

Methodological Note on Classifications

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1.0. Introduction

This document discusses the methodology used in determining countries' de facto and de jure classifications, anchors, and market structure. As it contains generalized examples pertaining to key concepts, specific cases in the accompanying de facto and de jure chronologies should be consulted to get a more complete understanding of the methodology. As the choice of reference point (or anchor) is a critical part of determining a classification, regimes and anchors are discussed together. This includes the means of classifying market structures.

2.0. The Present Methodology

In their simplest form, de facto and de jure classifications are a four-step process: first, determine the major rate; second, determine any currency anchors; third, assess what role the anchors play (i.e., what is the flexibility vis-à-vis the anchor); and last, apply the classification taxonomy.

3.0. Use of Sources

The de jure classifications are based on official statements of policy published by the monetary authorities or recorded in secondary literature. The terminology of the official statements was usually ignored, and the classification was made on the basis of official descriptions and officially sanctioned statements. The classification is that applicable to the major rate. However, since few country authorities provided a policy statement about any rate other than the official one, that is the rate that is usually classified. Where a country used terminology in describing their arrangement that implied that a rate was governed by more than one arrangement, the more inclusionary arrangement was chosen.¹ These procedures result in some differences between this dataset and the published IMF de jure data.²

The taxonomy used to discuss the de jure arrangements is that of the eight-category system from the 1997 IMF system. (The categories are listed in Appendix II.)

¹ For example, in July 1972, Hong Kong de jure retained its currency board and stated to the Fund that it would avail itself of wider margins ($\pm 2\frac{1}{4}$ per cent). Since a currency board implies narrower margins but an arrangement with wider margins can have the other prerequisites of a currency board, its de jure arrangement an arrangement with horizontal bands.

² Examples include Hong Kong, which is seen as a de jure currency board after 1983 whereas the IMF system classified it as a managed float; and instances where there was significant variance between the description and the label provided by the authorities. For example, if a country used the label managed floating but stated that the central exchange rate would be adjusted on the basis of an indicator, the IMF de jure system captured it as a managed float, whereas present system captures it as a crawling arrangement.

De facto assessments are based the examination of the behavior of a country's exchange rate behavior and relevant indicators, as well as the testimony of contemporary sources (IMF consultations, case studies from other multinational organizations, contemporary documents from economic research firms and investment banks, etc.). Sources are weighed to determine what best explains the behavior of the indicators. Under the assumption that exchange rate variability and flexibility are not the same, the present system makes no *a priori* assumptions about the behavior of currencies under different regimes or at different stages of market or economic development.

The exchange rates used are those applicable to the rate at which most domestic transactions were effected (mid-point).³ Preference was given to contemporary primary documents, especially Fund surveillance documents. These were compared against the printed version of the IFS, and when there were differences that were not explainable, preference was given to independent sources and IMF surveillance documents. The electronic IFS data were used only after comparison with the printed data. In cases where the two did not agree, preference was given to the printed version.

4.0. Single and Multiple Markets

A country is considered as having a multiple market if a secondary rate for the anchor currency or main trading currency is legal or tolerated within a country. This does not include multiple rates that are purely of a multiple currency practice nature, such as fixed taxes or other surcharges, broken cross-rates, bilateral payments arrangements, settlement accounts, or discriminatory treatment of countries or currencies.⁴

The classification of a country is based on the rate that accounts for the largest amount of non-Governmental trade in goods and services. The term "largest" is usually construed in terms of value, but in the case of countries whose trade in one commodity outweighs all others (such as oil), "largest" is construed as weighted by the number of transactions.

4.1. The Major Rate

The major rate is defined as the domestic legal (or tolerated) rate at which most current transactions are effected, excluding official transactions and transactions by state monopolies unless most transactions for goods to be consumed by the public were effected by the state or state-controlled entities. Currency composites, multiple rates, and broken cross-rates were also taken into consideration, as discussed below (p. 6).

³ While this distinction is usually not important, it plays a critical role in classifying arrangements with fixed buying but variable selling rates.

⁴ Egypt provides examples of the last two of these: from 1950 to 1954, fees applied on transactions with different countries resulted in varying "export pound" rates; and from 1973 to 1974, the exchange rates for convertible currencies other than the anchor currency could be traded only on the parallel market.

There is little data on market liquidity in most countries of the world, and major rates were determined using Fund documentation, which, as an integral part of the par value system and as a remnant thereof, state the relative size of markets for different exchange rates within a country. In a few cases, these were able to be verified using other information (e.g., where differential rates apply on transactions with different countries and the size of markets could be verified using *Direction of Trade Statistics*). Still, the identification of the major rate remains inadequately transparent and this may lead to inaccuracies.

It is important to stress that regimes and anchors were classified on the basis of domestic exchange rates and internal policy. This is especially important in a currency union, in which a country's domestic policies subordinate monetary policy to a multinational entity that has the authority to establish exchange rate policy. As relegating exchange rate policy to an external entity is the essence of a hard peg, countries in currency unions or cooperative agreements are classified on the basis of the internal legal agreement and not on the basis of the external exchange rate policy.⁵

4.2. Determination of Anchors

The concept of the anchor or reference currency changed significantly with the demise of the Bretton Woods system. While it is consistently used today to refer to a currency or composite against which a country adjusts or maintains its exchange rate, surveillance documents during the Bretton Woods period give countries up to three reference currencies: the “par value currency” (the dollar), the “intervention currency,” and the “reserve currency.” None of which corresponds to the present use: under the system, currencies were nominally set against the dollar (and countries usually had primarily dollar reserves), but the stability of currencies permitted countries to intervene in any currency. For example, some African countries under the Bretton Woods system had a par value vis-à-vis the dollar but supported the exchange rate through intervention in dollars in London and determined cross-rates on the basis of sterling rates. In these cases, it is probably the last portion—the determination of cross-rates—that most closely approximates our modern definition,⁶ must more than even whether or not a country devalues its currency at the same time as another country.⁷ Floating currencies (managed floating and independently floating) are arrangements in which there is no exchange rate anchor or the anchor plays a weak role.

⁵ This is in keeping with the IMF's 1999 de facto methodology. From 2007, the IMF classifies countries in currency unions on the basis of the exchange rate policy of the union.

⁶ This continues even after the end of the Bretton Woods period. The European Common Margins arrangement, for example, required members to defend the cross-rates of other member currencies, and Italy had a waiver allowing it to intervene using dollars until 1973.

⁷ Simultaneous devaluations are a poor indicator of anchors because countries often devaluated out of competitiveness concerns and because former colonial powers often negotiated with their former colonies not to devalue when they did.

In order to derive a consistent dataset, an anchor currency is defined here as the currency, composite, or value on the basis of which cross-rates are determined. This is termed the cross-rate approach to anchor determination. The exchange rates used are closing mid-points.⁸ Once the anchor (or the absence thereof) is determined, the appropriate classification category for the arrangement is applied.

The types of currency anchors are discussed in Appendix I. While most anchors are self-explanatory, some explanation is needed for gold and instances where countries maintained multiple currency anchors and broken cross-rates. (Currency composites and the SDR are discussed below under adjustment mechanisms, p. 15).

4.2.1.1. Treatment of Gold

A gold anchor is taken as meaning that a country would determine its cross-rates on the basis of gold content alone and not on the basis of market rates, with the monetary authorities absorbing any arbitraging. If, however, if it declared an anchor to gold but determined its cross-rates on the basis of another currency, it was considered as having gold as its *de jure* anchor and the other currency as its *de facto* anchor.

Typically, countries with gold as an anchor adjusted their dollar rate to match its gold content when the gold content of the dollar was changed.

4.2.1.2. Broken Cross-Rates and Multiple Anchors

A number of countries have maintained discriminatory rates between two or more currencies that result in broken cross-rates for extended periods of time.⁹ These countries are classified as having a single currency anchor vis-à-vis the currency most used in transactions or valuations rather than as a peg to a composite. This results in some differences in results from other studies.¹⁰ While many bilateral payments arrangements resulted in broken cross-rates, these were not used in classification.

⁸ While this distinction between buying and selling rates is usually not important, the mid-rate was chosen to accommodate arrangements with fixed buying but variable selling rates. On the rationale for using closing rates, cf. IMF 1999.

⁹ Notable instances include: Guinea (dollar, deutsche mark, French franc, and sterling, 1974), India (dollar, rupee, and others, throughout the 1970s), Myanmar/Burma (dollar and sterling, 2/13/1973–3/30/1974), Nepal (Indian rupee and, at various times, dollar, SDR, sterling, and a few other currencies, 6/26/1972–5/31/1983), and Yugoslavia (dollar and Deutsche mark, 7/13/1973–10/1973, 3/1974–7/29/1974, and 10/30/1974–2/28/1977). Multiple anchors were also common under the Bretton Woods system, although they usually did not result in broken cross-rates. One exception is Malaysia (11/19/1967–1/16/1969), where, after the devaluation of sterling, the (old) Malayan dollar continued to be pegged to sterling at the pre-devaluation rate while the (new) Malaysian dollar was pegged to gold on the basis of the post-devaluation sterling rate. Similarly, after August 15, 1971, some countries continued to trade certain currencies at their pre-August 15 values. In a slightly different approach, the Central Bank of Somalia imposed different spreads for several different currencies (7/5/1972–12/19/1973), which resulted in broken cross-rates.

¹⁰ Nepal maintained broken cross-rates vis-à-vis the dollar and Indian rupee (in addition to other currencies) throughout the 1970s, but since more than half of its trade was with India, the system classifies on the basis
(continued)

Arrangements with two currency anchors without broken cross-rates are classified vis-à-vis the more rigid anchor. So, a country that maintains a fixed rate against one currency but adjusts this rate to keep the exchange rate within a target vis-à-vis another currency is classified as having an arrangement vis-à-vis the latter anchor.¹¹ This rationale is also used in determining which ERM members actually had a peg to the DM (see below).

4.2.2. Method of Determining De Jure Anchor and Flexibility

The de jure anchor and the flexibility of the currency vis-à-vis the anchor is determined through explicit statements regarding the major rate. Where there is no distinct statement about the major rate as opposed to other rates, statements about exchange rate policy in general were used.

The de jure anchor is based on official notifications to the IMF, including both formal notifications and the ARER, with information in central bank annual reports being used for clarification when needed. The terminology of the official statements was ignored, and the determination was made on the basis of official descriptions and officially sanctioned statements. These procedures result in several differences between this dataset and the published IMF de jure data, as the IMF data sometimes used antiquated taxonomies and occasionally referred to minor rates.

When a de jure announcement did not include any details, recourse was made to secondary materials, such as news reports (usually the *Financial Times* and *New York Times*) and documents from investment banks (the most available of which was Standard Chartered) for exegetical purposes only. In using these, preference was given to statements by government or monetary authority officials (although care was taken to separate “off-the-cuff” remarks from exegesis) and to analyses of government announcements rather than criticisms. A policy statement had to be forward-looking, and extreme care was exercised in using backward-looking statements, as it is not uncommon for authorities to justify a new de jure policy by describing the failings of a previous de facto policy.

The information used to construct the de jure classifications for 1945–73 are summarized in the Chronology. The de jure descriptions from the IMF’s primary vehicle for classifications—the “Quarterly Reports on Exchange Arrangements” for 1974–98—are available with the Chronology. The classifications from 1998 on are based on the narrative portions of the ARER.

of the exchange rate vis-à-vis the Indian rupee. RR classified Nepal as having had a de facto crawling band vis-à-vis the dollar.

¹¹ For example, Iran, from 1975 to 1977, had an arrangement whereby the rial was pegged both to the dollar and to the SDR (in the latter case within wider margins). Whenever the rial-SDR rate exceeded the SDR boundaries for more than five days, the value of the rial vis-à-vis the dollar was adjusted to bring the rial-SDR rate back within the band.

4.2.3. Method of Determining De Facto Anchor and Flexibility

De facto anchors and flexibility are determined through looking at the statistical variability of the exchange rate on the major market against probable anchors, such as the dollar, Deutsche mark, sterling, currencies of major trading partners, and, as a proxy for currency composites, the post-July 1974 SDR. Since the electronic IFS exchange rates are inherently unreliable the further back one looks (see below), priority was given to the exchange rates in surveillance documents. The exchange rate with the lowest variability and the one that provided the lowest variability among cross-rates at the highest frequency was taken as the anchor. Simultaneous devaluations were not considered unless there was some indication in the literature.¹² The behavior of the exchange rate against the anchor was then examined and the relevant surveillance and other documents were examined to find the exchange rate policy that best resulted in the observable facts.

In surveillance documents, a distinction is made between the stated and implemented anchors and exchange rate policies. These statements were taken as facilitative, but not as *prima facie* authoritative unless no contradictory information was available.¹³

The primary narrative sources for documents relating to de facto classifications were IMF surveillance documents, including Article VIII, Article XIV, and Article IV reports, and research documents. Secondary sources included news reports (usually the *Financial Times* and *New York Times*); documents from investment banks; documents from the BIS; and documents from member countries' statistical agencies and foreign ministries. The primary repositories used were the IMF Archives and the Joint World Bank–IMF Library.

As for sources of exchange rate data, while the electronic version of the IFS presents the most extensive collection of exchange rate and other data, its data are inconsistent and misleading, especially in the case of multiple rate systems and arrangements with a central rate or par value. The most commonly used rate (IFS lines AE and AF/RF) is the “official” rate, which, depending on the country and the year, may

¹² As an example, there is no clear statement of Denmark's anchor under Bretton Woods other than the par value. The authorities do devalue with sterling (in 1949 it is by the same amount, but in 1967 it is by less), but the *Danmarks Nationalbank Report and Accounts* for those years indicate heavy deliberation on the part of the authorities as to whether or not to devalue, with the final decision being made on the base of potential competitive losses. High-frequency exchange rate data (from the same source) shows higher variability for sterling than the dollar, which remained (mostly) flat, and cross-rates are smoother when the dollar rate is used. These indicate that the dollar was the anchor.

¹³ As an extreme example of this, Guatemala imposed a floating arrangement at the end of 1962 and beginning of 1963. Surveillance documents depict a market with two functioning rates, with most transactions taking place at a fixed rate with a surcharge (coupon) that was determined at a market rate (see the chronologies). Exchange rate data for this period are not available (RR classified it as “dual market in which parallel market data are missing”), but documents from the Central Bank show the coupon rate averaging 3 per cent for the first few months with a maximum of 3.17 per cent. Since surveillance documents indicate the flexibility and the available exchange rate data seeming to support this, the period was classified as managed floating.

represent just the par value or the central rate; an official rate at which no transactions take place; or even a rate determined on a thin and illiquid market (see Box 1, below).

Since IFS data are not reliable *prima facie*, they were used only after comparison with the printed data, the information and exchange rates in IMF surveillance documents, and third-party resources. The last of these included: Trevor Underwood, ed., *Charles Fulton's Foreign Exchange Yearbook* (Cambridge and New York, 1979–81); American International Investment Corporation, *World Currency Charts* (San Francisco, 1963–77); and World Currency Analysts, *World Currency Yearbooks*. The *New York Times* included data on the free rate in Amsterdam in September–October 1971. Black, offshore and foreign rates were not considered unless the market was specifically tolerated or endorsed, such as the parallel market for Canadian dollars in New York in the 1940s. Black (i.e., illegal) market rates are taken from Reinhart's collection of data from Pick's *Black Market Yearbook*.¹⁴

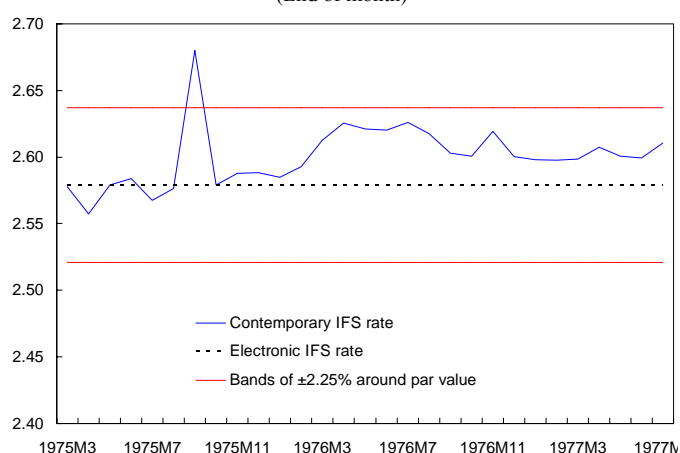
¹⁴ Pick eschews the label “parallel market data,” as his purpose was to point out the distortions of exchange controls, for which which reason he preferred “black market.” (IMF surveillance data sometimes contain black market data with varying frequencies.) Reinhart's database includes revisions in Pick's data (i.e., if a number is noted as corrected in a later volume, the corrected number is in her dataset).

Box 1. The Unreliability of Electronic IFS Data: An Example

On February 15, 1975, Jordan abandoned its peg to the dollar (with wider margins of $\pm 2\frac{1}{4}$ percent) and adopted a peg to the SDR, also with wider margins. The electronic IFS data show a flat dinar-SDR rate at the declared mid-rate, suggesting that they adopted a de facto peg to the SDR. The data printed in the contemporary IFS issues, however, show greater variability (Figure).^{1/} According to contemporary surveillance documents and Standard Chartered, however, (a) the exchange rate moved to the bottom range of the band before gradually moving to the upper range and (b) in the beginning, the authorities were uncomfortable with the high volatility of the SDR vis-à-vis the dollar and thus allowed the SDR-dinar rate to occasionally exceed the margins, although it is unclear how often this happened.

The narrative sources and the contemporary printed data seem to tell the same story. As a result, the electronic IFS data were ignored for the purposes of classification. (Jordan was classified (de facto and de jure) as having an arrangement with a horizontal band vis-à-vis the SDR.)

Figure. Jordan: SDRs per JD 1, March 1975–July 1977
(End of month)



Source: IMF, *International Financial Statistics*, various issues; and IFS database.

Another example of this is Guinea Bissau in the years before adopting the CFA franc, where the electronic data present CFA franc data, while surveillance documents and the small number of exchange rate datapoints available indicate a crawling peg.

^{1/} Beginning in late 1977, the printed IFS exchange rates for Jordan comprised only the declared mid-rate.

4.2.4. Intervention

For the purposes of classification, intervention was interpreted broadly. It includes both direct and indirect intervention. These include not only traditional market participation, but also moral suasion (ranging from the monetary authorities' advising banks of recommended buying and selling rates to suspension of licenses of banks that bid too high or too low), "gentlemen's agreements" involving the monetary authorities or the government, as well as the aggressive use of interest rates and other instruments of monetary policy and exchange controls with an eye toward influencing the exchange rate. This includes instances where a state-owned entity or an entity operating on behalf of or at the request of the state or the monetary authority makes large purchases or sales in

order to influence the exchange rate. Signaling—that is, sending a message through a related policy rate or via official statements—is not considered intervention unless there are consequences for market participants who do not heed it.

Market inefficiencies, unless endorsed or espoused by the authorities, are not considered intervention. So, for example, instances where only one local bank participates in the market (but the monetary authorities have not limited participation in the market) or where the dominant players in the market have a gentlemen’s agreement that the monetary authorities do not endorse are not considered intervention.

The presence/strength of intervention can be indicated by a black or free market spread, but this can also reflect risk premia and exchange controls, as well as market inefficiencies.

4.3. Classification Taxonomy

Once the anchor is determined and the de facto and de jure flexibility about the anchor are determined, the de facto and de jure descriptions are fit into the appropriate categories using the definitions below. The taxonomies of the de jure and de facto classifications are taken from the IMF’s 1999 de facto system (eight categories). In order to maintain consistency with BÖR’s data, the de facto dataset also includes BÖR’s “fine” categories, with the addition of one category, monetary union,¹⁵ thereby making 14 categories. Since the 14-category system disaggregates information in ways that are not suitable to de jure announcements (such as tightly managed floating and forward- and backward-looking crawls), comparisons between de facto and de jure classifications are based on the eight-category system.

The codes used in the databases and the mappings between the 8- and 14-category systems are listed in Appendix I. The mappings between the present system and the systems of Cottarelli and Giannini; Ghosh, Gulde, and Wolf; Levy-Yeyati and Sturzenegger; and Reinhart and Rogoff are detailed in Appendix II.

Exchange regimes are often grouped into three coarse categories: hard pegs, soft pegs, and floating.

4.3.1. Hard Pegs

Under a hard peg, the authorities are “forced by their legal commitment to implement the de jure regime” (BÖR 2002.11). These arrangements require that the authorities have limited and specified functions. Box 2 below gives examples of the importance of a legal commitment. In accordance with the IMF 1999 and BÖR methodologies, I have taken a country-internal approach to classification: exchange regimes are classified the basis of the degree of domestic control over monetary policy—

¹⁵ While the term monetary union now has other connotations, its usage here is borrowed from that in the 19th century when such arrangements were more common, the most famous examples being the Latin Monetary Union and the Scandinavian Monetary Union. GGW and BÖR classify these arrangements as soft pegs, while CG classifies them as currency boards. See below, p. 16.

that is, the degree of exchange rate flexibility permitted by domestic entities. In terms of hard pegs, this approach results in some differences with other IMF systems.¹⁶

4.3.1.1. Arrangements with No Separate Legal Tender

The category No Separate Legal Tender in the eight-category system comprises the finer categories another currency as legal tender and currency unions.

4.3.1.1.1. Another Currency as Legal Tender

The category another currency as legal tender is often termed dollarization. This category applies to countries where another country's legal tender circulates as the sole legal tender in the country in question. This country may issue its own coins or subsidiary currency, but they are freely changeable against the dollarized currency at par. If the currency is traded at a different exchange rate than it is in its issuing country¹⁷ or if the domestic subsidiary currency trades at a different rate (and Gresham's Law holds),¹⁸ then the country is classified on the basis of how that rate is determined.¹⁹

4.3.1.1.2. Currency Union

Under a currency union, a multinational or multilateral body issues banknotes that are legal tender in all members of the union and the policies governing the exchange rate are determined and implemented by a multinational body in which a member country has input. It differs from dollarization since this input is formalized and based on representation and also because the currency is common to all members.²⁰

¹⁶ Until the 1990s, the IMF classified dollarized countries on the basis of the arrangement governing the currency to which it was dollarized (e.g., a country that was dollarized to the dollar was classified as floating). Since 2007, the IMF classifies countries in currency unions according to the arrangement governing the shared currency (e.g., euro countries are classified as independently floating), which is also the approach taken by RR.

¹⁷ This would be the case in several countries after the dissolution of the Soviet Union, when the exchange rate of the old ruble was not consistent across the countries in which it served as the sole legal tender.

¹⁸ As an example of this, U.S. currency notes and coins were legal tender in Liberia and circulated with Liberian currency, which was limited to coins in denominations up to and including one dollar (in 1985, a \$5 coin was introduced). The coins were not backed in dollars, and when a loss of confidence stemming from persistent balance of payments deficits and political upheavals led to the disappearance of U.S. notes from circulation, the rates diverged, forcing Liberia off of its dollarized arrangement in late 1984.

¹⁹ In moderate cases, this does not affect the classification or the number of markets in the country. For example, in Singapore after November 1967, where the old Malayan dollar (which had been devalued with sterling) was circulating in parallel with the newly created Singapore dollar (which did not devalue), minor Malayan currency coins circulated at par with their Singapore dollar counterparts.

²⁰ Countries often weigh the international role of their currencies in their monetary policy decisions, but the foreign countries do not have formal representation on the board of the central bank of the issuing country.

The currency is freely used without conversion in all member countries and must have the same international exchange rate.²¹

The rationale behind making this a hard peg is that when a country surrenders sovereignty over its currency to a multinational body, such as a regional central bank, it loses the ability to set exchange rate and monetary policy freely. As the country has some voting power, it has more monetary independence than a dollarized country, but it cannot determine monetary policy independently. In addition, the arrangement is reinforced by legal arrangements.

It should be noted that classifications here take a country-internal approach to classifying—that is, regimes are classified on the basis of internal exchange rate policy. Since the individual euro countries have the euro as legal tender but exchange rate policy is determined by an international body—the ECB—individual euro countries are classified as having an arrangement with no separate legal tender while the euro, were we to classify it, would be independently floating.

4.3.1.2. Currency Board

A currency board is defined as an arrangement in which the monetary authority stands ready to convert domestic notes and coins against a foreign currency at a fixed rate. In order to ensure this, the domestic currency must be backed by 100 percent or more in low-risk foreign bonds, foreign currency, and/or gold, and the monetary authority is prohibited from typical central bank activities, such as lender of last resort or providing credit to the government. It has no discretionary powers, its operations being passive and its actions automatic. That said, a very small number of countries have “pure” currency boards, and a spectrum of arrangements are now considered currency boards.²² Key criteria include a declared currency board, a 100 percent backing commitment (or close thereto) in mostly foreign assets, an exchange rate that is legally fixed within a narrow range, and some limit on central banking activities. Implicit in these criteria is that while it is possible to have a currency board in name only, it is impossible to have a currency board de facto only.

²¹ For example, after the abolition of the Bank of Issue of Rwanda and Burundi (BERB) on January 1, 1964, its banknotes were stamped for use in one country or the other. Even though the previous foreign exchange law in each country remained in force and each country maintained its peg to the Belgian franc, the differently stamped BERB franc notes were treated as separate currencies, and Burundi and Rwanda are classified as being part of a currency union before that date and as having pegged arrangements thereafter. Similarly, although CFA franc banknotes issued by the BEAC, the BCEAO have the same arrangement with the French Treasury and are traded at the same exchange rate, BEAC notes may not be used in the BCEAO and vice versa. The two are, thus, treated as separate currency unions. The same applies in the case of the Malagasy-Comoros CFA franc: after the dissolution of the arrangement in July 1973, the Comoros continued to use the notes (albeit with a stamp referring to the Comoros). However, since Madagascar had ceased using the franc in 1973, the Comoros’ arrangement is treated as a conventional peg rather than a currency with no separate legal tender.

²² See Camilleri Gilson (2004) and Hanke (2008).

There are a few instances where countries had de jure currency boards but other de facto regimes. In the case of the U.A.E., the currency board had extensive central banking powers and the authorities themselves discredited their arrangement.²³ In instances where a government or non-government entity exists that performs typical central banking functions but does not issue currency or directly affect the issuance of currency, the currency board classification is maintained.²⁴

Countries with currency boards or currency board-like operations that did not keep the exchange rate fixed (Hong Kong),²⁵ that had a thriving parallel market (Yemen Arab Republic), or that maintained an arrangement that was effectively a currency board but eschewed the label are classified on the basis of how the exchange rate is determined. Countries with currency boards that adopted and implemented wider margins under the Smithsonian Realignment are classified as having arrangements with horizontal bands.

4.3.2. Soft Pegs

Under soft pegs, the exchange rate serves as an instrument of monetary policy. The exchange rate is controlled or managed vis-à-vis a currency anchor. Countries may also have monetary policy anchors, but these are not prerequisites for classification. (They are discussed below under floating arrangements.)

A key concept of soft pegs is the method of adjustment of the exchange rate vis-à-vis its anchor. Adjustment can take place on the basis of policy or based on a mechanism, the most typical of which are currency composites, which are discussed here, and crawls, which are discussed under intermediate arrangements.

²³ The U.A.E. Currency Board enjoyed “fairly wide central banking powers over the commercial banking sector but [lacked] full central bank authority over other financial institutions and intermediaries” (U.A.E. Currency Board, 1974 *Annual Report*, p. iv). In its later years, the U.A.E. Currency Board pegged the dirham to the SDR, further undermining its authority as a currency board. Schuler 1992 terms this a currency board “in name alone.”

²⁴ Examples include Sudan, where the National Bank of Egypt, Khartoum, acted as fiscal agent for the government and as lender of last resort from the time of the establishment of the currency board until the establishment of the central bank. In Malaysia, a central bank was created in 1959 that was intended to supersede the Commissioners of Currency, Malaya and British Borneo, although its functions that would have competed with those of the currency board were held in abeyance.

²⁵ On November 24, 1974, Hong Kong was forced off of its currency board (which had been since July 1972 an arrangement with horizontal bands) and its currency was allowed to float independently. The regime in place, however, continued many facets of a currency board: there was a lack of central bank facilities and there was still a backing requirement (instead of maintaining backing in dollars, the issuing banks credited the Exchange Fund in Hong Kong dollars, which the Fund used to purchase foreign currency). Without central bank facilities, the combination of these and a weak exchange rate eventually resulted in the demise of the regime (Jao 1998.222–23). The events that followed mirrored the predictions of such an arrangement by Ghosh et al. (2002.162–63).

4.3.2.1. Currency Composites

A composite anchor, also called a basket (the terms are used interchangeably here), is an anchor that is calculated on the basis of the fluctuations of several currencies. Technically, the exchange rate against the reference currency (e.g., the dollar) is adjusted to keep a steady rate against an average of the exchange rates of the basket currencies, usually in an effort to stabilize the nominal effective exchange rate (NEER). Typically, a basket is calculated as the weighted arithmetic average of the exchange rates of selected currencies vis-à-vis the domestic currency.²⁶ Baskets are always weighted, with the most common weights being trade-based (where the weights reflect the share of trade with the home country from major partners) and transaction-based (where the weights reflect the share of trade with the home country effected in major currencies). Some countries have used a mixture of these.

The SDR is a special case. Owing to the “equal value” principle of the SDR (Polak 1974.6), arrangements vis-à-vis the SDR prior to July 1974 are treated as having the SDR as de jure anchor but another currency as de facto anchor, and during this period the SDR is considered a single currency. From July 1, 1974, when the SDR was valued according to a basket, a peg to the SDR is considered a peg to a composite.

The composition of the basket used in the SDR was reviewed and modified periodically, which illustrates the fine line between composites and crawls. Given these adjustments, we could, at least in theory, consider a peg to the SDR an arrangement with a very slow crawl. However, this runs contrary to the country-internal approach to classification, in that the adjustment is made by a foreign entity. It also runs contrary to the intent of countries that adopted the SDR as anchor, viz., to target stability and not to correct for disequilibria. In conjunction with this, pegs to baskets that are adjusted with very low frequency are considered pegs. This includes such arrangements as Austria’s “hard-currency” policy (1973–76), in which currencies were removed from the basket when they depreciated, and the so-called “Geneva II” basket, in which only upward movements of currencies were accounted in the basket.

If the basket is adjusted frequently and according to a formula, then a peg will be considered a crawl. Thus, arrangements that target terms of trade and those with real effective exchange rate (REER) targets will result in a crawling arrangements with a basket anchor. There is one exception to this. Many non-SDR basket pegs saw frequent adjustment of the weights and composition during the first few months of implementation. Although this could be interpreted as resulting in a crawl, it seems to reflect fine-tuning as opposed to correcting for disequilibria. Hence, the adjustments did not influence the classification, provided the basket stabilizes within a short amount of time and a level rate is chosen.

Cooperate arrangements, like the ERM, are a special case of composite anchors, and are discussed below.

²⁶ Mathematically, it would be more appropriate to use a harmonic or a geometric than an arithmetic average, but instances of countries doing this are very rare.

If a country has a floating rate and simply monitors the exchange rate vis-à-vis a currency but does not manage it regularly or along an implicit path or range, this is not considered a currency anchor.

4.3.2.2. Conventional Fixed Pegs

The category conventional fixed pegs in the eight-category system, comprises the finer categories monetary unions, other conventional fixed pegs, and peg to a composite. Technically, a fixed peg is an arrangement with horizontal bands with a narrower range of fluctuation, so there is some overlap with intermediate arrangements. However, given the historical difference between the two arrangements, they are classified separately. No distinction is made between countries that maintain a flat exchange rate vis-à-vis the anchor and those that allow flexibility up to that threshold.

4.3.2.2.1. Monetary Union

A monetary union is an arrangement between multiple countries whereby their separate currencies are freely interchangeable at fixed rates and circulate freely throughout the union. These arrangements are usually multilateral, in that the members share responsibility for its management, such as in the case of the East African Community and Syria and Lebanon, but may be unilateral, as in the case of the Common Monetary Area and the Belgium-Luxembourg Economic Union, where policy decisions are made almost entirely by South Africa and Belgium, respectively. In the latter case, South Africa and Belgium are classified on the basis of the external exchange arrangement, while Luxembourg and the other members of the CMA have monetary unions. There is a fine line between this type of agreement and a currency union, the difference being the ease of dissolution.²⁷

4.3.2.2.2. Other Conventional Fixed Peg

An other conventional fixed peg is an arrangement whereby largely impermeable extremes of up to ± 1 percent are placed on the fluctuation of the exchange rate and the central rate is level. In a de facto sense, the classification applies when the authorities deliberately keep the exchange rate within the narrow range for three months or more. The rate need not have a set central rate—countries may set upper and/or lower boundaries, but the level of fluctuation is always limited. The exchange rate may be adjusted (an adjustable peg), but adjustment must be rare (usually less four times a year) and must not be effected through an automatic adjustment mechanism.

²⁷ In the Syrian-Lebanese monetary union, for example, the two countries had a customs union and a shared central bank: the Bank of Syria and Lebanon, which held both countries' reserves and issued banknotes. This is indistinguishable from a currency union except for one factor: although the banknotes were freely movable between both countries at par, the notes had an imprint ("Syria" or "Lebanon") indicating the country in which they were originally issued. This imprint made the dissolution of the union and establishment of exchange controls in 1948 much easier than would have been the case otherwise. In contrast, the issuing country on euro banknotes is identifiable only through the serial number, making distinction and dissolution more difficult.

This category also serves as a residual category for arrangements with fixed rates that do not fit neatly into the hard peg categories (Box 2).

4.3.2.2.3. Peg to a Composite

The category peg to a composite is distinguished in the database, for the sake of eight-category comparisons, this category was included within conventional fixed pegs, the difference being indicated in the figures on anchor consistency.

Box 2. Countries with Hard Peg–Like Arrangements

There are several instances where countries have de facto binding commitments to a fixed exchange rate (such as free banking), but lack the express legal commitment and are hence classified as conventional fixed pegs. This is especially common among countries without monetary authorities, two of which are discussed here.

Cuba (5/1942–4/26/1950)

The monetary system of Cuba was first organized under a law of October 1914 which established the Cuban peso as the country's monetary unit with a gold content equal to that of the dollar, and provided that both the gold peso and the U.S. dollar were to be unlimited legal tender. Without a central bank, the peso was issued by the Treasury. Silver certificates, backed 100 per cent by silver pesos held in the Treasury, were first issued by the government in the early part of 1935. In May 1942, a program was initiated for the purchase of gold to be used as backing for a new issue of silver certificates. These certificates were issued against a reserve of 98 per cent in either gold or dollars. As the gold purchases were intended to serve as the reserve for the central bank (which would be created in 1950), the gold could not be used for intervention.

De facto, this is many aspects of a currency board: a fixed exchange rate, a high backing requirement, and, by virtue of the absence of monetary authority, the absence of credits to the government or LOLR facilities. However, there was no legal mandate or obligation to maintain the status quo and no specific prohibition on activities other than the use of the reserves. As a result, Cuba is classified as a conventional fixed peg.

Honduras (1926–6/30/1950)

Honduras also lacked a monetary authority. A law of 1926 set the exchange rate at L 2 per US\$1. Minting of metallic currency was done by the Government, while banknotes were issued by two local banks—Banco Atlantida and Banco de Honduras. The note issue by these banks could not exceed 170 per cent of the banks' paid-in capital and surplus excluding gold and foreign exchange. More importantly, the issuing banks were required by law to maintain reserve coverage of 50 per cent of their note issue and 25 per cent of their outstanding demand deposits in domestic silver. The total issue of domestic coins remained fixed between 1939 and 1949. This situation lasted until the establishment of the central bank in 1950. (Beginning in 1934, there was a monetary authority, the Exchange Control Commission, which *inter alia* had the right to adjust the exchange rate, but it never exercised any authority over exchange matters.)

The government was reluctant to issue additional silver coins which, with the fixed exchange rate, created an implicit ceiling on banks' monetary liabilities. Additionally, without a monetary authority, there could be no typical central bank activities. However, again, as there was no legal prohibition on these activities and as the reserve requirement was just 50 per cent, it really cannot be considered a hard peg, and Honduras is classified as a conventional fixed peg.

4.3.2.3. Intermediate Arrangements

4.3.2.3.1. Horizontal Bands

An arrangement with horizontal bands is similar to a conventional fixed peg except that the range of fluctuation, while still predetermined or implicit, is wider than ± 1 percent. No limit is set on the range of fluctuation, the only requirement being that both limits are horizontal. If the authorities maintain soft inner bandwidths (i.e., permeable intervention points), this does not affect the classification. However, if a narrower bandwidth is made impermeable, the classification is based on these narrower bands. If a country's exchange rate supersedes the formal band for a very brief period due to market pressures but is quickly brought back in line, this is not considered as violating the arrangement. Arrangements with nonparallel bands are considered crawling arrangements.

Countries that availed themselves of wider margins under the Smithsonian Realignment are classified as having *de jure* horizontal bands. They are considered as having *de facto* horizontal bands only if the increased flexibility was actually permitted. Countries that interpreted the Smithsonian decision as allowing wider buying-selling spreads but maintain a stable central rate are classified as *de facto* pegs. Similarly, countries that adopt wider bands in order to achieve devaluations are classified as having *de facto* pegs. However, instances where the exchange rate shows limited variability within the band without official intervention are inadequate to result in a *de facto* peg.²⁸

In terms of the predecessor arrangements to the euro from 1971, this study follows the IMF and BÖR in classifying members as having horizontal bands vis-à-vis a central rate (unless they maintained narrower bands) until the adoption of the euro in 1999.²⁹ See the discussion below (p. 25).

4.3.2.3.2. Crawling Pegs and Crawling Bands

Crawling pegs and bands are similar to horizontal bands and pegs in that a largely impermeable limit is placed on the range of fluctuation. However, the central rate or the slope of one or more of the bands is not level. The central rate is usually adjusted vis-à-vis a measured indicator, such as realized inflation, price differentials, non-horizontal NEER targets, or any REER targets.³⁰ Depending on how the anchor is calculated, the

²⁸ On the smoothness of exchange rate behavior within a band, see Krugman 1991.

²⁹ Studies have taken different approaches to classifying the deutsche mark. In the present system, West Germany is classified as having an arrangement within horizontal bands from March 1973 through February 1983, since they were not always at the head or tail of the “snake” (the points with the largest responsibility for intervention). After March 1983, when the “EMS began to resemble a fixed-rate regime” with the mark as numeraire (Kenen and Meade 2008.48), there is good reason to classify most of the members as having a peg to the mark and West Germany as having a managed float. However, this study follows Bubula and Ötoker-Robe's view of West Germany having an arrangement with horizontal bands (as a participant) until the end of 1998.

³⁰ Arrangements with horizontal NEER targets are classified as pegs or arrangements with horizontal bands, depending on the level of flexibility.

crawl may be vis-à-vis a single currency or a composite. If the fluctuation limit is less than ± 1 percent, it is a crawling peg; otherwise, it is a crawling band. Arrangements with nonparallel bands are considered crawling arrangements, dependant upon the spread.

4.3.3.2.1 Forward- and Backward-Looking Crawls

Forward-looking crawls are adjusted on the basis of forecasted or targeted variables, while backward-looking crawls are adjusted on the basis of realized variables and are hence subject to lags. Either type may have a rate of crawl that is preannounced; in the former, the preannounced target is set to meet an expected variable; in the latter, it is to compensate for a variable's previous performance. The window of assessment and frequency of adjustment do not play a role unless the frequency is so low as to be indistinguishable from an adjustable peg. The rate of crawl also does not play a role, provided that it reflects the underlying variables. for example, if a crawl targets inflation differentials and those differentials approach zero for a time (and hence the crawl slows to a zero), the country is not reclassified as a peg unless there is some indication of a deviation from the crawl mechanism.

4.3.3. Floating Arrangements

Floating arrangements were originally termed “independently floating” in the 1975 IMF system to indicate that the exchange rate floats independently of a currency anchor (the term is not to be confused with the modern usage). In these arrangements, although the authorities do not target implicitly or explicitly an exchange rate level or path akin to those described above. There are two floating classifications: managed floating and independently floating.

4.3.4. Other Managed Floating with No Predetermined Path for the Exchange Rate

The eight-category group other managed floating with no predetermined path for the exchange rate comprises two types of arrangements that are captured in the 14-category groups other tightly managed floating and managed floating.

4.3.4.1. Other Tightly Managed Floating

Strictly speaking, all of the categories above are various forms of tightly managed arrangements, in that the exchange rate is determined largely or primarily by intervention or the possibility thereof. Other tightly managed floating serves as the residual category for intervention strategies and goals that are not captured by the groups above, and includes instances where the authorities intervene in the exchange rate heavily to sharply limit its fluctuation or range. There may also be exchange rate targets, but they are targets are soft or implemented irregularly or haphazardly, with the result that the exchange rate does not float freely but also does not follow a predicted or predictable path, even ex post.

Flexible arrangements with rules-based or automatic adjustment are not classified here but as crawling arrangements, horizontal bands, or pegs, depending on the frequency and type of adjustment. Simple examples include one-sided bands and volatility limits, but also periods where the exchange rate is fixed but adjusted both up and down to reflect

market pressures (such as a fixed rate that is adjusted a few times a year to account for the parallel rate). Arrangements with one-sided bands (i.e., maximum or minimum exchange rate levels) are usually classified in this category unless the market rate is so far from the floor/ceiling as to make it ineffective, on which case the arrangement would be managed floating.³¹

The central criteria for this category is that the exchange rate is controlled but permits market functioning more than the arrangements above. While considered an intermediate arrangement in Bubula and Ötöker-Robe, these arrangements are classified together with other managed floating in the eight-category classification system and in the de jure system because there is no clear de jure mapping.

4.3.4.2. Managed Floating

The difference between managed and independent floats has been called one of the most puzzling for scholars outside of the IMF.³² The category managed floating is intended to identify countries that intervene or maintain a more or less constant present in the market with broad exchange rate targets (such as correcting misalignments), short-term desires to limit variability, or “leaning against the wind.” There is no threshold for intervention in the category, as some countries may intervene just once in a market to achieve the same effect as another country intervening for months. The classification does not indicate limited variability, but as the authorities have an interest in moving or controlling the exchange rate, there is a perception in the country that if the authorities did not intervene, the market would be much more disorderly or would cease to reflect fundamentals. The exchange rate, hence, is an instrument of monetary policy and the flexibility of the exchange rate is perceived to be less than it is in independently floating.

4.3.5. Independently Floating

Under independently floating, the country eschews direct and indirect intervention in the foreign exchange market. When the country does intervene, such as to meet reserve targets, purchases and sales are done in such a way as to minimize the effect on the exchange rate. There is no threshold for intervention, and a country may be in the market every day (as in the case of Australia).

The effect of official actions on the exchange rate is difficult to quantify, but the category is meant to indicate in practice that the actions of monetary authorities follow the market rather than lead it and that the exchange rate is an indirect instrument rather than a direct one. Other direct instruments of monetary policy, such as reserve levels and interest rates, are not used in order to directly affect the exchange rate.

Many countries with floating arrangements monitor the exchange rate vis-à-vis a currency or a basket of currency. Unless the monitoring requires action or leads to

³¹ This includes arrangements with an effective minimum rate, such as arrangements with a fixed base rate but an adjustable coupon rate.

³² Willett et al., 2006; cf. Nitithanprapas and Willett 2002.

automatic or discretionary rules, the existence of such monitoring is not by itself adequate to preclude a classification as managed or independently floating.

Floating arrangements are classified according to the monetary policy anchor.

4.3.5.1. Anchors of Monetary Policy

Floating arrangements are those without a currency anchor, and since the 1980s, most floating arrangements have one or more policy targets. In earlier years, it is difficult to classify monetary policy not only because of the complexity of policy arrangements then but also because the modern understanding of monetary policy developed only in the mid-1970s (see Tower and Willett 1976), and as a result earlier documents seldom discuss policies adequately enough to support a reliable classification. As a result, although some information was obtainable from central bank documents and surveillance documents, most of the information in the dataset is derived from the ARER, CG, and Mahadeva and Sterne (2000, especially p. 35 Table 3.1). I should stress that these anchors were not verified independently here and that countries may have a number of anchors. Many countries target more than one variable; the classification is based on the major or primary target, although that is often difficult to discern empirically. A country's choice of instruments of monetary policy does not affect its classification. In the anchors dataset, the following categories are used:

4.3.5.1.1. Interest Rate Targets

Policy targets a market-based interest rate.

4.3.5.1.2. Monetary Aggregate Targets

Policy is aimed at raising or lowering any monetary indicator to a target or target range. In cases where information is available, this category may be disaggregated into base money/reserves, domestic credit, broad money, and narrow money targets.

4.3.5.1.3. Inflation Targeting Framework

The country's monetary authorities are required to satisfy an inflation target, and there are legally mandated domestic repercussions if they fail. This does not include arrangements where there is a soft inflation target or where there is no legally binding obligation to pursue an inflation target.

4.3.5.1.4. Fund-Supported or Other Monetary Program

Monetary policy is governed by a number of targets imposed under an external program. If the program has just one target (or one major target), the anchor is classified on the basis on that target. This category indicates that the country has to satisfy several indicators for which there are repercussions if they fail.

4.3.5.1.5. Multiple Indicators/Other

The country's authorities have either adopted a policy different from those listed above or it targets several indicators, none of which has long-term priority over the others.

4.3.5.1.6. Not Determined

Information is not available to establish a reliable classification. This is the default anchor for pre-1977 floating arrangements unless there is some evidence that a target was in place.

4.3.6. Granularity and Averages

At their finest level, classifications are based on end-month observations. This is applied somewhat inconsistently to account for the forward-looking vs. backward-looking aspect of de jure and de facto regimes. Normally, a given country's classification for a given month is the average flexibility during that month, such that events that last a few days are averaged out.³³ However, since de jure changes are made effective the date that the policy changed, de facto policy changes that are datable are made effective that date and the monthly classification reflects the change, even if it occurs on the last day of the month.

In most analyses, end of period data are used. Averages are calculated as the period mode, that is, the modal end-of-month observation over the period. For periods with bimodal or multimodal classifications, the latest mode in the period is used.

4.3.7. Types of Rates and Market Structure

The data on market structure are taken from the ARER and surveillance documents. The information in the summary tables at the back of the ARER were given priority over the information in the country chapters, as (a) the tables reflected end-of-year data, whereas the country chapters could continue past the new year, and (b) the tables could reflect confidential information not included in the narrative portions (such as unpublished restrictions under Article IV or Article VIII). For this reason, the data are annual (end-of-period). In addition, as these data are not discussed in BÖR's data, the data are for 1945–89 only. Note that all country classifications are based on legal or tolerated domestic rates.

4.3.7.1. Types of Rates

Par value rate applied: The country has a par value and the par value applies on some transactions. See below, p. 28

³³ For example, if a transportation strike blocks a small country's exports from reaching the port, thereby changing the demand for foreign currency, and the monetary authorities intervene for a week to stabilize the exchange rate until the strike subsides, this is not considered a change in policy, even if the week overlaps the end of the month.

Other fixed rate: At least some transactions are effected at an explicitly fixed rate that is not the par value.

Officially adjusted/Variable premium: The country has at least one (fixed) exchange rate that is subject to official adjustment.

Market-determined: At least one rate is sold at an auction (agnostic of how the auction works or the flexibility of the rate)

Coupon rate: Under coupon systems, exporters who convert foreign exchange domestically are given transferable coupons that entitle the holder to purchase a fixed amount of foreign exchange at a certain rate. Domestic sales of foreign exchange are made only against these coupons, and they are often sold on markets. The coupon, thus, functions as a flexible surcharge.

Mixing rates: Some transactions are required to be funded through a rate based on multiple markets. For example, a country may sell foreign exchange for certain purposes at a rate that is 65 percent auction rate and 35 per cent par value. These are distinguished from the following.

Adjusted mixing rates (share changes): Mixing rates in which the per cent shares are subject to periodic modification. For example, a system like that above, in which the authorities adjust the ratios.

Adjusted mixing rates (rates change): Mixing rates in which at least one of the mixing rates is subject to endogenous change. For example, a country has a mixing rate that is 65 per cent auction rate and 35 per cent a fixed rate that the authorities modify.

Adjusted rates for goods: Foreign exchange is available for different goods at different rates.

4.3.7.2. Rate Structure

Unified rate: There is one legal exchange rate in the country.

Different import and export rates: Transactions relating to imports and exports are effected at different rates. This includes instances where there are multiple rates for imports or exports.

More than one rate for imports

More than one rate for exports

Special BPA rate: The country maintains bilateral payments arrangements with a special exchange rate.

Special rate for invisibles

Special rate for capital

Bazaar/Curb rate/Tolerated parallel rate: The authorities explicitly tolerate a market rate that is not under their control and may even require some transactions to take place on the market.

Exchange tax/Bonus: Purchases or sales of foreign currency are subject to a tax or purchases or sales of some currencies (or for specified transactions) are available at a bonus or below-market rate.

Black market: Documents explicitly note that a black market is active.

4.4. Special Cases and Considerations

This section details some of the special cases of exchange regime classification and how they were handled.

4.4.1. Certain Types of Managed Floating in the IMF De Jure Data

As noted in the main study, the term “managed floating” in the de jure data used by CR does not correspond to our modern usage.³⁴ The term is prevalent in the data underlying the dataset, and in collecting the data for the de jure dataset used here, the term was ignored in favor of the description of the practice. What we would see as crawling arrangements were regularly described as managed floating in the source IMF documents, while de jure crawling bands and arrangements with wider horizontal bands were usually classified in the residual category.

One type of arrangement classified as managed floating required some analysis before classification: Arrangements in which exchange rates are preannounced weeks of months ahead of time. They are usually classified on the basis of the intended path of the preannounced rate. That is, if the rate is flat or if it entails a step adjustment, it is considered a peg, while rates that implicitly or explicitly entail a depreciation or appreciation are considered crawls. If, however, the preannouncement serves solely as a guide, then a floating category is considered.

4.4.2. Adjustment Against Parallel Market Rates

As a rule, systems in which the exchange rate is automatically adjusted are classified on the basis of the implied path for the exchange rate vis-à-vis the target indicators. There is one exception to this rule. In some systems, an exchange rate is adjusted to follow the parallel rate. If the parallel rate is floating, this results in the adjusted exchange rate being managed floating (usually tightly managed floating). The rationale for this is that although the rate is effectively pegged to the parallel rate, the adjustment is made with the intention of finding the market value of the currency, not of

³⁴ For example, from the Q4 1995 “Quarterly Report”: “[T]he Costa Rican colon has been adjusted by the Central Bank on a daily basis.... Currently, the pace of devaluation is 11 cents per day, or 13.5 percent on an annual basis.... In light of the above, the exchange rate arrangement of Costa Rica has been reclassified... to the category ‘More Flexible: Other Managed Floating.’”

using the exchange rate as an instrument of monetary policy. Since there are invariably lags in adjustment—and since the adjustment is ultimately at the discretion of the monetary authorities—the rate is not considered independently floating. In cases where the adjustment is done in stages or on the basis of an incremental schedule, then the arrangement is considered a crawl.

4.4.3. Cooperative Arrangements and Multilateral Arbitrage Arrangements

These types of arrangements, in which countries mutually or multilaterally agree to defend each other's currency or to restrict cross-rates in their respective domestic markets, are classified variously on the basis of the anchors used and the legal status of the currencies within the countries. If the currencies of all participants are legal tender across the membership in the agreement, the arrangement is classified as a monetary union (above, p. 16). If the countries are limiting their variability within a narrow range against a common anchor, then each country is treated as having some arrangement (such as a peg) vis-à-vis that currency. The following presents some examples.

4.4.3.1. The European Multilateral Arbitrage Arrangement

From 1953 to 1999, the variability of cross-rates between certain European currencies was limited by multilateral intervention agreements. The first of these was the European Multilateral Arbitrage System, introduced in 1953, in which Belgium-Luxembourg, Denmark, France, the Netherlands, Sweden, Switzerland, the U.K., and West Germany would intervene in their respective markets to keep fluctuations of the other currencies within $\pm\frac{3}{4}$ per cent. (Norway joined at the end of 1953, Italy in 1955, and Austria in 1957). Although they limited the relative fluctuations of the currencies, the dollar was still the central anchor and daily exchange rates indicate that dollar variability was the lowest of any cross-pair (except when other agreements came into play).

4.4.3.2. The Snake, ERM, and the Euro

On August 23, 1971, Belgium-Luxembourg and the Netherlands entered into an agreement—the Benelux narrow margin arrangement—to keep their exchange rates within a narrow margin ($\pm 1\frac{1}{2}$ per cent) and to allow them both to float. This joint-float led to an agreement by EEC ministers on April 24, 1972, to keep their currencies within a band of $\pm 2\frac{1}{4}$ percent (the Smithsonian realignment would have allowed fluctuation up to $\pm 4\frac{1}{2}$ per cent). This was formalized by the European Common Margin Arrangement (the “snake”) on March 19, 1973. Under the “snake,” member countries intervened to support their own and the partner countries within the prescribed bands. By nature of the arrangement, countries that found themselves closer to the intervention points tended to intervene more, and as a result there were frequent realignments.

Since members managed their exchange rates to keep them within a spread vis-à-vis all member currencies, this results in the countries being classified as having a peg to a composite, even though the composite is implicit and the weights could shift as countries under the ECM moved from the front of the “snake” to its back. The reason that the ECM was not identified as having a dollar anchor is that while countries declared a par value in terms of dollars, the central or “pivot” rate floated within the permitted range against the dollar and the members jointly floated within a narrower range vis-à-vis this

rate. Countries that did not participate in the arrangements but still used the central rate as an anchor are classified as having the ECM/ERM as an anchor as a nonparticipant.³⁵

On March 13, 1979, the “snake” was replaced with the Exchange Rate Mechanism (ERM) of the European Monetary System (EMS), in which each currency was subject to compulsory intervention rates and bilateral central rates in European Currency Units (ECUs). There was no single central rate, but all of the rates together implied a central rate. Even though this “central” rate was flexible, the *de jure* arrangement is treated as an arrangement with horizontal bands, as each currency was held within a fixed range. Technically speaking, the anchor of the ERM was a basket of currencies while the anchor of the ERM was a single currency, the ECU. In practice, however, countries took two approaches: some seem to have targeted the implied central rate, while others targeted the DM on a day-to-day basis. Countries of the former group are classified as having a cooperative arrangement (ECM/ECU/ERM),³⁶ while the latter have an arrangement vis-à-vis the DM. Owing to the methodology used in classifying arrangements with multiple anchors, countries that adopted a wider band vis-à-vis the ERM in order to maintain a narrow peg against the DM are classified as having a peg to the DM.

A distinction is made between actual participants in the “snake”/ERM and countries that pegged to the central rate, the key reason being that in the latter case there was no mutual intervention policy.

As noted in the body of this study, studies have taken different approaches to classifying the Deutsche mark. In this study, West Germany is classified as having an arrangement within horizontal bands from March 1973 through February 1983, since they were not always at the head or tail of the “snake” (the points with the largest responsibility for intervention). After March 1983, when the “EMS began to resemble a fixed-rate regime” with the mark as numeraire (Kenen and Meade 2008.48), there is good reason to classify Germany as a managed float. However, it is clear that West Germany managed the float of the mark vis-à-vis the other currencies in the arrangement. That is, West Germany allowed some flexibility in its float but also intervened—in conjunction with the other central banks—to maintain the spread. Although this suggests some endogeneity in the determination of the basket, this study retains BÖR’s interpretation of

³⁵ Norway is a problematic case. On January 22, 1972, Norway signed a treaty for accession to the EEC and, on May 23, adopted the EEC common margins agreement. However, after a referendum in September, Norway decided not to join. However, documents refer to the krone as a participant in the agreement and Norway and other members seem to have intervened to preserve their mutual margins. So, Norway is classified as being a participant in the system, even though it was not a member of the EEC.

³⁶ The anchor is also applied, albeit anachronistically, to the pre-snake Benelux agreement.

West Germany having an arrangement with horizontal bands until the beginning of 1999.³⁷

The euro came into existence as a unit of account with fixed rates of conversion on 1/1/1999, but was not issued as a currency until the beginning of 2002 (there was then a brief period of dual circulation in most countries). Although all of the euro countries' currencies were linked by an irrevocable fixed rate, bank accounts could be denominated in either domestic currency or euros and bureaux de change and banks still charged a conversion fee on non-euro payments and banknotes of euro countries did not circulate outside their countries of origin. In addition, there was a perceptible change of expectations once the euro actually launched. Hence, in many ways we could argue that the period 1999–2001 could be seen as a *de jure* currency union with *de facto* conventional fixed pegs or even a multiple currency practice with a very narrow spread. However, the facts that most internal payments grew to be effected in euros, that the ECB controlled monetary policy, and that foreign exchange markets across the union had only negligible spreads indicates that the euro was the *de facto* currency. Hence, the whole period 1999–2001 is seen as a *de facto* and *de jure* currency union.

4.4.3.3. The W-ERM II

The dataset includes the W-ERM II, an arrangement that was adopted *de jure* in several West African countries but was never implemented. As the enacting laws are still in effect, the countries are considered to have this *de jure* arrangement.

4.4.4. Multilateral Intervention Accords

If two or more a group of countries agree to intervene to influence the value of one of their currencies in a non-rules based way, then that currency is treated as having less flexibility. For example, the Louvre and Plaza Accords, which were meant to influence the value of the dollar, resulted in the dollar being managed floating but not the yen (but cf. Latter 1996.13), even though influencing the value of the dollar implicitly affected their exchange rates.

Instances where currencies have a natural or statistical link (such as the traditional link between the yen and the won or results of the Austrian National Bank methodology) that are not the result of official policies or actions do not affect the classification.

Under the Louvre, Plaza, and other accords, the industrialized nations—usually the U.S., Japan, and Germany—entered into several multilateral agreements to manage the floats of one or more of their currencies. For these periods, the currency in question is treated as *de facto* and *de jure* managed floating. For the purposes of this study, owing to requirements in the “Guidelines for Floating” (IMF 1974b) and actions taken after the

³⁷ From 1973 on, CG classifies West Germany as having a floating arrangement with the other members of the “snake”/ECM and the ERM having limited flexibility vis-à-vis the mark. GGW classify Germany as having a float with rule-based intervention. LYS and RR see the mark as independently floating.

London and Bonn summits, as well as the accords noted above, the U.S. is classified as having a managed float in several periods before the mid-1990s.³⁸

4.4.5. Par Values

Under the Bretton Woods arrangement, countries declared a par value vis-à-vis the dollar and gold of a certain weight and fineness. Initial par values were set in the end of 1946, with the dollar being set at 0.888671 gram. With the exception of new members and countries that had a special arrangement with the Fund (such as pre-revolution China and Taiwan), all members had a par value, within ½ per cent of which exchange transactions were to take place. However, a par value is different from a central rate (a rate at which the mean possible exchange rate transaction is effected), in that a country did not need to keep its exchange rate(s) at the par value. Rather, it could adjust its exchange rate—even automatically—up to 10 per cent from the par value without having to consult with the IMF Board or establish a new par value. In multiple currency practices, only official transactions, if any transactions at all, took place at the par value (see de Vries 1966 and 1967).

For these reasons, the existence of a par value is not sufficient to classify a country as having a peg; similarly, the dollar-valued nature of the par value is inadequate to classify a country as having a peg to the dollar.

It is difficult to say when the par value system ends; I have taken 1977, the date of the Jamaica agreements and the adoption of the Second Amendment.

4.4.6. Arrangements in 1971–73

The period from the floating of the mark in May 1971 to the floating of the dollar in March 1973 is extremely difficult to classify, largely because of the high frequency with which arrangements were changed but also because contemporary reports focused more on ways of returning to parity than on the policies that had been implemented.³⁹ This is further complicated by the lack of reliable domestic high-frequency exchange rate data.

The chief source of high-frequency exchange rate data for this period is an electronic dataset formerly available from the Federal Reserve Bank of New York, which reflects New York noon rates from 1/1/1971; I compared these with rates reported in the *New York Times* (closing selling rates), and while the two are very close and have a very narrow spread for major currencies, the spread in some instances can be as high as 5 per cent. It is possible that the exchange rates of some currencies showed wide intraday fluctuations, but it is also possible that the data have minor errors. While the overall behavior of the rates is the same in both datasets, I used *New York Times* data under the

³⁸ Depending on how the reference zones under the Louvre accord were defended, there may even be a justification for classifying periods as a horizontal band or joint-float, but that is difficult given the current information. See Krugman 1991.

³⁹ One exception is the BIS study by Kneeshaw (1971).

assumption that the *New York Times* has considerably more reputational risk and was thus more likely to correct its information.⁴⁰

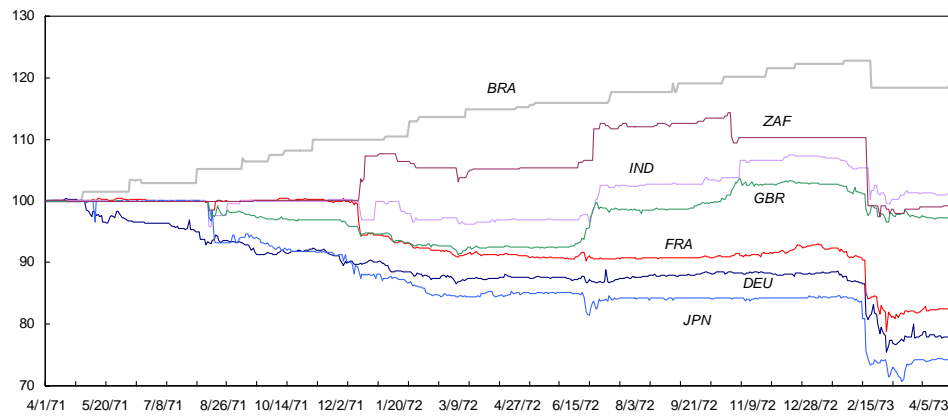
Figure 1 illustrates the problem of classifying the period. According to surveillance documents, sterling, for example, seems to have floated with little policy guidance, but the range of its floatation was rather narrow (~8 per cent in the first six months with a standard deviation of 0.8 d.). According to the surveillance documents, the float was largely free, with occasional interventions in 1972 which became much rarer after the floating of the dollar. While there are other factors that could have resulted in the stability of the exchange rate, such as capital controls and the continued of special rate for capital transactions, the exchange rate remained stable. It is hard to describe this as “floating in a sea of tranquility,” a term used to describe the stability of the Canadian dollar in the late 1950s. rather, the broad stability before 1973 seems to reflect a lack of coordinated speculation, in that the market was either too used to government intervention that it continued to experience Krugman (1991) effects or that floating hit the market so much by surprise that it did not update its models quickly enough. Experiences with crawling arrangements later seem to reflect the first of these.

The method for classifying countries that availed themselves of wider margins under the Smithsonian realignment is discussed above (p. 18)

⁴⁰ Each issue of the *New York Times* listed four rates: the daily rate, the previous day’s rate, the rate one week earlier, and the rate a year earlier. In collecting the data, the modal of the four rates was used.

Figure 1. Exchange Rates of Selected Currencies, 1971–73
(Vis-à-vis the dollar; Index; Daily data)

Major and Selected Developing Currencies: 4/1/1971–4/30/1973 (4/1/1971=100)



Selected Major Currencies: 5/3/1971–12/31/1971 (5/3/1971=100)

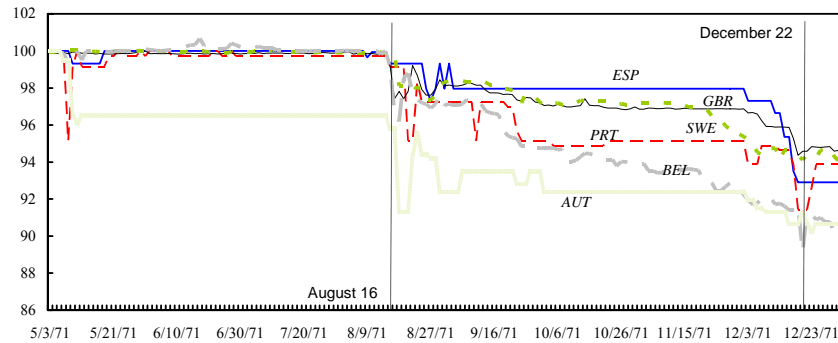
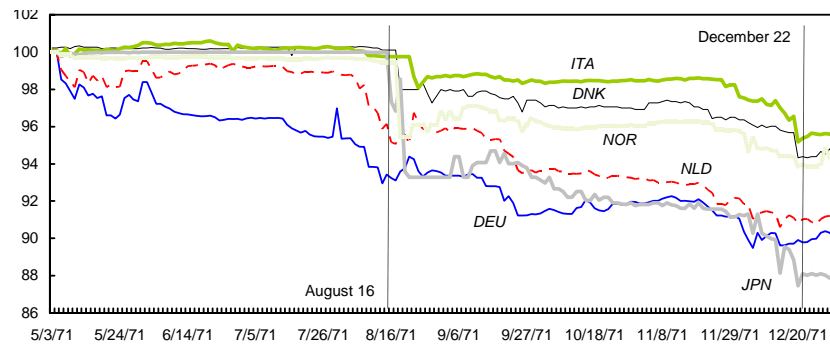
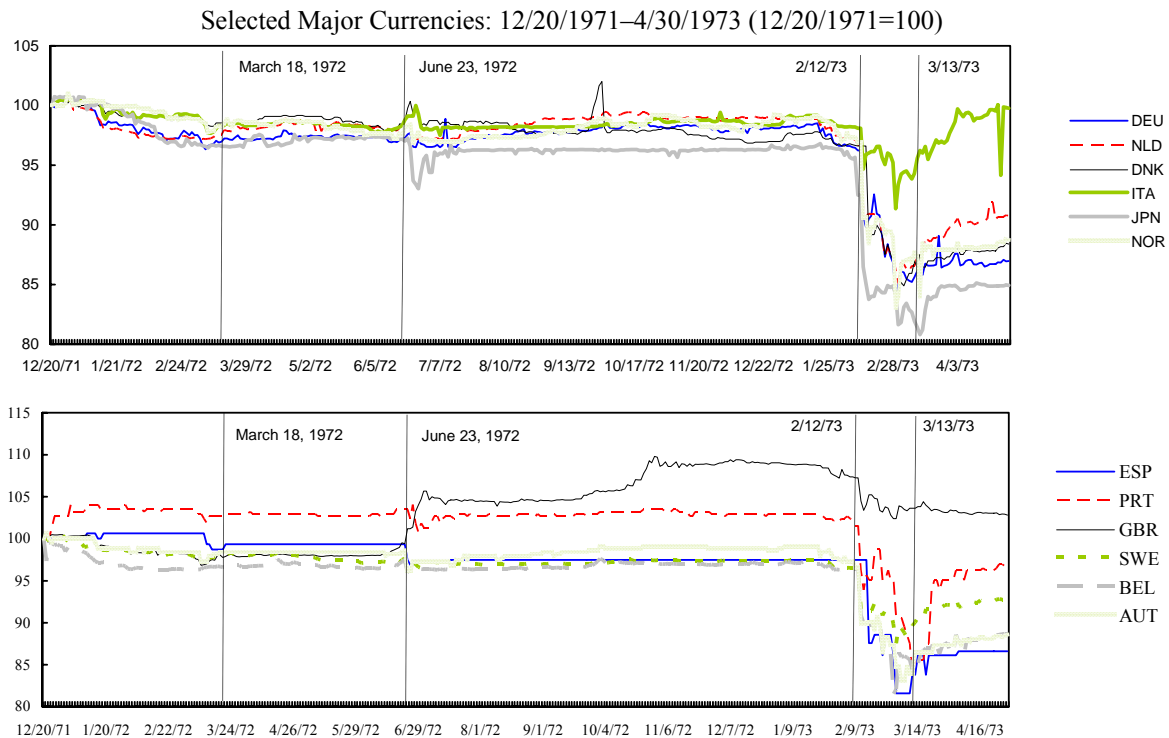


Figure 1 (continued)



Source: *New York Times*, various issues.

4.4.7. Transitions from Intermediate Arrangements

Any arrangement in which the authorities defend the exchange rate at boundaries will be governed by the expectation of (and the credibility of) the monetary authority's interventions (Krugman 1991). This influences the behavior of the market, and when a country voluntarily (i.e., is not forced off of an arrangement) widens its band or moves from an intermediate arrangement to a floating arrangement, there is a tendency for the exchange rate to adhere to the previous intervention points, even when the authorities have ceased to intervene. Examples of this include Israel and Hungary, in which the exchange rates remained within the previous bands long after they were abandoned. As arrangements are classified on the basis official statements and activities, taking market knowledge market "memory" that is not based on expectations do not of the stated and intervention

4.4.8. The CFA Francs

Using the currency union methodology above, the CFA franc countries are classified as having no separate legal tender. However, although the BCEAO and BEAC issue the joint currencies, foreign exchange transactions are effected through operations

accounts with the French Treasury in Paris,⁴¹ and it is the French Treasury that guarantees the exchange rate. In addition, there is also considerable flexibility within the arrangement, as France maintains different agreements with some countries. Cameroon, for example, has an agreement with France that gives it the possibility to adapt regulations to its own requirements, and some of the members have unilaterally imposed exchange taxes.

We could, then, view the relationship a country has with Paris having primacy over its relationship with its currency union. However, as we are following the IMF methodology, it is classified as if the currency union has primacy, viz., as a currency union.

One problem with this solution comes in the classification of its market structure. When France introduced a dual market (1971–74), the CFA franc countries followed suit. Since the move by the CFA franc ensured that all transactions were at the same rates as those in France, we could classify their market as unitary. This would create a problem with Cameroon, which unified its markets before France did and thus by unifying its markets may have created a multiple currency practice. In order to avoid this conundrum, I classify the markets as dual in the CFA franc countries as well.

4.5. Closed Markets

When a country closes its markets for a period of time (as most countries in the week after August 15, 1971, or in Argentina at the end of 2001), the domestic approach to classifying exchange regimes may no longer be appropriate, as the authorities may no longer be able to intervene as directly (depending on the preferred method of intervention) and transactions may not reflect official policies and/or may reflect increased risk premia. The policy adopted here is to maintain the *de facto* and *de jure* classifications unless there is a clear indication of policy during the period when markets are closed. Unless the government intervenes in banks or offshore markets, any statements about exchange rate policy are made effective the day the markets open. That is, when the market is closed, the classification does not default to some other option (such as independently floating or a fixed peg) that is not supported by the source materials. As classifications are based on the end of the month, most market closures do not have an impact (the Argentine case being an exception).

5.0. Caveats About the Present System

As is noted in the main body of the study, the main disadvantages of the study are its degree of nontransparency, in that it is difficult to verify the classifications without recourse to the primary sources, and its reliance on ephemera: quality primary and

⁴¹ Since 1949, transactions involving currencies quoted in Paris are effected through two successive operations: sales of CFA francs for (metropolitan) French francs and then sales of French francs for the requisite currency. That is, most transactions require an intermediate purchase of French francs, and each central bank keeps a fixed share of its reserves in its operations accounts in Paris (for BEAC countries, 65 per cent; for BCEAO countries, 50 percent since September 2005).

secondary sources are less available for earlier periods, making it more difficult to weigh different witnesses and to philologically analyze the historical usage of the technical terms in each document, especially during early periods.⁴² In addition, there is the very real problem that the de jure dataset looks forward while the de facto one is backward looking, and any comparison of the two runs the risk of being at least slightly inaccurate.

5.1. Assumptions in the present system and other de facto systems

Before comparing the de facto classification systems, should note key differences in what the different systems measure and in their assumptions. (1) The present de facto system measures the exchange regime as a function of the accuracy of IMF surveillance and implies that countries are transparent during surveillance activities (or that the truth eventually comes out) and that concurrence between an indicator and reported policies over a long period implies that those policies were adhered to or even effective at higher frequencies. (2) LYS, on the other hand, measures the exchange regime as a function of joint movements of the exchange rate and reserve levels. This implies that countries tend not to intervene indirectly, impose capital controls, or intervene on the forward market or via interest rates; that they have low credibility (i.e., the threat of intervention is not enough to control the exchange rate); and that reserves are largely dollar-denominated. (3) RR, on the other hand, measures the regime as a function of the probability of large changes in the exchange rate, which implies that the level of Krugman effects are not country-specific⁴³ and that volatility is uniform across countries and at all exchange rate levels.⁴⁴

6.0. Consistency

In order to test the consistency of the data for 1945–89 with Bubula and Ötoker-Robe, the first four years of Bubula–Ötoker-Robe’s dataset (1990–93) were reconstructed. With two exceptions, the differences (listed in Appendix III) all occurred at the beginning of the sample period and arise principally from the use of earlier documents in the present system, which at times provided more information.⁴⁵ The first exception is the treatment of the United States’ interventions. Although United States intervention in the dollar dropped off from the mid-1990s, BÖR saw the interventions of 1991–94 as not affecting the classification. I treat the periods in which the level of the dollar was intentionally

⁴² An additional drawback to the methodology, one that led to its replacement but that does not have an effect here, is that its reliance on due diligence made current assessments very difficult, such that reclassifications were often made with a considerable lag while the system was in place. See Habermeier et al. 2009.

⁴³ Eichengreen and Razo-Garcia (2011) found that the level of pairwise concurrence across systems was significantly different for countries of different levels of development.

⁴⁴ Using RR’s data, Bleaney and Francisco (2007) found that more devalued black market rates are more volatile than less devalued ones.

⁴⁵ It is also possible that the differences stem from sources available to Bubula and Ötoker-Robe that are not yet available to the public, and these differences would need to be re-examined as more documents pass the 20-year threshold.

modified through international coordination, including the Basle, Plaza, and Louvre Accords, as managed floating (cf. Latter 1996.13), in part because the accords served as a de jure announcement and it is difficult to say that the Accords came as a surprise to the market.⁴⁶

The second exception is the treatment of high-frequency changes. Bubula and Ötoker-Robe classify instances where a country's exchange arrangement changes multiple times within a short span and none of the arrangements lasts for more than two months as managed or tightly managed floating. The present study, finding that it was common for countries entering crises in the 1980s to go through a rapid series of exchange arrangement changes, sought to capture all implemented regimes that are verifiable and for which the evidence is clear.⁴⁷

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⁴⁶ RR and LYS treat the dollar, mark, and yen as de facto independently floating from the 1980s on.

⁴⁷ That said, I do follow Bubula and Ötoker-Robe in the use of managed floating and tightly managed floating when information is inconclusive.

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