [3]	Fix	Fix	Fix	Interm [2]	Fix [3]
NIGER	Fix[2]	Fix †	Fix[2]	Fix[2]	Fix	Fix[2]	Fix[2]	Fix[2]	Fix †	Fix[2]	Fix[2]	Fix[2]	Fix †	Fix[2]	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Interm [3]	Fix[2]	Fix[2]	Fix[2]	Fix	Fix[2]	Fix
NIGERIA**	Fix	Interm [2]	Fix[2]	Interm* [2]	Float [2]	Fix	Float	Float	Float [2]	Float [2]	Interm* [2]	Float	Interm [3]	Interm*	Float	Interm*	Fix	Interm*	Interm	Float	Fix †	Fix	Fix	Fix	Fix[2]	Interm [3]	Float
NORWAY*	Fix	Interm [2]	Interm [2]	Interm [2]															Fix	Fix	Fix	Fix	Fix	Fix	Fix	Fix	Fix
OMAN	Fix[2]	Fix[2]	Fix[2]	Fix[2]	Fix	Fix[2]	Fix †	Fix[2]	Fix[2]	Fix[2]	Fix[2]	Fix[2]	Float	Fix	Fix[2]	Fix[2]	Fix[2]	Fix	Fix[2]	Fix[2]	Fix †	Fix[2]	Fix[2]	Fix[2]	Fix[2]	Fix[2]	Fix
PAKISTAN**		Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Float	Interm* [2]	Float	Float [2]	Float [2]	Fix[2]	Interm* [2]	Float [2]	Interm* [2]	Float [2]	Interm* [2]	Incon	Float [2]	Float	Float [2]	Float [2]		
PALAU																					Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*
PANAMA**	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*
PAPUA NEW GUINEA	Float	Interm [2]	Fix	Interm* [2]	Float																	Fix	Fix	Fix	Fix	Fix	Interm*
PARAGUAY	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Interm	Interm*	Interm	Fix †	Fix †	Interm	Float	Interm [2]	Float	Float [2]	Interm* [2]	Interm* [2]	Interm* [2]	Interm* [2]	Float	Float	Float [2]
PERU**	Fix †	Float	Interm*	Interm*	Float	Float	Float	Float	Float	Interm*	Interm*	Interm*	Fix †	Interm*	Interm [3]	Interm [3]	Interm [3]	Interm*	Interm*	Float	Interm [2]	Float [2]	Float [2]	Interm* [2]	Float [2]	Float	Interm* [2]
PHILIPPINES**	Interm [2]	Interm [2]	Fix[2]	Incon	Incon	Incon	Fix[2]	Fix[2]	Interm [2]					Fix[2]	Interm* [2]	Interm* [2]	Float	Interm* [2]	Interm [2]	Fix	Float [2]	Float [2]	Fix[2]	Float	Float	Float [2]	Float
POLAND**	Fix*	Fix*	Fix*	Fix*													Interm	Float	Float	Float	Float	Float	Float [2]	Float	Float	Float	Float
PORTUGAL*			Float	Float	Float	Interm [2]	Fix	Float	Float	Float	Interm [2]	Fix	Interm [2]	Interm [2]	Fix	Fix	Fix	Interm [2]	Fix	Fix	Fix	Fix	Fix	Fix	Fix	Fix*	Fix*
QATAR	Fix*							Fix*	Fix*	Fix †	Fix †	Fix †	Fix[2]	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix[2]	Fix[2]	Fix[2]	Fix	Fix[2]
ROMANIA	Fix*	Fix*	Fix*	Fix*		Fix*	Fix*		Fix*									Interm [3]			Interm*	Float	Float	Interm	Float	Interm*	Float
RUSSIA**																								Interm* [2]	Interm [3]	Float	Float [2]
RWANDA	Fix †	Fix †	Fix[2]	Fix †	Fix †	Fix[2]	Fix[2]	Fix †	Fix †	Float [2]	Fix †	Fix[2]	Fix[2]	Fix †	Fix[2]	Fix[2]	Interm*	Fix[2]	Float	Incon		Interm	Interm* [2]	Float [2]	Interm [2]	Float	Float
SAINT KITTS AND NEVIS	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix	Fix [3]	Fix[2]	Fix	Fix	Fix[2]	Fix †	Fix[2]	Fix †	Fix[2]	Fix †	Fix †	Fix[2]	Fix[2]	Fix[2]	Fix †	Fix[2]	Fix †	Fix[2]	Fix[2]	Fix[2]
SAINT LUCIA	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix[2]	Fix[2]	Fix[2]	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †
ST VINCENT AND GREN.	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix †	Fix[2]	Fix[2]	Fix[2]	Fix †	Fix †	Fix[2]	Fix[2]	Fix †	Fix[2]	Fix[2]	Fix †	Fix †	Fix †	Fix †	Fix †	Fix[2]	Fix[2]	Fix[2]	Fix †	Fix[2]
SAMOA																											
SAN MARINO*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*
SAO TOME & PRINCIPE																								Interm*	Fix	Interm* [2]	Float
SAUDI ARABIA	Fix [3]	Fix [3]	Fix [3]	Fix	Interm [2]	Fix	Fix	Fix			Fix	Fix	Fix	Fix	Fix[2]	Fix	Fix[2]	Fix	Fix[2]	Fix[2]	Fix	Fix[2]	Fix	Fix[2]	Fix †	Fix[2]	Fix	Fix[2]
SENEGAL	Fix[2]	Fix[2]	Fix †	Fix †	Fix[2]	Fix[2]	Fix[2]	Fix[2]	Fix[2]	Fix †	Fix †	Fix[2]	Fix[2]	Fix †	Fix †	Fix[2]	Fix †	Fix †	Fix[2]	Fix †	Interm [3]	Fix †	Fix †	Fix †	Fix †	Fix[2]	Fix[2]
SEYCHELLES					Fix*	Float	Fix[2]	Float	Fix[2]	Fix[2]	Fix[2]	Fix[2]	Fix[2]	Fix	Fix[2]	Fix[2]	Fix[2]	Fix[2]	Fix †	Fix †	Fix †	Interm* [2]					
SIERRA LEONE	Fix	Fix[2]	Fix[2]	Fix[2]	Float	Fix[2]	Fix[2]	Fix[2]	Incon	Interm [3]	Fix †	Interm [3]	Interm [3]	Interm [3]	Fix	Interm*	Interm [3]	Fix	Fix [3]	Fix [3]	Interm*	Float	Float	Fix	Fix	Interm*
SINGAPORE														Interm* [2]	Interm [2]	Interm* [2]	Interm [2]	Interm [2]	Interm [2]	Fix	Interm* [2]	Interm [2]	Interm* [2]	Float	Float	Fix	Fix
SLOVAK REPUBLIC																						Interm [2]	Interm* [2]	Interm [2]	Float	Fix	Fix
SLOVENIA																			Interm*	Float	Fix	Interm [2]	Interm [2]	Fix	Fix[2]	Interm [2]	Interm [2]
SOLOMON ISLANDS																											

Country	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
SOMALIA	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*																			
SOUTH AFRICA**	Fix	Float	Fix²	Fix²	Fix	Fix	Fix	Float	Float	Fix	Interm*	Interm*	Interm*	Float	Float	Float	Fix	Float	Float	Fix	Interm ²	Fix	Float	Float	Float	Float ²	Float
SPAIN*				Float	Float ²	Float	Float	Float ²	Float	Float ²	Float ²	Float ²	Interm* ²	Interm ²	Interm* ²	Float ²	Float ²	Interm* ²	Float	Float	Fix	Float	Fix²	Fix²	Fix²	Fix*	Fix*
SRI LANKA	Float ²	Float	Float	Interm	Float ²	Interm* ²	Float	Float	Fix²	Float	Interm* ²	Interm* ²	Incon	Interm* ²	Interm* ²	Float	Incon	Interm* ²	Interm* ²	Float	Interm* ²	Interm* ²	Interm* ²	Interm* ²	Fix	Interm* ²	Float
SUDAN	Fix †	Fix²	Fix †	Fix †	Float	Float	Fix²	Interm	Interm*	Fix*	Fix*		Fix*		Fix*	Fix*	Fix*			Interm*	Interm	Interm* ³	Interm	Float	Float		
SURINAME	Fix †	Fix²	Fix †	Fix †	Fix	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Interm	Interm*	Incon	Fix †	Fix †	Interm	Interm
SWAZILAND	Fix*	Fix	Fix	Fix²	Fix²	Fix²	Fix	Fix²	Fix	Fix	Fix	Fix²	Fix²	Fix²	Fix	Fix²	Fix	Fix	Fix	Fix	Fix	Fix²	Fix	Fix	Fix	Fix²	Fix
SWEDEN*	Float ²	Interm* ²	Interm* ²	Float	Float ²	Interm* ²	Float ²	Float	Float	Interm ²	Float ²	Interm ²	Float ²	Float ²	Interm* ²	Float ²	Interm ²	Fix	Fix ³	Fix	Float	Float	Float	Interm ²	Fix	Float ²	Float ²
SWITZERLAND*	Float	Interm ²	Interm ²	Interm ²	Float	Interm ²	Interm ²	Fix	Interm ²	Float ²	Interm ²	Interm ²	Interm ²	Interm* ²	Interm* ²	Interm ²	Float ²	Interm ²	Interm ²	Interm ²	Interm* ²	Interm ²	Interm ²	Interm ²	Interm ²	Interm* ²	Interm ²
SYRIAN ARAB REPUBLIC	Interm ²	Fix²	Interm ²	Fix	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Interm ³	Fix †	Fix †	Fix †	Fix*	Fix*	Fix †	Fix †	Fix †	Fix †	Fix*	Fix*	Fix †
TAJIKISTAN																											
TANZANIA	Interm* ²	Float	Fix †	Fix †	Fix †								Interm	Float	Interm*	Interm*				Interm*	Float ²	Float	Float	Interm ²	Float ²	Float	Incon
THAILAND**	Fix †	Fix †	Fix †	Fix²	Fix²	Fix²	Fix²	Float ²	Fix²	Fix †	Float	Float ²	Interm* ²	Interm* ²	Interm* ²	Interm* ²	Interm* ²	Interm* ²	Interm* ²	Interm* ²	Interm* ²	Interm* ²	Incon	Interm*	Interm*	Float	Float
TOGO	Fix²	Fix²	Fix²	Fix †	Fix²	Fix †	Fix †	Fix²	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix²	Interm ³	Fix²	Fix	Fix²	Fix²	Fix †	Fix²
TONGA			Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix*	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Incon	Incon	Interm* ²									
TRINIDAD AND TOBAGO	Fix	Fix²	Float	Fix †	Fix²	Fix²	Fix †	Fix²	Fix²	Fix	Fix²	Float	Float	Fix²	Float	Fix²	Fix²	Fix²	Fix †	Interm*	Interm ²	Fix²	Interm* ²	Incon	Incon	Fix †	Fix²
TUNISIA													Float	Interm ²	Interm* ²	Float ²	Interm* ²	Interm* ²	Interm* ²	Float ²	Float ²	Interm ²	Interm* ²	Float ²	Incon	Interm* ²	Interm ²
TURKEY**	Interm* ²	Interm* ²	Float ²	Float	Interm*	Float	Interm	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Interm	Float	Float	Float	Fix	Float	Float
TURKMENISTAN																											
UGANDA						Fix †	Fix †	Interm ³			Interm*	Interm	Float							Fix	Fix	Fix	Fix	Fix	Fix	Fix	Fix
UKRAINE																					Interm ³	Interm*	Float	Interm* ²	Interm*	Float	Float
UNITED ARAB EMIRATES			Fix	Fix²	Fix²	Fix²	Incon	Fix²	Fix †	Fix²	Fix*	Fix*	Fix*	Fix*	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix²	Fix †	Fix²	Fix †
UNITED KINGDOM*														Interm ²	Float ²	Float	Float	Float ²	Float	Float	Float ²	Float ²	Float ²	Float	Float ²	Float ²	Float
UNITED STATES*	Float	Float	Float ²	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float	Float
URUGUAY	Interm ³		Float	Float	Float	Interm ²	Interm ²	Interm ²		Interm*	Interm*	Interm*	Float	Float	Float	Interm*	Float	Float	Float	Float	Float	Float	Float	Interm* ²	Float ²	Interm* ²	Interm* ²
VANUATU																											
VENEZUELA**	Fix	Fix	Fix †	Fix †	Fix †	Fix †	Fix †	Fix †	Fix²	Fix †	Interm	Fix †	Interm	Fix²	Fix²	Interm ³	Float	Fix	Float	Float	Interm*	Interm*	Interm*	Fix	Fix	Interm ²	Interm ²
VIETNAM																											
YEMEN																		Fix †	Fix †	Fix †	Fix †	Interm ³	Interm ³	Float ²	Float ²		
ZAIRE	Fix²	Fix †	Interm*	Fix †	Float	Interm	Interm*	Interm*	Fix †	Interm ³	Fix	Fix	Fix	Interm*	Interm*	Float	Interm	Interm ³	Interm ³	Interm ³	Interm ³	Interm ³					
ZAMBIA	Fix	Fix²	Float	Fix²	Fix	Fix	Fix²	Fix²	Fix²			Interm ³	Interm ³	Interm ³	Float							Fix ³	Fix ³	Fix	Fix	Fix	Fix
ZIMBABWE																					Fix	Fix	Fix ³	Interm*	Interm* ³	Fix	Interm*

	Basket
	Not existing or not independent country
	One classification variable not available
Fix †	Inconclusives
Fix*	Uncontroversials
Interm	Dirty
Interm*	Dirty/CP
2	Classified in 2nd round
3	Outliers
*	Industrial Countries
**	Emerging Economies

Figure 1: Exchange Rate Classification

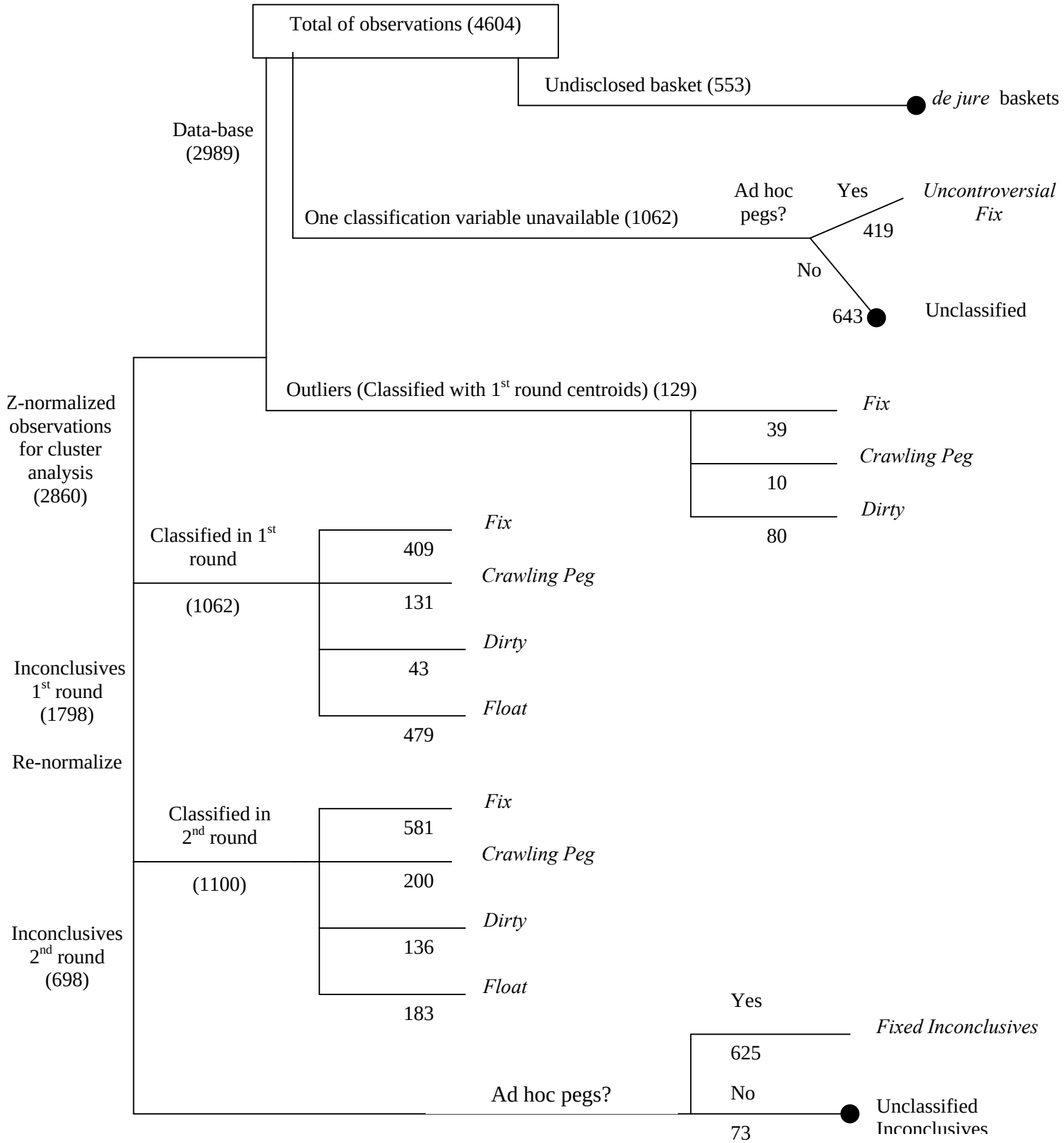
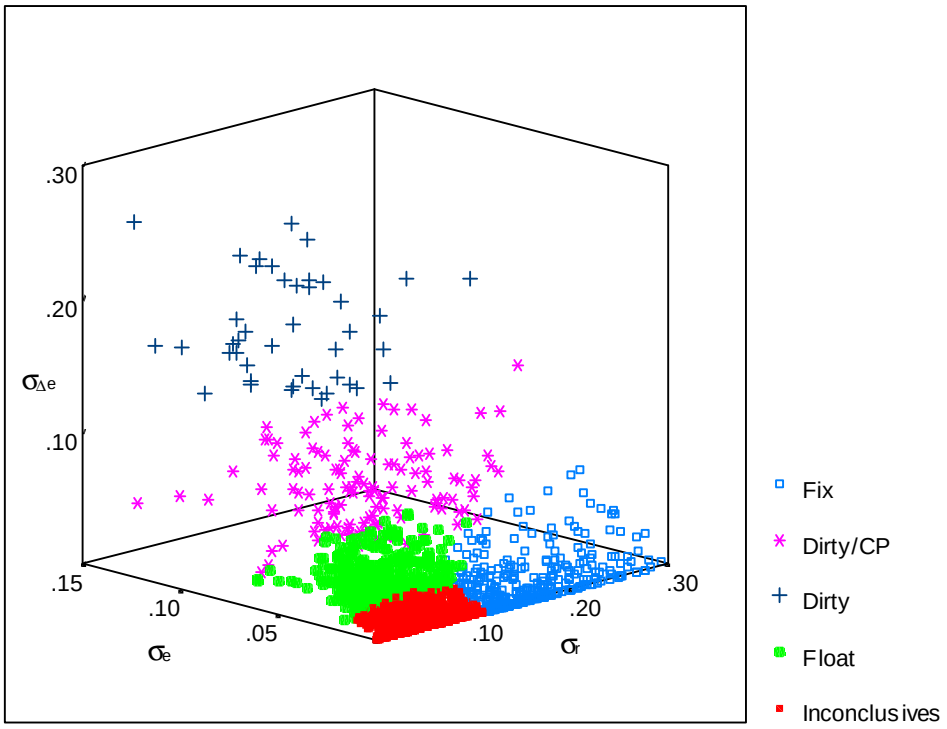


Figure 2

a) 1st round



a) 2nd round

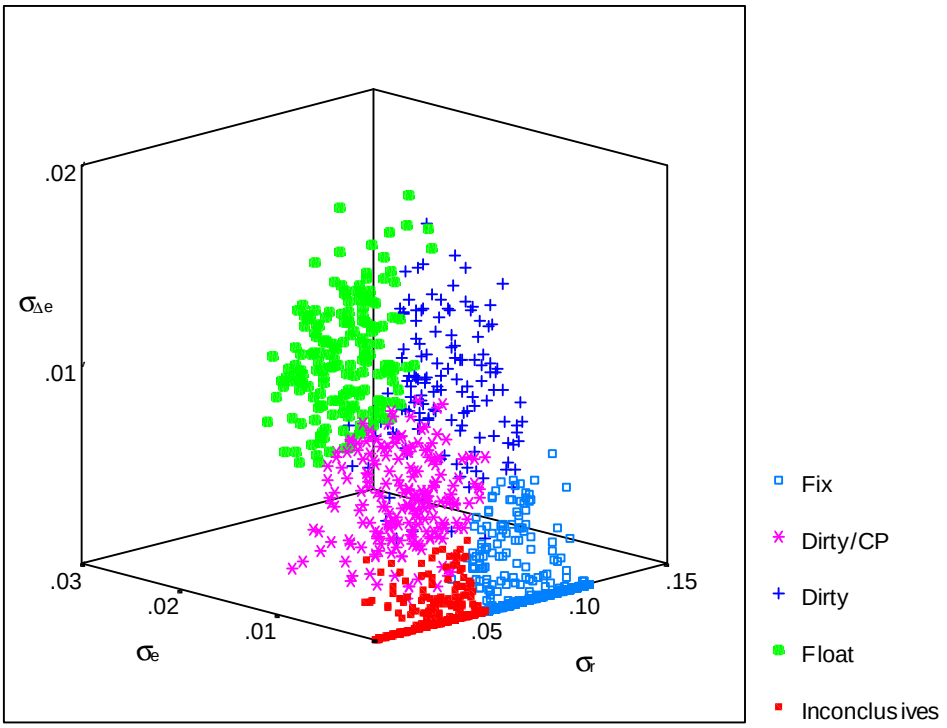


Figure 3: Distribution of Exchange Rate Regimes
IMF Classification (1974 – 2000)
All Countries

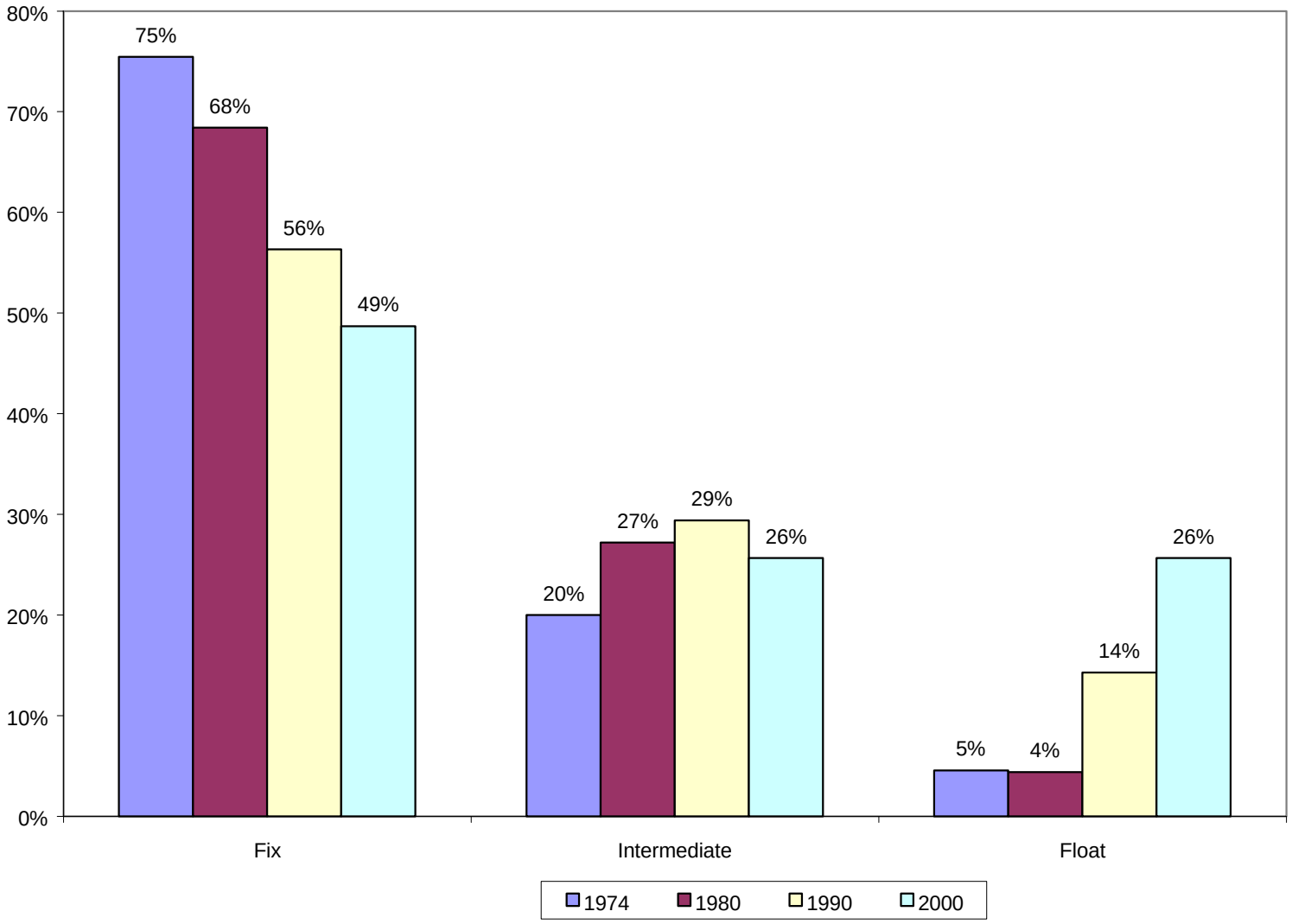


Figure 4: Distribution of Exchange Rate Regimes
LYS Classification (1974 – 2000)
All Countries

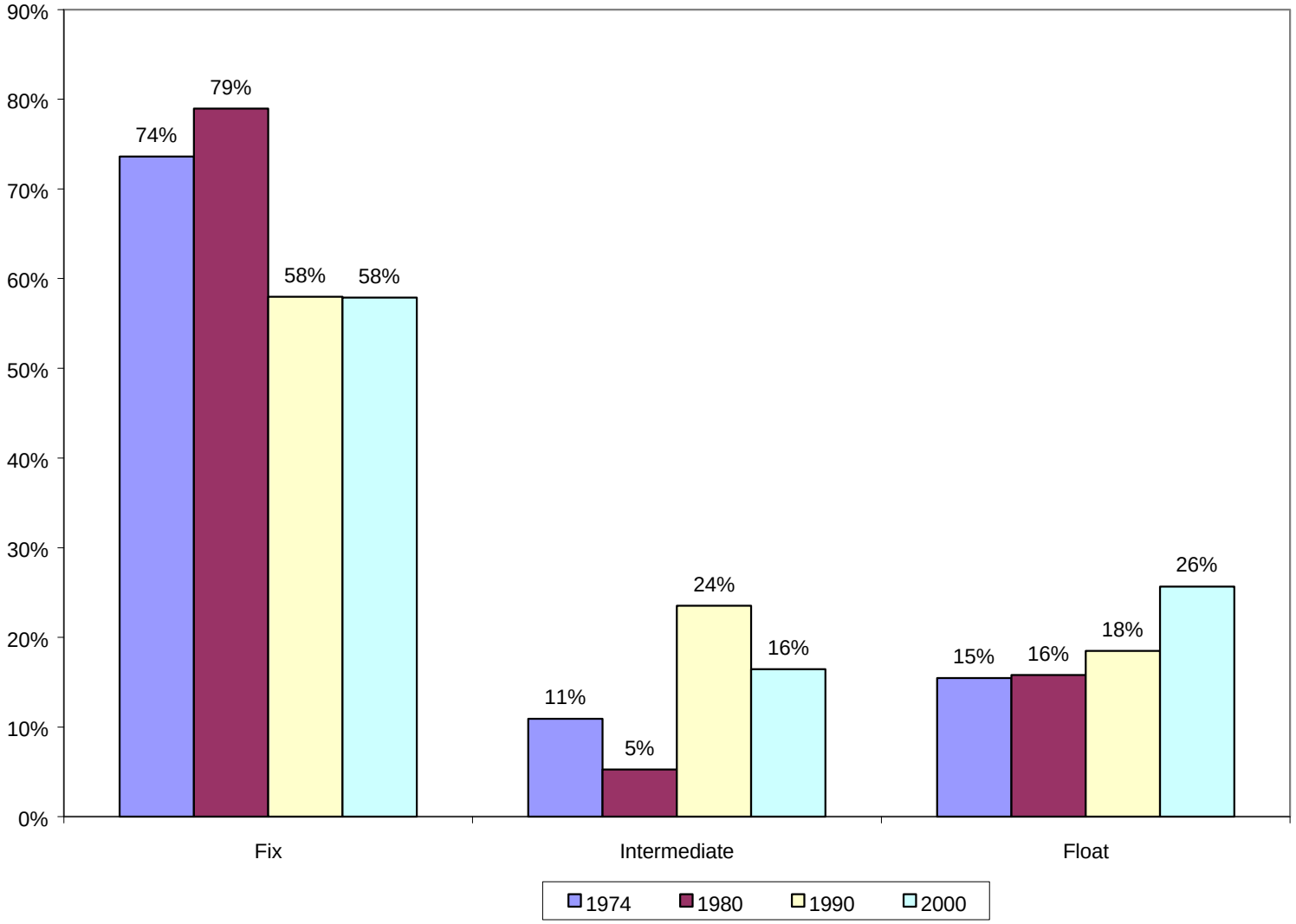


Figure 5: Developed and Emerging Countries
(LYS Classification)

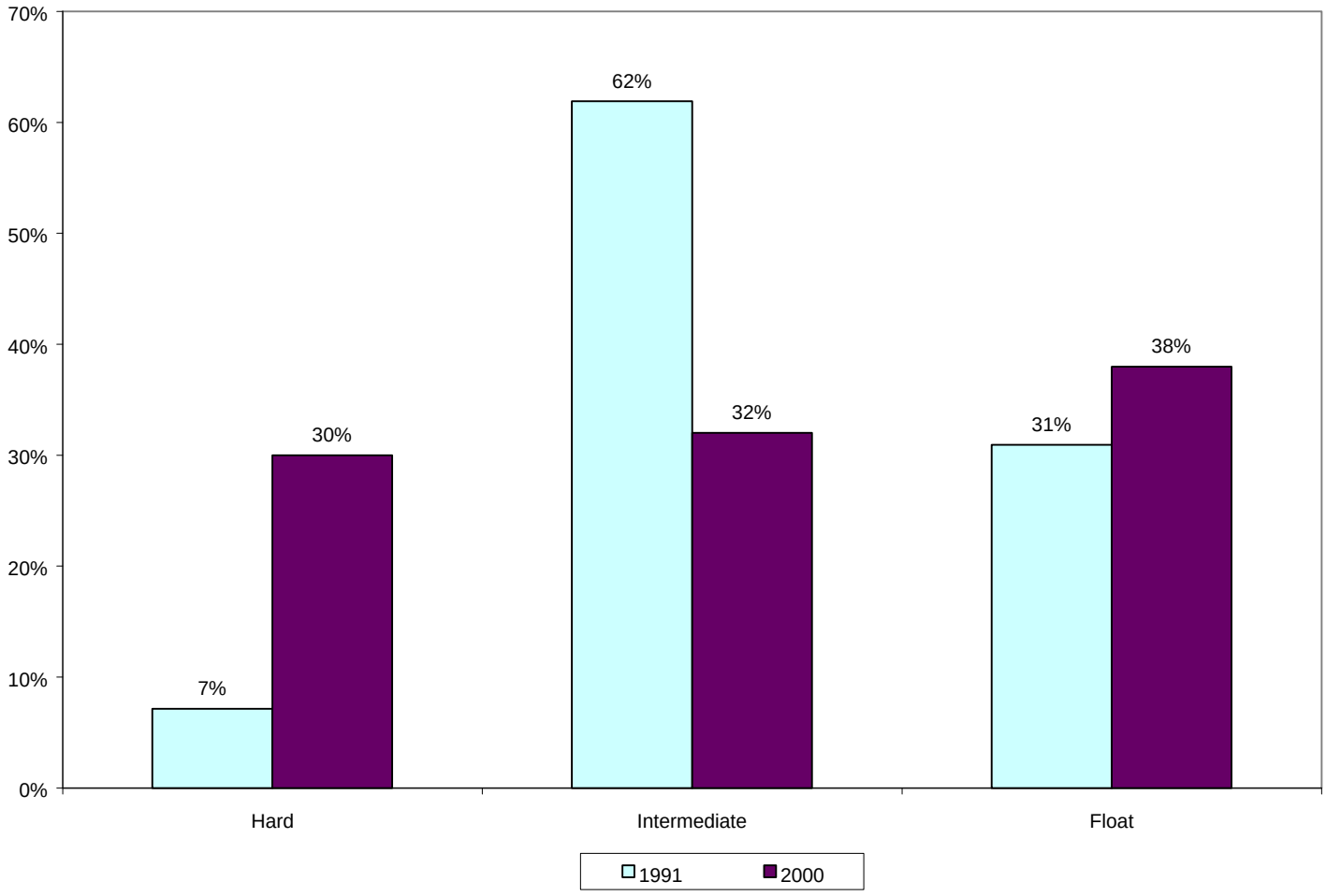


Figure 6: Other Countries
(LYS Classification)

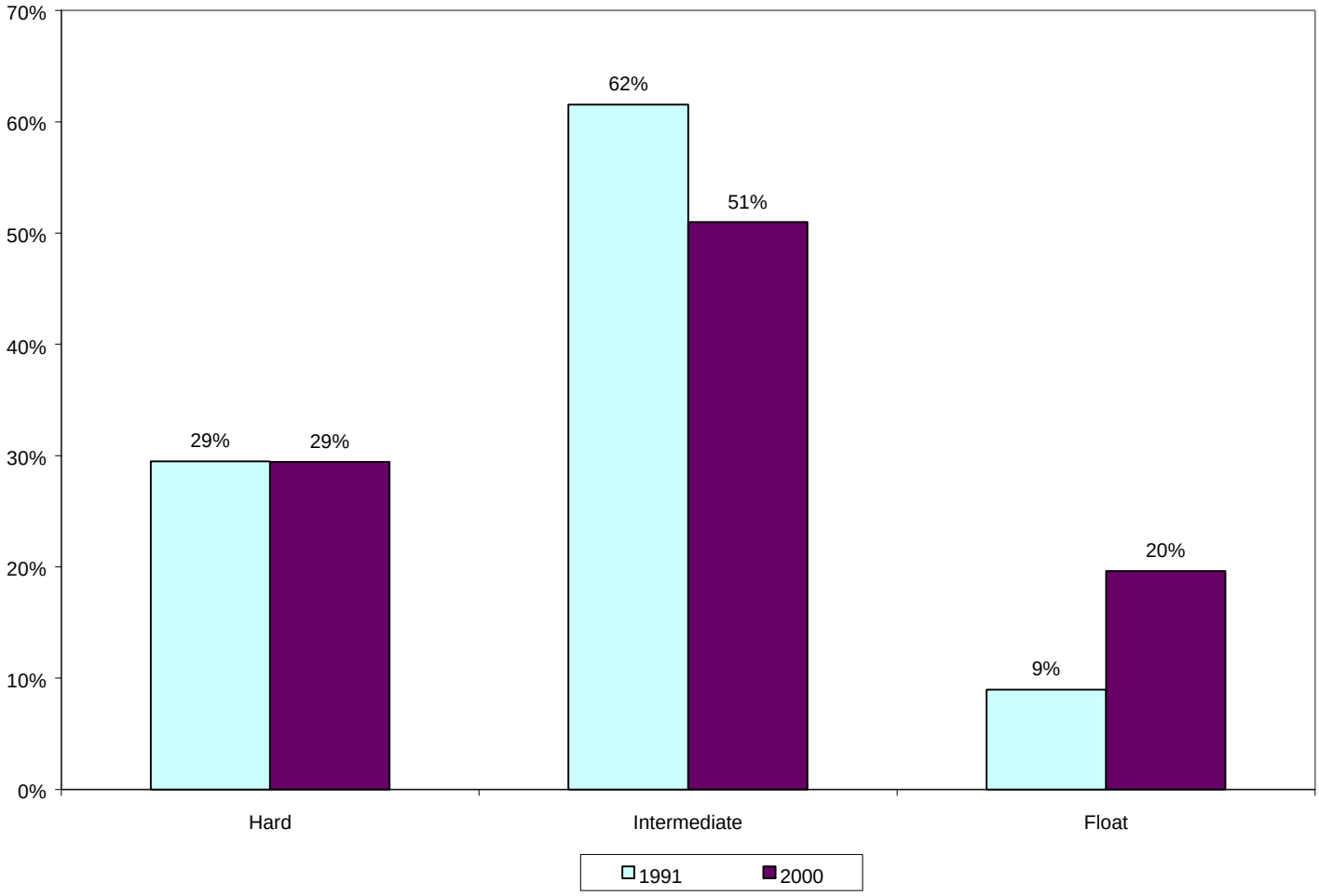


Figure 7: Fear of Floating
(Number of *de jure* floats that *de facto* are not floats)

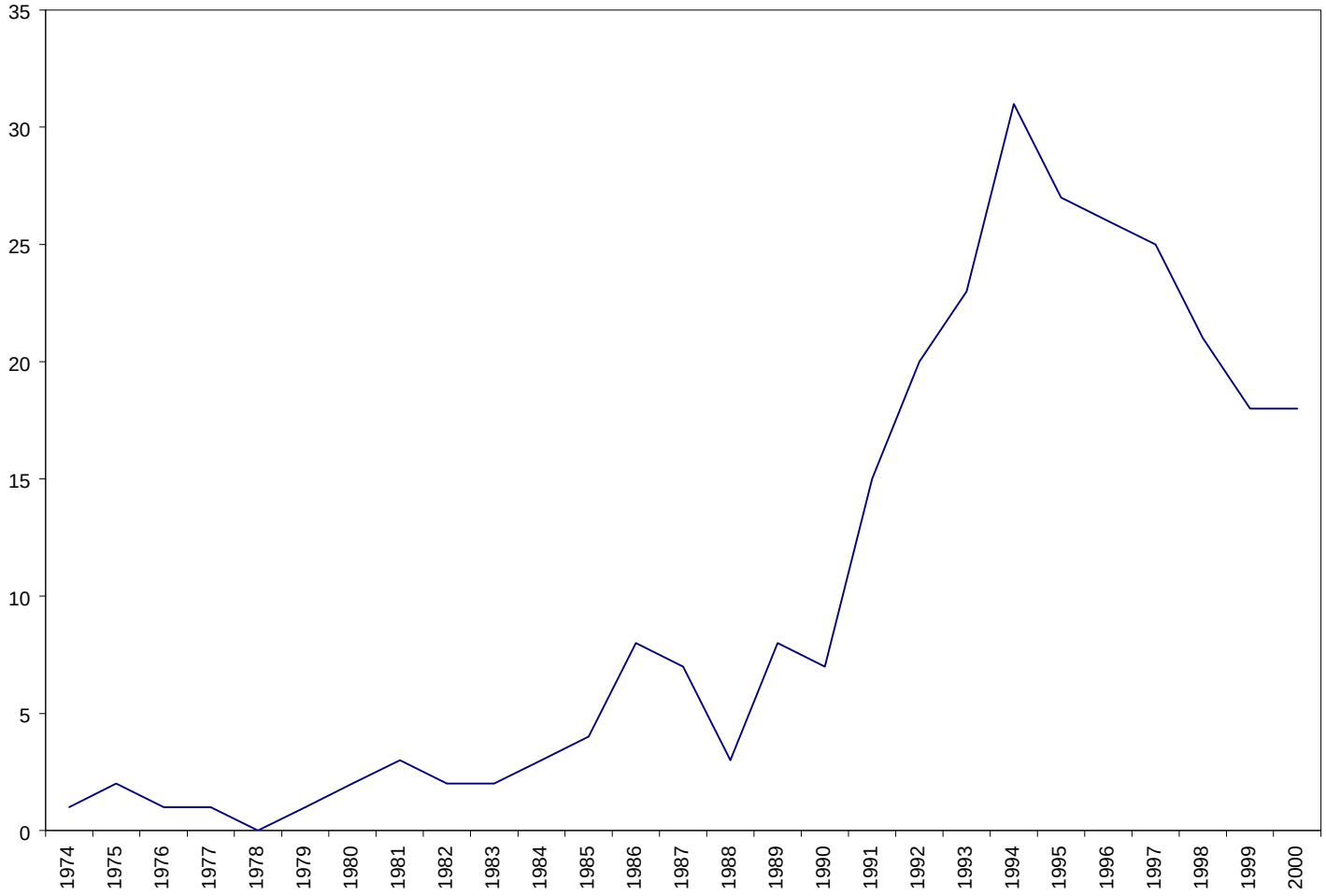


Figure 8: Fear of Pegging
(% of *de facto* pegs which are not *de jure* pegs)

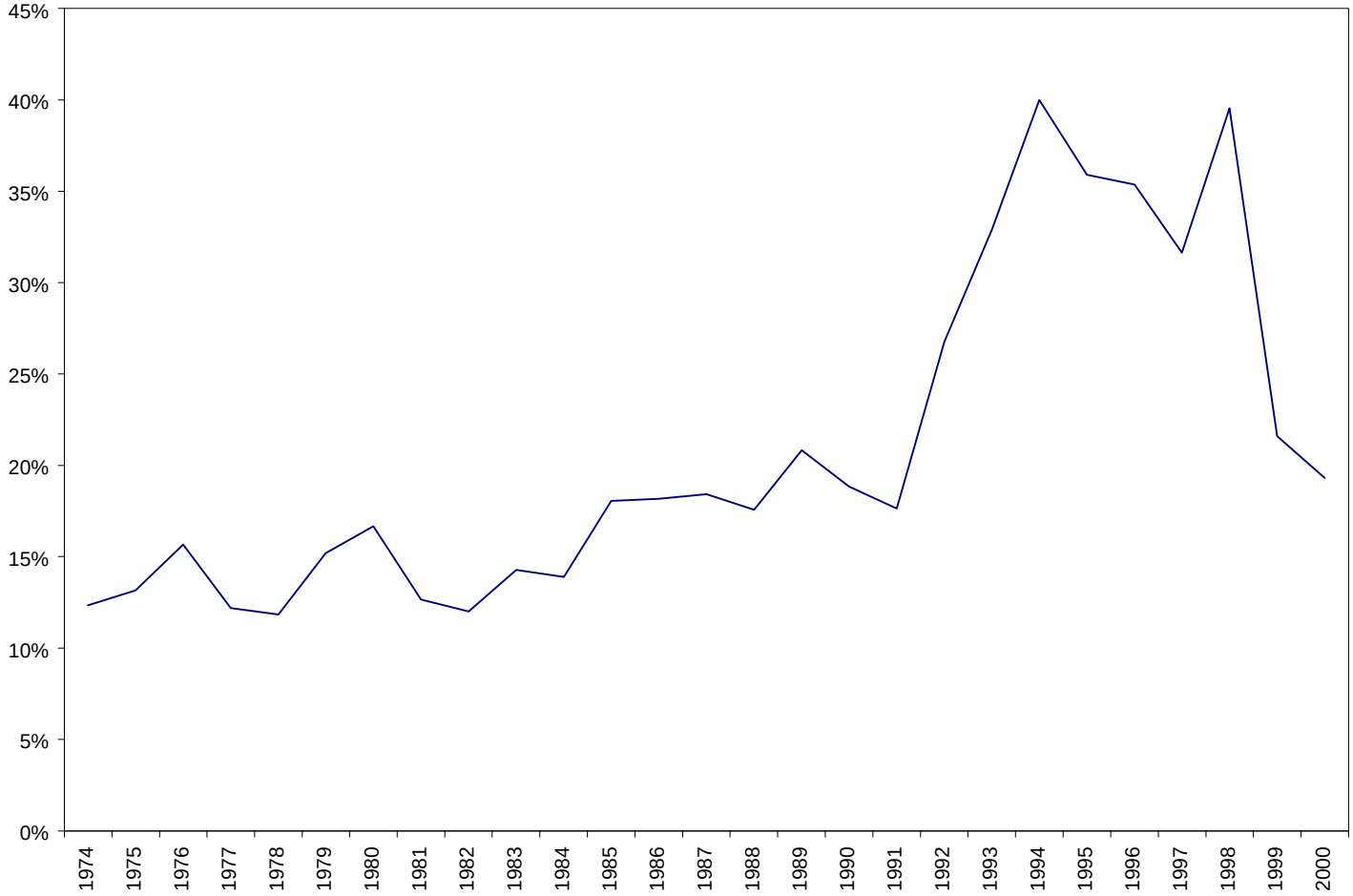


Table 2: Cluster Boundaries

	Average monthly volatility in the exchange rate			Average monthly volatility in the change of the exchange rate			Average monthly volatility in international reserves (relative to monetary base)		
1st Round Boundaries									
	Minimum	Centroid	Maximum	Minimum	Centroid	Maximum	Minimum	Centroid	Maximum
Float	0.09%	2.31%	7.22%	0.81%	2.03%	6.70%	0.60%	4.59%	13.44%
Dirty	12.80%	17.27%	26.94%	4.76%	8.51%	13.68%	0.88%	6.98%	23.07%
Dirty / CP	0.53%	6.96%	14.22%	2.49%	5.21%	13.74%	1.38%	8.67%	27.52%
Fixed	0.00%	0.20%	7.22%	0.00%	0.23%	4.61%	10.57%	14.68%	29.87%
2nd Round Boundaries									
	Minimum	Centroid	Maximum	Minimum	Centroid	Maximum	Minimum	Centroid	Maximum
Float	0.72%	1.18%	2.37%	0.36%	0.96%	1.37%	0.25%	3.19%	6.46%
Dirty	0.16%	0.95%	1.77%	0.33%	0.86%	1.58%	5.38%	7.86%	10.63%
Dirty / CP	0.02%	0.53%	1.05%	0.24%	0.50%	1.44%	0.35%	4.29%	7.53%
Fixed	0.00%	0.00%	0.63%	0.00%	0.00%	0.66%	5.65%	7.51%	11.02%

Table 3: LYS Classification

Regime	1st Round	2nd Round	Outliers	Inconclusives	Ad-hoc	LYS	IMF
Float	479	183				662	513
Intermediate	174	336	90			600	937
Fix	409	581	39	625	419	2073	1885
Total	**1062**	**1100**	**129**	**625**	**419**	**3335**	**3335**

Table 4: Exchange Rate Regimes
LYS vs. IMF Classification
(in %)

Year	Float / Float	Float / Interm.	Float / Fix	Interm. / Float	Interm. / Interm.	Interm. / Fix	Fix / Float	Fix / Interm.	Fix / Fix	Mismatch	Mismatch 1st round	Mismatch 2nd round	Fear of Peg	Fear of Float	Total number of cases
1974	4%	8%	4%	1%	3%	7%	0%	9%	65%	29%	46%	36%	12%	20%	110
1975	1%	4%	9%	2%	9%	6%	0%	9%	61%	29%	52%	20%	13%	67%	109
1976	2%	8%	5%	1%	5%	5%	0%	12%	62%	31%	62%	24%	16%	33%	113
1977	4%	10%	3%	1%	8%	4%	0%	9%	63%	25%	52%	17%	12%	20%	114
1978	4%	14%	6%	0%	6%	2%	0%	8%	60%	30%	50%	24%	12%	0%	111
1979	3%	10%	4%	1%	8%	4%	0%	11%	59%	30%	65%	18%	15%	25%	113
1980	3%	11%	2%	1%	4%	1%	1%	12%	66%	28%	56%	26%	17%	40%	114
1981	2%	11%	5%	1%	10%	3%	2%	7%	59%	28%	58%	20%	13%	60%	116
1982	4%	9%	4%	2%	10%	5%	0%	8%	59%	27%	57%	24%	12%	33%	111
1983	3%	9%	4%	1%	14%	4%	1%	8%	56%	27%	45%	28%	14%	40%	107
1984	3%	11%	4%	2%	12%	5%	1%	8%	55%	30%	59%	27%	14%	50%	113
1985	3%	12%	4%	2%	10%	5%	2%	10%	53%	34%	56%	33%	18%	57%	111
1986	2%	11%	5%	4%	12%	7%	3%	8%	48%	38%	67%	44%	18%	80%	112
1987	3%	7%	3%	3%	14%	6%	3%	9%	52%	31%	53%	37%	18%	64%	120
1988	7%	9%	5%	3%	10%	5%	0%	11%	51%	33%	55%	40%	18%	27%	120
1989	5%	12%	5%	5%	8%	6%	2%	11%	48%	40%	64%	39%	21%	57%	120
1990	8%	8%	2%	4%	12%	8%	2%	9%	47%	33%	59%	33%	19%	41%	119
1991	5%	10%	2%	10%	12%	5%	3%	8%	47%	37%	69%	40%	18%	71%	120
1992	12%	6%	4%	9%	8%	3%	8%	8%	43%	38%	62%	33%	27%	59%	120
1993	13%	10%	3%	8%	5%	2%	10%	9%	40%	42%	63%	42%	33%	59%	128
1994	9%	6%	2%	15%	5%	14%	8%	11%	30%	57%	72%	62%	40%	72%	132
1995	13%	11%	1%	7%	9%	6%	11%	7%	34%	44%	63%	42%	36%	59%	148
1996	12%	11%	0%	9%	10%	3%	9%	11%	36%	42%	62%	37%	35%	60%	147
1997	14%	12%	1%	11%	9%	1%	6%	11%	36%	41%	56%	34%	32%	53%	152
1998	12%	13%	1%	7%	9%	1%	7%	16%	34%	45%	64%	42%	40%	54%	152
1999	15%	9%	0%	5%	13%	0%	7%	6%	46%	26%	45%	21%	22%	44%	151
2000	14%	11%	1%	7%	9%	1%	5%	6%	47%	31%	50%	32%	19%	46%	152
Total	**7%**	**10%**	**3%**	**5%**	**9%**	**4%**	**4%**	**9%**	**49%**	**35%**	**58%**	**32%**	**21%**	**54%**	**3335**

Note: Float/Fix indicates country with *de facto* float and *de jure* fix