IMMEDIATE ATTENTION

SM/02/233

July 22, 2002

To: Members of the Executive Board

From: The Secretary

Subject: **Exchange Arrangements and Foreign Exchange Markets—Developments and Issues**

Attached for the information of Executive Directors is a paper on exchange arrangements and foreign exchange markets—developments and issues. It is proposed that this paper be published in the World Economic and Financial Surveys series. If no objections are received by **noon on Monday, July 29, 2002**, the paper will be published.

Questions may be referred to Mr. Ishii (ext. 37355) and Mr. Habermeier (ext. 38857) in MAE.

Att: (1)

Other Distribution:
Department Heads

INTERNATIONAL MONETARY FUND

Exchange Arrangements and Foreign Exchange Markets: Developments and Issues

Prepared by the Monetary and Exchange Affairs Department

Approved by Stefan Ingves

July 18, 2002

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I. Introduction

1. The rapid integration of international financial markets—under which the economic developments and policy decisions of one country may affect many other countries—underscores the importance of Fund surveillance to ensure that the international monetary system operates effectively and that each member observes the obligations set forth in the Fund's Articles of Agreement. This report forms part of the Fund's multilateral surveillance aimed at reviewing and analyzing progress in promoting a stable system of exchange rates and orderly exchange arrangements among member countries.[1]

2. This report updates developments in exchange arrangements in 1998–2001.[2] It also discusses the evolution of exchange rate regimes based on de facto policies since 1990,[3] reviews foreign exchange market organization and regulations in a large number of developing and transition countries as of 2001, and examines factors affecting exchange rate volatility in these countries in 2001. The report does not revisit questions related to the appropriateness of policy responses to the recent crises or assess Fund policy advice in the areas of exchange rate regimes as well as exchange and capital controls, which have been examined in depth in other papers.[4]

3. This report is organized as follows: Section II summarizes the findings, which may be useful in formulating Fund policy advice and designing technical assistance relating to exchange rate regimes, exchange regulations, and foreign exchange market development. Section III reviews the evolution of exchange rate regimes and analyzes factors underlying these trends. Section IV evaluates progress toward currency convertibility for current and capital account transactions and analyzes factors bearing on the use of exchange regulations.

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[1] "Country" in this report does not always refer to a territorial entity that is a state as understood by international law and practice; the term also covers the euro area and some nonsovereign territorial entities for which statistical data are provided internationally on a separate basis.

[2] The previous report on Developments and Issues in the International Exchange and Payments System (SM/98/172, 7/7/98) was published in the World Economic and Financial Surveys series in September 1999 (see Johnston and others, 1999).

[3] On November 24, 1998, the Board approved the publication of the previous staff report (EBD/98/124, 11/8/98), which proposed to institute the exchange rate regime classification based on de facto policies. The de jure classification system in effect through 1998 was based on members' official notifications of their exchange rate regimes.

[4] For example, Eichengreen and others (1998), Lane and others (1999), and Ariyoshi and others (2000).

Section V looks at foreign exchange market organization and regulations in a large number of developing and transition countries, drawing on the 2001 Survey on Foreign Exchange Market Organization, and Section VI examines factors affecting exchange rate volatility, focusing on structural features of the foreign exchange market, the type of exchange rate regimes, and the presence of exchange regulations. Appendix I provides statistical background material.

II. A Summary of Findings

4. **Against the backdrop of continuing financial globalization and a series of emerging market crises since 1997, there have been important changes in the evolution of exchange rate regimes and the pace of liberalization of current and capital transactions among Fund member countries.** Countries have moved away from intermediate exchange rate regimes toward floating regimes and, to a lesser extent, hard pegs.[5] The momentum of liberalization—especially of capital transactions—appears to have diminished, possibly reflecting growing concerns about risks associated with the sudden reversal of capital inflows. These developments, combined with macroeconomic fundamentals and foreign exchange market organization and regulations, may have affected exchange rate volatility.

5. **There has been a shift away from intermediate regimes according to the Fund's official exchange rate regime classification system based on de facto exchange rate policies** (Section III). However, the shift has been less pronounced than implied by the de jure classification system. The polarization of exchange rate regimes appears to have been more pronounced in countries that have already gained access to international capital markets. Statistical evidence suggests that in the past decade, intermediate regimes tended to be more prone to market pressures compared with floating or hard peg regimes.

6. **The evolution of exchange rate regimes reflects the changing role of the exchange rate in the monetary policy framework and the degree of countries' integration into international capital markets**. In particular, the use of the exchange rate as

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[5] Intermediate exchange rate regimes are defined as soft pegs (conventional fixed pegs to a single currency or a basket of currencies, horizontal bands, and crawling pegs with and without bands) plus tightly managed floating regimes (under which authorities attempt to keep the exchange rate stable without any commitment to a predetermined path). Hard peg regimes include currency boards and exchange rate regimes with no separate legal tender (such as formal dollarization and currency unions). Note that the latter category includes countries where the currency chosen as legal tender may freely float with respect to the currencies of the rest of the world (for example, countries in the European Monetary and Economic Union (EMU)).

the nominal anchor of monetary policy has declined. Also, an increasing number of countries have adopted an inflation-targeting framework, although the exchange rate still plays an important role in the monetary policy rule in cases where the degree of pass through from exchange rates to prices, is high. Many countries with greater access to international capital markets have either moved away from intermediate regimes toward more flexible exchange rate regimes to gain greater monetary policy autonomy or were forced to do so in the face of severe pressures on their currencies. Only a limited number of countries have adopted hard peg regimes after exiting from intermediate regimes.

7. **The de facto exchange rate classification system has helped to clarify the nature and role of members' exchange rate regimes.** It has facilitated discussions with country authorities about the implementation of exchange rate regimes and hence has contributed to more effective surveillance of the international monetary system. However, assessing actual exchange rate policies was difficult in some cases where countries informally targeted the exchange rate through direct or indirect intervention while officially announcing a floating exchange rate regime. The timely availability of information and transparent presentation of the functioning of the exchange rate regimes has been crucial for the accurate classification of members' regimes.

8. **Changes in the number of countries maintaining exchange controls during 1998–2000 indicate a slowdown in efforts to liberalize current, and especially capital, account transactions** (Section IV). The share of Fund member countries maintaining "exchange restrictions"[6] on payments and transfers for current international transactions subject to Articles VIII or maintained under the transitional arrangements of Article XIV declined further to about 20 percent by end-2001.[7] However, the share of countries with "exchange controls" on current transactions (including receipts) fell only marginally, to about 70 percent

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[6] An exchange restriction is a concept under the Fund's jurisdiction that applies only to the making of payments and transfers for current international transactions. The broader concept of an exchange control includes, in addition to restrictions subject to the Fund jurisdiction under Article VIII and restrictions maintained under the transitional arrangements of Article XIV, a range of measures that may affect any transaction by residents or nonresidents involving the use of foreign exchange domestically or abroad or cross border flows associated with the acquisition of assets or issuance of liabilities denominated in domestic or foreign currency.

[7] Payments for current international transactions, as defined under Article XXX, Section (d) of the Articles of Agreement, also include certain items which, from an economic perspective, are capital in nature, namely: (i) normal short-term banking and credit facilities; 66investments; and (iii) "moderate" remittances for family living expenses. The term moderate has not been precisely defined.

of total Fund members by end-2001.[8] Moreover, virtually all members continued to maintain some types of controls on capital account transactions, although some measures were used for prudential and other purposes and were not designed explicitly to restrict cross-border capital flows.

9. **The use of exchange controls appears to have been little influenced by the degree of flexibility of exchange rate regimes or the occurrences of currency crisis.** Excluding countries in the euro area, which are classified as maintaining hard peg regimes and impose virtually no controls on current transactions, no clear relationship was found between the type of exchange rate regimes and the use of controls on current transactions. Nor was a specific pattern evident with respect to capital controls. Countries that experienced crises tended to resort to exchange controls to reduce pressure on the exchange rate, although no systematic patterns were found in the choice of controls imposed by these countries.

10. **Foreign exchange markets reveal wide variations in their key structural features in both developing and emerging market economies** (Section V). A staff survey of foreign exchange market organization found that dealer markets in these countries predominate over auction markets and that foreign exchange accounts are permitted in a large majority of countries. Most countries seek to influence foreign exchange market organization through regulations, which can significantly affect exchange rate dynamics and often lead to some segmentation of the foreign exchange market. In addition, in the vast majority of countries, the central bank is an active participant in the foreign exchange market, but the form this participation takes is highly varied.

11. **Notwithstanding technological and financial innovations, many countries continue to experience high exchange rate volatility.** As financial markets around the world become more integrated, volatile exchange rate movements in one country may spill over to other countries as seen in recent financial crises, underscoring a need to better understand factors affecting exchange rate volatility. In analyzing exchange rate volatility, greater attention should be given to not only macroeconomic fundamentals but also other factors, especially the structural features of foreign exchange markets, the type of exchange rate regimes, and the presence of exchange regulations.

12. **Some structural features of the foreign exchange markets appear to influence exchange rate volatility** (Section VI). Even after taking into account other features of the countries in question, including most notably their macroeconomic performance such as inflation, real GDP growth, and fiscal deficits, countries with decentralized foreign exchange dealer markets tended to have lower volatility in 2001. The type of exchange rate regimes also affects volatility; for example, countries with an independently floating regime tend to

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[8] The changes in the number of countries with controls may reflect more accurate reporting and improved coverage of controls in the Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER)—a major information source for this report.

have higher volatility, while those with a crawling band regime tend to experience less volatility. In addition, the presence of exchange restrictions appears to be associated with higher volatility, while some prudential and foreign exchange market regulations (for example, limits on net foreign exchange open positions and restrictions on monetary use of domestic currency by nonresidents) are associated with lower volatility.

III. Developments and Issues in Exchange Rate Regimes

A. Introduction

13. **This section reviews country experiences in the use of different exchange rate regimes and their trends since 1990, and discusses some of the factors underlying these trends**. It analyzes the evolution of exchange rate regimes based on de facto policies, which have formed the basis of the Fund's official exchange rate regime classifications since January 1999.[9] This system classifies exchange rate regimes based on the degree of commitment to a given exchange rate path and not necessarily the degree of flexibility of the exchange rate; it also adds a new dimension to place members' exchange rate regimes in their overall monetary policy framework (Box 1). The de facto classification has been backdated to 1990, while providing more details on some regime categories (Figure 1).[10] The remaining parts of this section discusses whether exchange rate regimes based on members' de facto policies have shifted away from intermediate regimes toward hard peg or floating regimes since 1990, and if so, in which direction. It also examines whether certain exchange rate regimes have been subject to more frequent exits and severe market pressures. It then discusses factors underlying the evolution of exchange rate regimes, including exchange regulations, the monetary policy framework, and integration with international capital markets. The section also reviews the experience with the new classification scheme and discusses issues related to its implementation.

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[9] The de jure classification system in effect through 1998 had a number of shortcomings, including its failure to capture differences between the actual and announced policies and between very rigid forms of pegged regimes and softer pegs. For details, see Johnston and others (1999).

[10] More details on the database are provided in Bubula and Otker-Robe (2002a), which this section draws on heavily.

Box 1. De Facto Classification of Exchange Rate Regimes and Monetary Policy Framework

This classification system is based on the members' actual, de facto, regimes that may differ from their officially announced arrangements. The scheme ranks exchange rate regimes on the basis of the degree of flexibility of the arrangement or (formal or informal) commitment to a given exchange rate path. It distinguishes between the more rigid forms of pegged regimes (such as currency board arrangements); other conventional fixed peg regimes against a single currency or a basket of currencies; exchange rate bands around a fixed peg; crawling peg arrangements; and exchange rate bands around crawling pegs, in order to help assess the implications of the choice of exchange rate regime for the degree of independence of monetary policy. This includes a category to distinguish the exchange arrangements of those countries that have no separate legal tender. The new system presents members' exchange rate regimes against alternative monetary policy frameworks with the intention of using both criteria as a way of providing greater transparency in the classification scheme and to illustrate that different forms of exchange rate regimes could be consistent with similar monetary frameworks. The following explains the categories.

Exchange Rate Regimes

Exchange Arrangements With No Separate Legal Tender

The currency of another country circulates as the sole legal tender ("formal dollarization"), or the member belongs to a monetary or currency union in which the same legal tender is shared by the members of the union. Adopting such regimes is a form of surrendering the monetary authorities' independent control over domestic monetary policy.

Currency Board Arrangements

A monetary regime based on an explicit legislative commitment to exchange domestic currency for a specified foreign currency at a fixed exchange rate, combined with restrictions on the issuing authority to ensure the fulfillment of its legal obligation. This implies that domestic currency be issued only against foreign exchange and that it remain fully backed by foreign assets, eliminating traditional central bank functions such as monetary control and the lender of the last resort and leaving little scope for discretionary monetary policy; some flexibility may still be afforded depending on how strict the rules of the boards are established.

Other Conventional Fixed Peg Arrangements

The country (formally or de facto) pegs its currency at a fixed rate to another currency or a basket of currencies, where a basket is formed from the currencies of major trading or financial partners and weights reflect the geographical distribution of trade, services, or capital flows. The currency composites can also be standardized, such as those of the SDR. There is no commitment to keep the parity irrevocably. The exchange rate may fluctuate within a narrow margin of less than ±1 percent around a central rate or the maximum and minimum value of the exchange rate remain within a narrow margin of 2 percent for at least three months. The monetary authority stands ready to keep the fixed parity through direct (i.e., via sale/purchase of foreign exchange in the market) or indirect intervention (e.g., via aggressive use of interest rate policy, imposition of foreign exchange regulations or exercise of moral suasion that constrains foreign exchange activity, or through intervention by other public institutions). Flexibility of monetary policy, though limited, is greater than in hard pegs, since traditional central banking functions are still possible, and the monetary authority can adjust the level of the exchange rate, though relatively infrequently.

Pegged Exchange Rates Within Horizontal Bands

The value of the currency is maintained within certain margins of fluctuation of at least ±1 percent around a formal or a de facto fixed central rate. It also includes the arrangements of the countries in the exchange rate mechanism (ERM) of the European Monetary System (EMS) (replaced with ERM-II on January 1, 1999). There is some limited degree of monetary policy discretion, with the degree of discretion depending on the band width.

Crawling Pegs

The currency is adjusted periodically in small amounts at a fixed rate or in response to changes in selective quantitative indicators (past inflation differentials vis-à-vis major trading partners, differentials between the target inflation and expected inflation in major trading partners, etc). The rate of crawl can be set to generate inflation adjusted changes in the currency ("backward looking"), or set at a preannounced fixed rate and/or below the projected inflation differentials ("forward looking"). Maintaining a credible crawling peg imposes constraints on monetary policy in a similar manner as a fixed peg system.

Box 1. Classification of Exchange Rate Regimes and Monetary Policy Framework (Continued)

Exchange Rates Within Crawling Bands

The currency is maintained within certain fluctuation margins of at least ±1 percent around a central rate, which is adjusted periodically at a fixed rate, or in response to changes in selective quantitative indicators. The degree of flexibility of the exchange rate is a function of the width of the band, with bands chosen to be either symmetric around a crawling central parity or to widen gradually with an asymmetric choice of the crawl of upper and lower bands (in the latter case, there may not be a pre-announced central rate). The commitment to maintain the exchange rate within the band continues to impose constraints on monetary policy, with the degree of policy independence being as a function of the band width.

Managed Floating With No Predetermined Path For the Exchange Rate

The monetary authority influences exchange rate movements through active intervention to counter the long-term trend of the exchange rate, without specifying a predetermined exchange rate path, or without having a specific exchange rate target. Indicators for managing the rate are broadly judgmental (e.g., balance of payments position, international reserves, parallel market developments), and adjustments may not be automatic. Intervention may be direct or indirect. Distinction is made between "tightly managed floating" (where intervention takes the form of very tight monitoring that generally results in a stable exchange rate without having a clear exchange rate path, with the aim of permitting authorities an extra degree of flexibility in deciding the tactics to achieve a desired path) and "other managed floating" (where exchange rate is influenced in a more ad hoc fashion).

Independently Floating

The exchange rate is market determined, with any foreign exchange intervention aimed at moderating the rate of change and preventing undue fluctuations in the exchange rate, rather than at establishing a level for it. In these regimes, monetary policy is in principle independent of exchange rate policy.

Monetary Policy Framework

Members' exchange rate regimes are presented against alternative monetary policy frameworks in order to present the role of the exchange rate in broad economic policy and help identify potential sources of inconsistency in the monetary-exchange rate policy mix.

Exchange Rate Anchor

The monetary authority stands ready to buy/sell foreign exchange at given quoted rates to maintain the exchange rate at its pre-announced level or range (the exchange rate serves as the nominal anchor or intermediate target of monetary policy). These regimes cover exchange rate regimes with no separate legal tender, CBAs, fixed pegs with and without bands, and crawling pegs with and without bands, where the rate of crawl is set in a forward looking manner.

Monetary Aggregate Anchor

The monetary authority uses its instruments to achieve a target growth rate for a monetary aggregate (such as reserve money, M1, and M2) and the targeted aggregate becomes the nominal anchor or intermediate target of monetary policy.

Inflation Targeting Framework

Involves the public announcement of medium-term numerical targets for inflation with an institutional commitment by the monetary authority to achieve these targets. Additional key features include increased communication with the public and the markets about the plans and objectives of monetary policymakers and increased accountability of the central bank for obtaining its inflation objectives. Monetary policy decisions are guided by the deviation of forecasts of future inflation from the announced inflation target, with the inflation forecast acting (implicitly or explicitly) as the intermediate target of monetary policy.

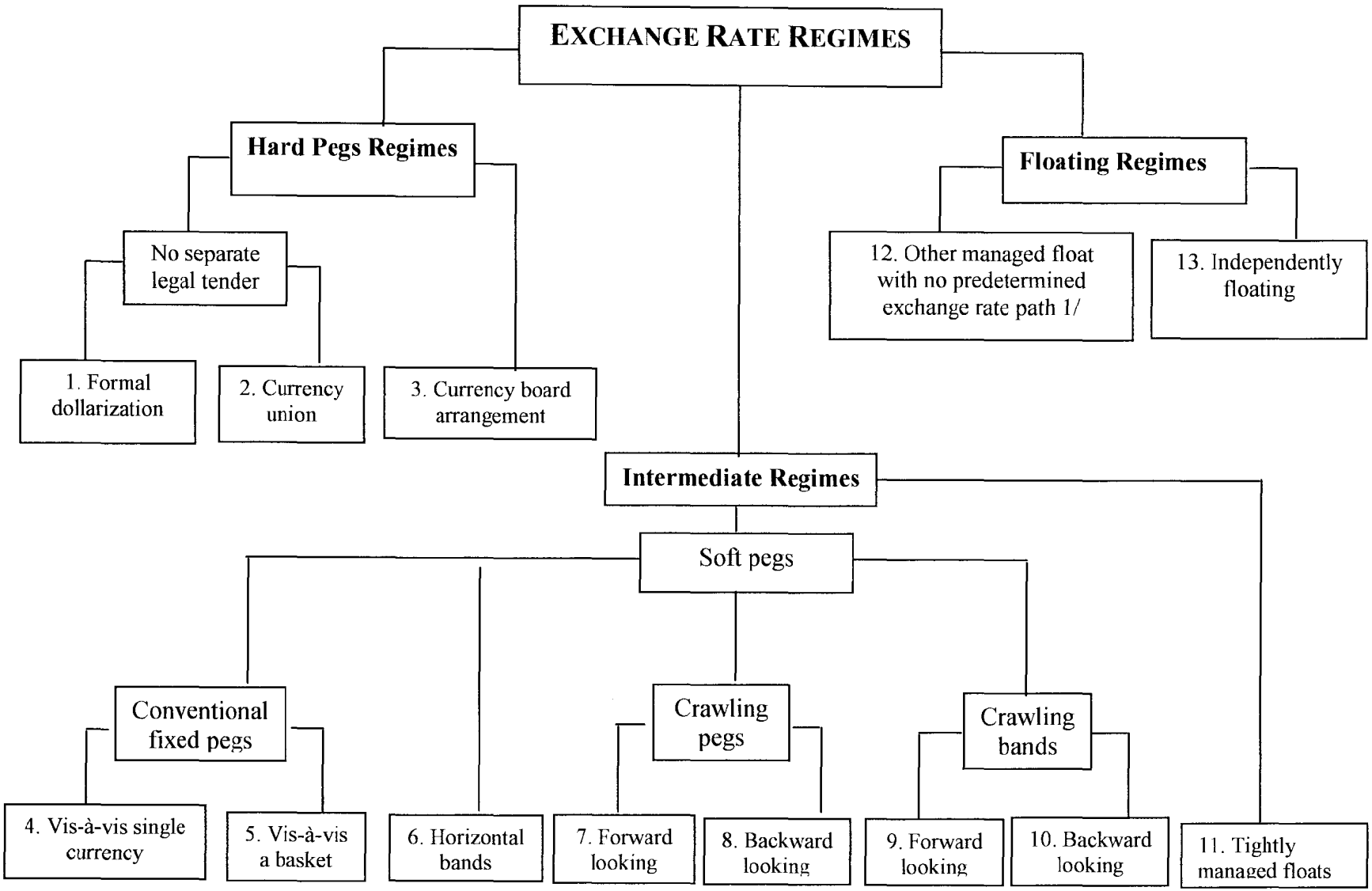
Fund Supported or Other Monetary Program

Involves implementation of monetary and exchange rate policy within the confines of a framework that establishes floors for international reserves and ceilings for net domestic assets of the central bank. As the ceiling on net domestic assets limits increases in reserve money through central bank operations, indicative targets for reserve money may be appended to this system.

Other

The country has no explicitly stated nominal anchor, but rather monitors various indicators in conducting monetary policy, or there is no relevant information available for the country.

Figure 1. De Facto Classification of Exchange Rate Regimes



1/ Excludes tightly managed floats.

B. Evolution of Exchange Rate Regimes since 1990

14. **Since 1990, there has been a marked shift away from pegged exchange rate regimes toward floating regimes, as assessed by the official notifications of country authorities to the Fund.** Based on the Fund's de jure classification of exchange rate regimes, the share of member countries with pegged exchange rate regimes (including regimes with limited flexibility within a band and the Exchange Rate Mechanism (ERM) of the European Monetary System) fell from about 65 percent in 1990 to 44 percent in 1998 (Figure 2 and Table 1). This apparent trend toward greater exchange rate flexibility has been questioned, since some countries targeted or tightly managed their exchange rates in reality, while declaring officially that they were implementing floating regimes. Such deviations between de jure and de facto policies reflected, among other things, the political implications of exchange rate depreciations, and concerns about the impact of depreciations on financial and nonfinancial institutions and inflation.[11]

15. **Indeed, the move toward more flexible exchange rate regimes has been less pronounced when members' de facto policies were taken into account**. Countries with floating regimes, while almost doubling their share in 1998 compared to 1990, made up only slightly more than one-third of the membership in 1998 based on the de facto classification, instead of more than half as suggested by the de jure classification (Tables 1 and 2). The difference in the share of floating regimes between the two classifications partly reflects the fact that the countries informally pegging their currencies and those managing their exchange rates along a predetermined target path, as in crawling peg or crawling band regimes, are classified as pegged regimes in the de facto classification, as opposed to floating regimes. As a result, more than half of the members were still pursuing various forms of pegged regimes at end-2001. While pegged regimes have remained dominant, there has been a discernible shift within these regimes over the past decade, away from softer pegs toward harder pegs. The share of the latter rose from less than 20 percent of all pegged regimes in 1990 to more than 46 percent in 2001, offsetting the drop in the share of soft pegs (Figure 3).

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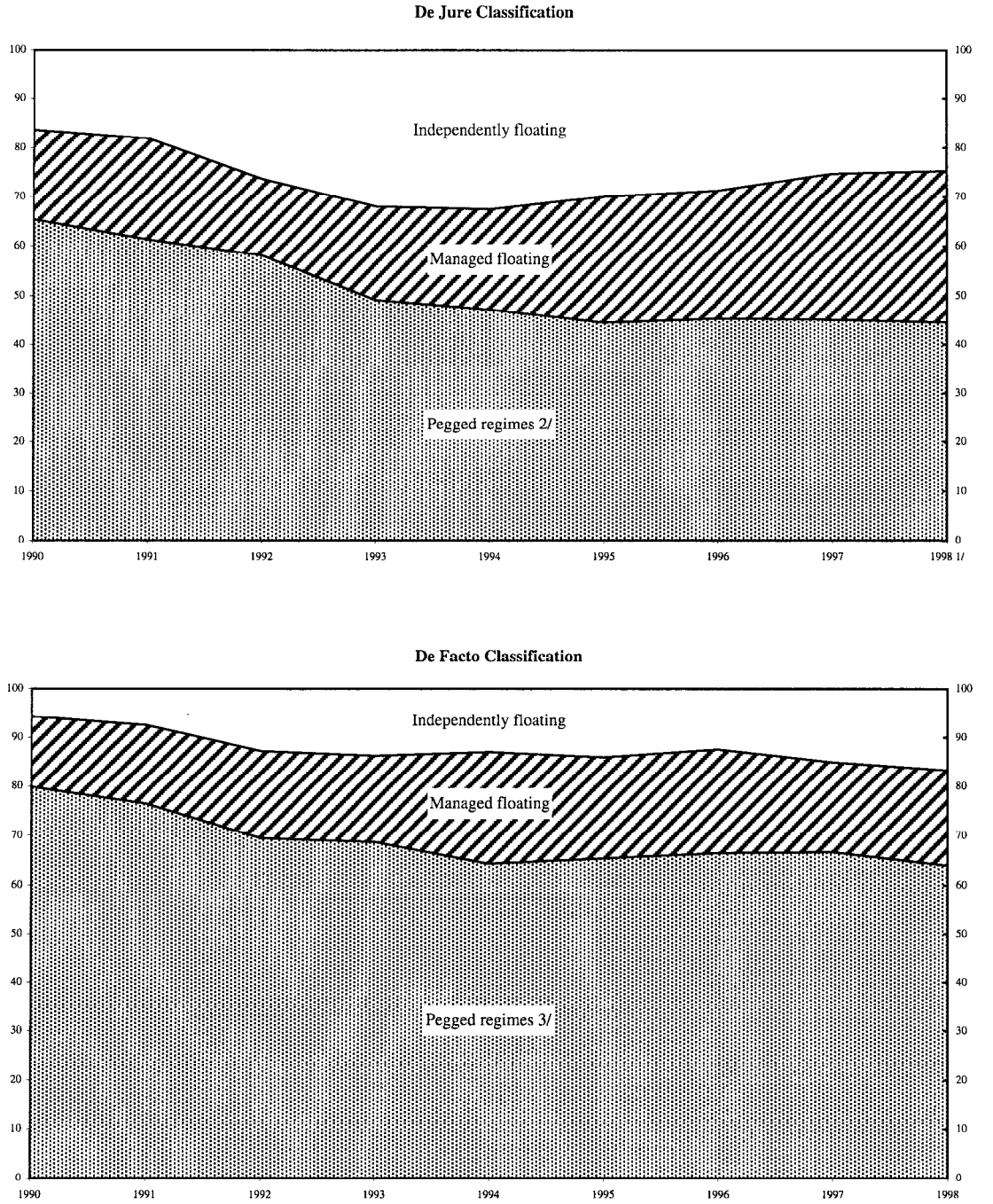
[11] See, for example, Collins (1996), Calvo and Reinhart (2000), Hausmann, Panizza, and Stein (2000), and Baliño, Bennet, and Borensztein (1999).

Figure 2. IMF Membership: Evolution of Exchange Rate Regimes, 1990–98
(In percent of IMF membership)



Source: IMF, International Financial Statistics, and Bubula and Otker-Robe (2002a).

1/ 1998 figures refer to September 1998, which is the last date the de jure classification system was updated.

2/ Includes arrangements with no separate legal tender, currency boards, conventional fixed pegs, and horizontal bands.

3/ Includes arrangements with no separate legal tender, currency boards, conventional fixed pegs, and horizontal bands, and in addition, crawling pegs and crawling bands.

Table 1. Evolution of Exchange Rate Regimes, 1990–2001

(In percent of Fund membership)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
De Jure Classification 1/												
Pegged regimes 2/	65.4	61.3	58.1	49.1	47.2	44.4	45.3	45.1	44.5	...	...	...
Of which: Limited flexibility	9.2	9.0	7.8	7.4	7.9	7.8	8.8	8.8	9.3	...	...	...
Floating regimes	34.6	38.7	41.9	50.9	52.8	55.6	54.7	54.9	55.5	...	...	...
Independently floating	16.3	18.1	26.3	32.0	32.6	30.0	28.7	25.3	24.7	...	...	...
Managed floating	18.3	20.6	15.6	18.9	20.2	25.6	26.0	29.7	30.8	...	...	...
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	...	...	...
De Facto Classification												
Pegged regimes	79.9	76.4	69.4	68.7	64.3	65.4	66.5	66.7	64.0	59.7	58.6	55.9
Hard pegs 3/	15.7	16.1	19.4	15.9	16.2	16.2	16.2	18.3	18.3	24.2	24.7	25.8
Soft pegs 4/	64.2	60.2	50.0	52.7	48.1	49.2	50.3	48.4	45.7	35.5	33.9	30.1
Floating regimes	20.1	23.6	30.6	31.3	35.7	34.6	33.5	33.3	36.0	40.3	41.4	44.1
Independently floating	5.7	7.5	12.8	13.7	13.0	14.1	12.4	14.5	16.7	18.3	19.4	21.5
Managed floating 5/	14.5	16.1	17.8	17.6	22.7	20.5	21.1	18.8	19.4	22.0	22.0	22.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Memorandum item:												
Intermediate regimes 6/	69.2	66.5	56.1	58.8	56.8	58.9	58.4	53.2	48.9	40.9	41.4	38.7

Sources: IMF Annual Report on Exchange Arrangements and Exchange Restrictions, various issues; and Bubula & Otker-Robe (2002a).

1/ Since September 1998, the de jure classification has not been updated.

2/ Includes arrangements with no separate legal tender, currency boards, conventional fixed pegs and horizontal bands, and regimes with limited flexibility within a band and ERM.

3/ Comprises arrangements with another currency as legal tender (i.e. dollarization), currency unions, and currency boards.

4/ Comprises conventional fixed pegs vis-à-vis a single currency or a basket, horizontal bands, and crawling pegs and bands.

5/ Includes tightly managed floating regimes.

6/ Defined as to include tightly managed floating regimes and soft peg regimes.

Table 2. Exchange Rate Regimes and Anchors of Monetary Policy
as of December 31, 2001 1/

Exchange Rate Regime (number of countries)	Monetary Policy Framework					
	Exchange rate anchor				Monetary Aggregate Target	Inflation Targeting Framework	Fund-Supported or Other Monetary Program	Other
Exchange arrangements with no separate legal tender (40)	**Another currency as legal tender** Ecuador† El Salvador 14/ Kiribati Marshall Isl. Micronesia Palau Panama San Marino	**ECCU 3/** Antigua & Barbuda Dominica Grenada St. Kitts & Nevis St. Lucia St. Vincent and the Grenadines	**CFA franc zone** **WAEMU** Benin† Burkina Faso† Côte d'Ivoire† Guinea-Bissau† Mali† Niger† Senegal† Togo	**CAEMC** Cameroon† C.Afr.Rep.† Chad† Congo, Rep. Of† Eq. Guinea Gabon†				**Euro Area** 4/ 5/ Austria Belgium Finland France Germany Greece Ireland Italy Luxembourg Netherlands Portugal Spain
Currency board arrangements (8)	Argentina† Bosnia and Herzegovina† Brunei Darussalam Bulgaria† China: Hong Kong SAR Djibouti† Estonia† Lithuania†							
Other conventional fixed peg arrangements (including de facto peg arrangements under managed floating) (41)	**Against a single currency (30)** Aruba Bahamas, The 6/ Bahrain Bangladesh Barbados Belize Bhutan Cape Verde China, People's Rep. Of * 7/ Comoros 9/ Eritrea Iran 6/ 7/ Jordan† 7/ Lebanon 7/ Lesotho† Macedonia, FYR† 7/ Malaysia Maldives 7/ Namibia Nepal Netherlands Antilles Oman Qatar 7/ 8/ Saudi Arabia 7/ 8/ Sudan 7/ Suriname 6/ 7/ Swaziland Syrian Arab Republic 6/ Turkmenistan 7/ United Arab Emirates 7/ 8/ Zimbabwe 7/		**Against a composite (10)** Botswana 6/ Fiji Kuwait Latvia Libyan A. J. Malta Morocco Samoa Seychelles Vanuatu		China, People's Rep. Of * 7/			
Pegged exchange rates within horizontal bands (5) 10/	**Within a cooperative arrangement ERM II (1)** Denmark		**Other band arrangements(4)** Cyprus Egypt 6/ Hungary* Tonga			Hungary*		
Crawling pegs (4)	Bolivia† Costa Rica 7/ Nicaragua† Solomon Islands 7/							

Exchange Rate Regime (number of countries)	Monetary Policy Framework					
	Exchange rate anchor		Monetary Aggregate Target	Inflation Targeting Framework	Fund-Supported or Other Monetary Program	Other
Exchange rates within crawling bands (6) 11/	Belarus Honduras† Israel*	Romania† 7/ Uruguay† Venezuela		Israel*		
Managed floating with no pre-announced path for exchange rate (42)			Ghana† Guinea† Guyana† Indonesia† Jamaica† 7/ Mauritius Mongolia† São Tomé & Príncipe† Slovenia Sri Lanka† Tunisia	Thailand	Azerbaijan Cambodia 6/ Croatia Ethiopia Iraq Kazakhstan Kenya Kyrgyz Republic Lao PDR 6/ Mauritania Nigeria Pakistan Russian Federation Rwanda Trinidad & Tobago Ukraine Vietnam Yugoslavia Zambia	Algeria 4/ Angola 4/ Burundi 4/ Dominican Rep. 4/ 6/ Guatemala 4/ India 4/ Myanmar 4/ 6/ 7/ Paraguay 4/ Singapore 4/ Slovak Rep. 4/ Uzbekistan 4/ 6/
Independently floating (40)			Gambia, The† Malawi† Peru† Philippines† Sierra Leone† Turkey† Yemen†	Australia Brazil 13/ Canada Chile 6/ Colombia† Czech Rep. Iceland Korea Mexico New Zealand Norway Poland South Africa Sweden United Kingdom	Albania Armenia Congo, Dem. Rep. Georgia Madagascar Moldova Mozambique Tajikistan Tanzania Uganda	Afghanistan 6/ 12/ Haiti 4/ Japan 4/ Liberia 4/ Papua New Guinea 4/ Somalia 6/ 12/ Switzerland 4/ United States 4/

Source: Staff Reports.

1/ A country with a * indicates that the country has more than one nominal anchor that may guide monetary policy. It should be noted, however, that it would not be possible, for practical purposes, to infer from this table which nominal anchor plays the principal role in conducting monetary policy.

2/ A country with † indicates that the country has a Fund supported or other monetary program.

3/ These countries have a currency board arrangement.

4/ The country has no explicitly stated nominal anchor, but rather monitors various indicators in conducting monetary policy.

5/ Until they are withdrawn in February 2002, national currencies will retain their status as legal tender within their home territories.

6/ Member maintained exchange regimes involving more than one market. The regime shown is that maintained in the major market.

7/ The indicated country has a de facto regime, which differs from its de jure regime.

8/ Exchange rates are determined on the basis of a fixed relationship to the SDR, within margins of up to ±7.25%. However, because of the maintenance of a relatively stable relationship with the U.S. dollar, these margins are not always observed.

9/ Comoros has the same arrangement with the French Treasury as do the CFA Franc Zone countries.

10/ The band width for these countries is: Cyprus (±2.25%), Denmark (±2.25%), Egypt (±3%), Hungary (±15%), and Tonga (±5%).

11/ The band for these countries is: Belarus (±5%), Honduras (±7%), Israel (±22%), Romania (unannounced), Uruguay (±3%), and Venezuela (±7.5%).

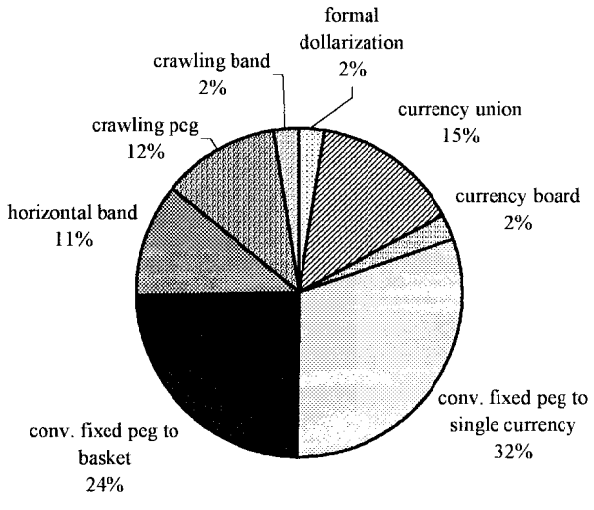
12/ There is no relevant information available for the country.

13/ Brazil maintains a Fund-supported program.

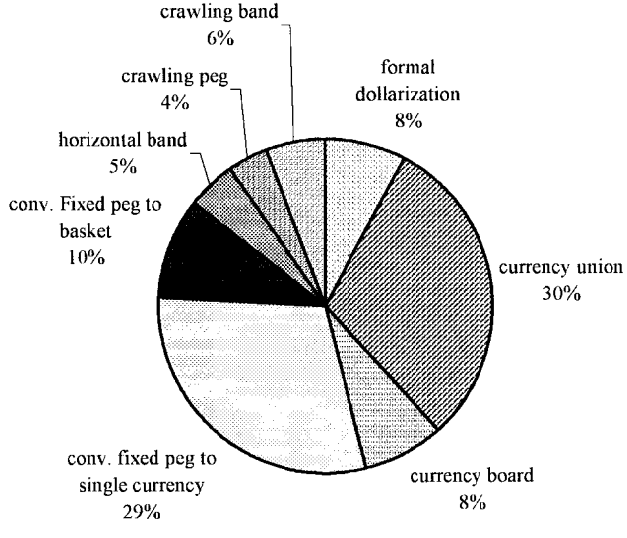
14/ For El Salvador, the printing of new colones, the domestic currency, is prohibited, but the existing stock of colones will continue to circulate, along with the U.S. dollar, as legal tender until all notes physically wear out.

Figure 3. IMF Membership: The Evolution of Pegged Exchange Rate Regimes, 1990 and 2001

1990
(Number of members with pegged regimes = 127)



2001
(Number of members with pegged regimes = 104)



Source: Bubula and Otker-Robe (2002a)

16. **The de facto exchange rate classification indicates a trend away from intermediate regimes toward the two ends of the spectrum of exchange rate regimes** (Figure 4 and Table 3). This trend may provide some support for the "bipolar" or "shrinking middle" view of exchange rate regimes, which suggests that intermediate regimes (including soft pegs and tightly managed floats) would eventually vanish. With such regimes having been at center-stage in major currency crises over the past decade, there had been growing support for the view that floating or truly fixed exchange rate regimes are the only regimes compatible with increased capital mobility.[12] This view has been challenged on several grounds, including by the lack of strong empirical evidence that intermediate regimes are vanishing (Masson, 2001) and by the observation that corner solutions are not immune to crises (Williamson, 2000). The latter view has been validated by the collapse of Argentina's currency board arrangement in January 2002, which showed that macroeconomic and financial policies need to be consistent with the exchange rate regime if a crisis is to be avoided.

17. **There have also been notable shifts within the intermediate regimes.** Countries tended to move to more flexible exchange rates within the intermediate regimes; for instance, the shares of countries with crawling bands increased while those maintaining conventional fixed pegs and crawling pegs declined significantly (Figure 5 and Table 4). There also seems to have been a growing tendency to choose single currency pegs, as opposed to pegs to a basket of currencies in both fixed and crawling peg regimes. Crawling pegs also became more forward looking, as countries assigned greater weight to disinflation objectives and moved away from real exchange rate targeting rules designed to safeguard export competitiveness.[13]

18. **The shift away from intermediate regimes has been more pronounced among developed and emerging market countries and less pronounced for other Fund members** (Figure 4).[14] In the developed countries, the launching of EMU in January 1999 accounted for most of the significant movement from intermediate regimes to hard pegs, although part of the decline reflected the fact that a number of European countries floated during the ERM turmoil of 1992–93 (for example, Norway, Sweden, and the

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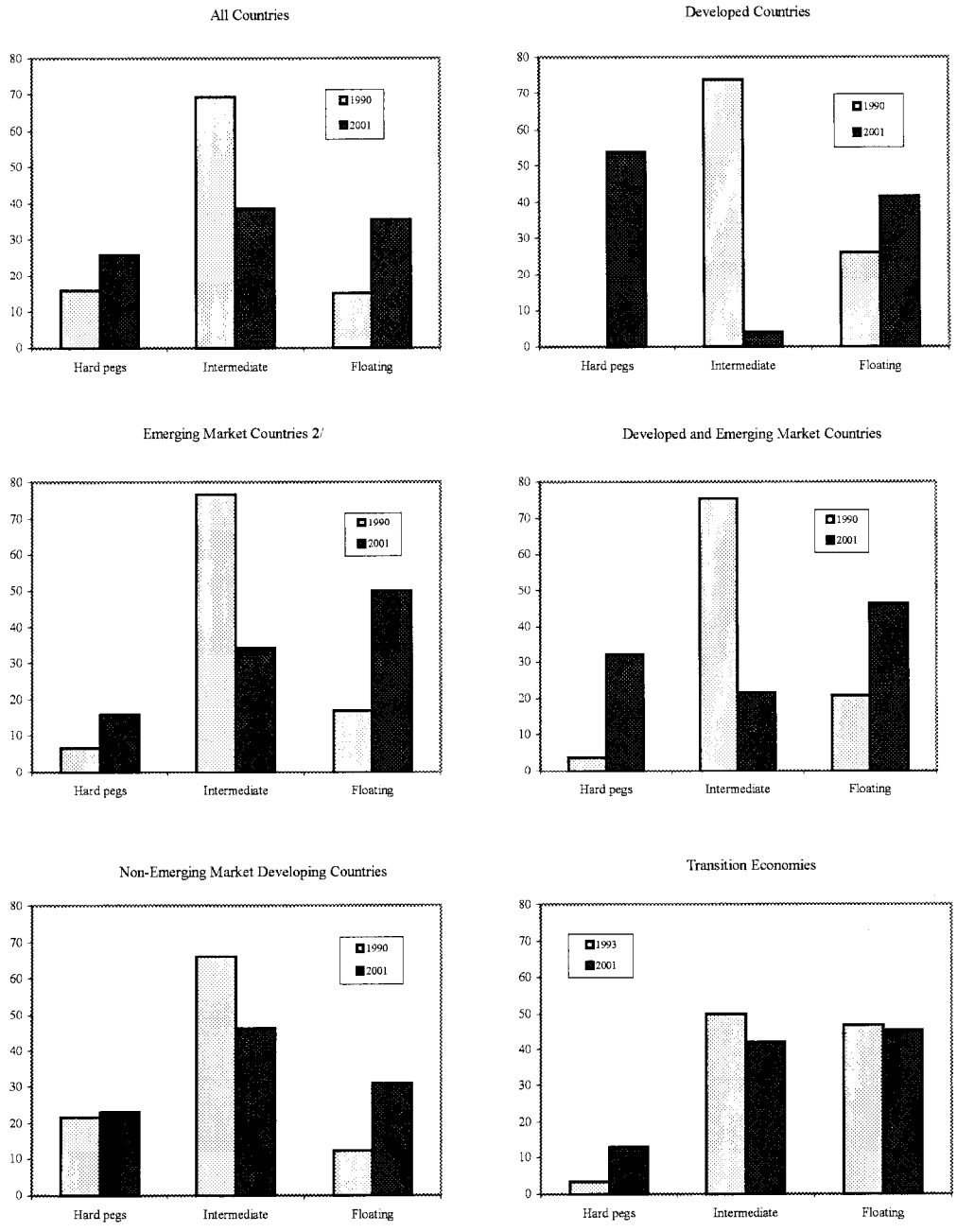
[12] For details, see, for example, Eichengreen (1994), Fischer (2001), Goldstein (1999), Mussa and others (2000), Obstfeld and Rogoff (1995), and Summers (1999).

[13] For example, nine out of ten crawling peg and crawling band regimes were forward looking at end-2001, as opposed to five out of 18 at end-1990.

[14] See Fischer (2001).

Figure 4. Trend Toward Polarization of Exchange Rate Regimes Across Country Groups in 1990 and 2001 1/
(In percent of membership in each group)



Source: Staff estimates.

1/ Hard pegs = Formal Dollarization+Currency Unions+Currency Boards
Intermediate = Conventional fixed pegs+Horizontal Bands+Crawling Pegs+Crawling Bands+Tightly Managed Floats
Floating = Independently Floats+ Other Managed Floats with No Predetermined Path for the Exchange Rate.

2/ The definitions of the developed and developing countries coincide with that of the IFS. The list of emerging market countries is based on a number of existing definitions that combine the countries included in the Emerging Markets Bond Index Plus (EMBI+) and Morgan Stanley Capital International (MSCI) index, with a few exceptions: Greece is included in the developed countries group and Singapore and Hong Kong are included in the emerging countries group. This gives a list of 32 countries: Argentina, Brazil, Bulgaria, Chile, China, Colombia, Czech Republic, Egypt, Ecuador, Hong Kong, Hungary, India, Indonesia, Israel, Jordan, Korea,

Table 3. Evolution of Exchange Rate Regimes by Country Group, 1990–2001
(In percent of members in the given category)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Developed Countries												
Hard pegs 1/	0.0	0.0	4.2	4.2	4.2	4.2	4.2	4.2	4.2	50.0	50.0	54.2
Intermediate regimes 2/	73.9	73.9	50.0	54.2	54.2	54.2	62.5	58.3	58.3	12.5	12.5	4.2
Of which: soft pegs 3/	73.9	73.9	50.0	50.0	50.0	50.0	58.3	58.3	58.3	12.5	12.5	4.2
Floating regimes 4/	26.1	26.1	45.8	41.7	41.7	41.7	33.3	37.5	37.5	37.5	37.5	41.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Developing Countries												
Hard pegs 1/	18.4	18.8	21.8	17.7	18.0	18.0	18.0	20.4	20.4	20.4	21.0	21.6
Intermediate regimes 2/	68.4	65.2	57.1	59.5	57.1	59.6	57.8	52.5	47.5	45.1	45.7	43.8
Of which: soft pegs 3/	62.5	58.0	50.0	53.2	47.8	49.1	49.1	46.9	43.8	38.9	37.0	34.0
Floating regimes 4/	13.2	15.9	21.2	22.8	24.8	22.4	24.2	27.2	32.1	34.6	33.3	34.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Emerging Market Countries 5/												
Hard pegs 1/	6.7	10.0	9.7	9.4	9.4	9.4	9.4	12.5	12.5	12.5	15.6	15.6
Intermediate regimes 2/	76.7	66.7	64.5	75.0	68.8	81.3	78.1	56.3	53.1	40.6	37.5	34.4
Of which: soft pegs 3/	63.3	53.3	51.6	62.5	53.1	59.4	62.5	50.0	46.9	34.4	28.1	25.0
Floating regimes 4/	16.7	23.3	25.8	15.6	21.9	9.4	12.5	31.3	34.4	46.9	46.9	50.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Developed and Emerging Market Countries												
Hard pegs 1/	3.8	5.7	7.3	7.1	7.1	7.1	7.1	8.9	8.9	28.6	30.4	32.1
Intermediate regimes 2/	75.5	69.8	58.2	66.1	62.5	69.6	71.4	57.1	55.4	28.6	26.8	21.4
Of which: soft pegs 3/	67.9	62.3	50.9	57.1	51.8	55.4	60.7	53.6	51.8	25.0	21.4	16.1
Floating regimes 4/	20.8	24.5	34.5	26.8	30.4	23.2	21.4	33.9	35.7	42.9	42.9	46.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Non-Emerging Market Developing Countries												
Hard pegs 1/	21.7	21.3	24.8	19.8	20.2	20.2	20.2	22.3	22.3	22.3	22.3	23.1
Intermediate regimes 2/	66.0	64.8	55.2	55.6	54.3	54.3	52.7	51.5	46.2	46.2	47.7	46.2
Of which: soft pegs 3/	62.3	59.3	49.6	50.8	46.5	46.5	45.7	46.2	43.1	40.0	39.2	36.2
Floating regimes 4/	12.3	13.9	20.0	24.6	25.6	25.6	27.1	26.2	31.5	31.5	30.0	30.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Bubula and Otker-Robe (2002a)

1/ Comprises arrangements with another currency as legal tender (i.e., dollarization), currency unions, and currency boards.

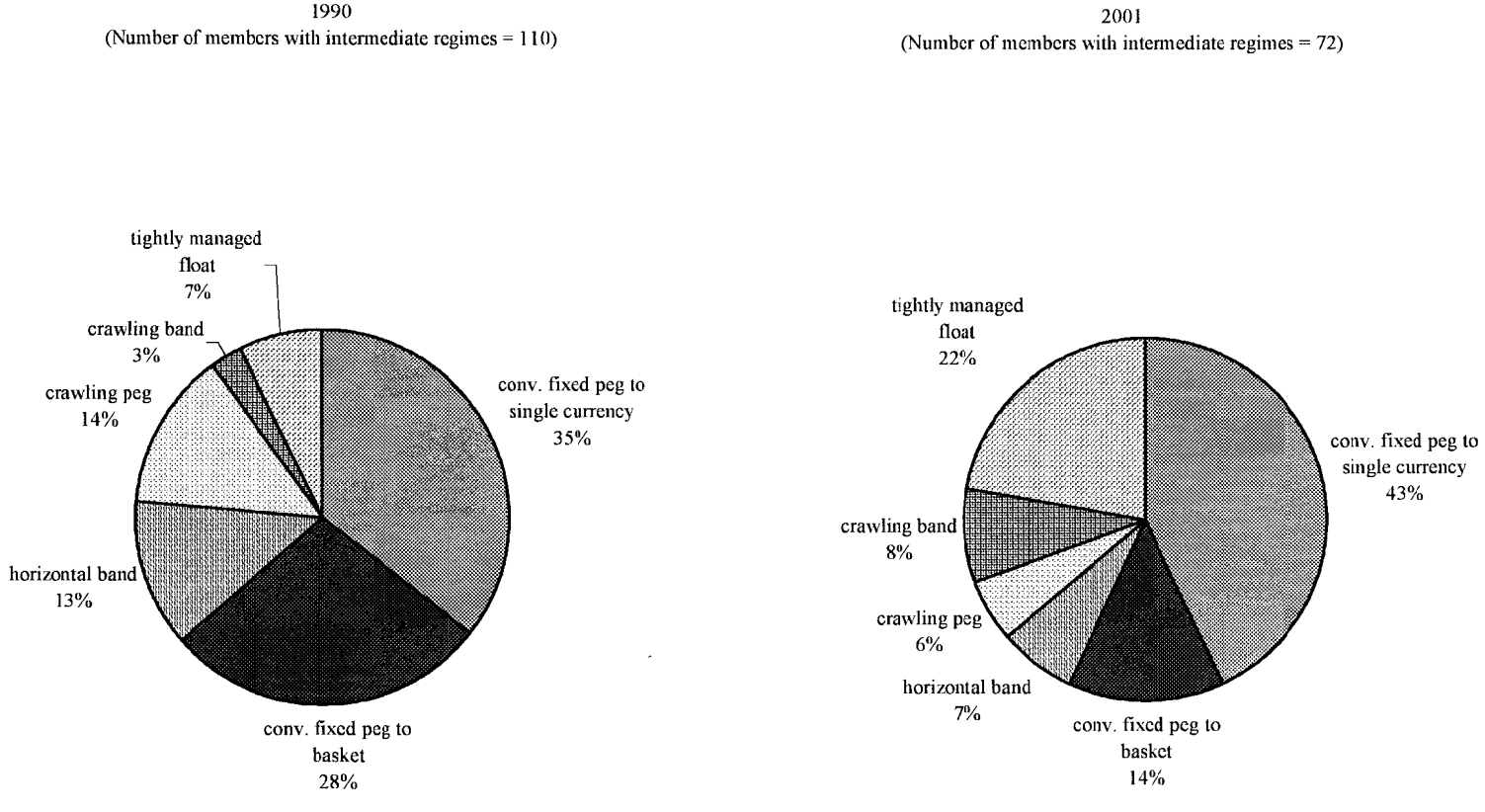
2/ Comprises soft pegs plus tightly managed floating regimes.

3/ Comprises conventional fixed pegs vis-à-vis a single currency or a basket, horizontal bands, and crawling pegs and crawling bands.

4/ Comprises independently floating regimes and managed floating with no predetermined exchange rate path, excluding tightly managed floats.

5/ Includes 32 countries: Argentina, Brazil, Bulgaria, Chile, China, Colombia, Czech Republic, Egypt, Ecuador, Hong Kong, Hungary, India, Indonesia, Israel, Jordan, Korea, Malaysia, Mexico, Morocco, Nigeria, Pakistan, Panama, Peru, Philippines, Poland, Russia, Singapore, South Africa, Sri Lanka, Thailand, Turkey, and Venezuela.

Figure 5. IMF Membership: The Evolution of Intermediate Regimes Between 1990 and 2001



Source: Bubula and Otker-Robe (2002a).

Table 4. The Evolution of Intermediate Exchange Rate Regimes, 1990-2001
(In percent of all intermediate regimes, end-year)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Conventional fixed pegs	63.6	58.9	60.4	57.0	53.3	51.4	47.2	51.5	52.7	59.2	57.1	56.9
Fixed peg to single currency	35.5	32.7	33.7	33.6	35.2	36.7	34.3	38.4	40.7	46.1	44.2	43.1
Fixed peg to basket	28.2	26.2	26.7	23.4	18.1	14.7	13.0	13.1	12.1	13.2	13.0	13.9
Horizontal band	12.7	12.1	10.9	12.1	14.3	11.9	16.7	16.2	17.6	6.6	7.8	6.9
Crawling peg	13.6	14.0	12.9	15.0	11.4	11.0	11.1	13.1	12.1	11.8	9.1	5.6
Crawling band	2.7	5.6	5.0	5.6	5.7	9.2	11.1	10.1	11.0	9.2	7.8	8.3
Tightly managed float	7.3	9.3	10.9	10.3	15.2	16.5	13.9	9.1	6.6	13.2	18.2	22.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Memorandum items:												
Members with intermediate regimes	110	107	101	107	105	109	108	99	91	76	77	72
(in percent of total membership)	69.2	66.5	56.1	58.8	56.8	58.9	58.4	53.2	48.9	40.9	41.4	38.7
Total membership	159	161	180	182	185	185	185	186	186	186	186	186

Source: Bubula and Otker-Robe (2002a).

United Kingdom). In the emerging market countries, there has been a marked shift toward floating regimes. More flexible regimes were adopted in many countries that faced a sudden reversal of large capital inflows in the 1990s (for example, Brazil, Colombia, Czech Republic, Indonesia, Korea, Mexico, Philippines, Russia, Thailand, and Turkey). A few countries experiencing large capital inflows gradually moved to more flexible exchange rate regimes to enhance monetary policy autonomy in keeping inflation low (for example, Chile and Poland). Several emerging market countries adopted more rigid exchange rate regimes (for example, Argentina, Bulgaria, and Ecuador), with the hope of enhancing policy credibility and stabilizing their economies. For most developing countries with limited access to international capital markets and for transition economies as a whole, intermediate regimes have remained dominant.

19. **The degree of polarization of exchange rate regimes has varied across regions** (Figures 6 and 7). In Europe, the intermediate regimes contracted most notably (mainly in the late 1990s as part of a long-planned effort toward political and economic integration), with the shift evenly distributed between floating and hard peg regimes. In Africa, a number of countries gradually adopted more flexible exchange rate policies. Intermediate regimes remained common in Asia and Latin America, although their share declined significantly in the late 1990s as a result of the financial crises in these regions. In the small island economies in the Caribbean and Pacific, and in the Middle Eastern countries, no significant change in the composition of regimes has been observed.

20. **The exchange rate regime shifts during 1990–2001 do not indicate a particular exit pattern.** Most intermediate regimes exited to a floating regime, rather than to hard pegs, although certain intermediate regimes were replaced by other intermediate regimes before eventually shifting to a float (Figure 8). Slightly more than half of all regime shifts across all types of regimes involved exits to more flexible exchange rate regimes and the remaining to less flexible regimes (Figure 9 and Table 5).[15] Also, a greater proportion of the exits toward greater flexibility involved a move to floating regimes, while most of the regime shifts toward less flexibility was to soft peg regimes as opposed to hard peg regimes (Table 6).[16]

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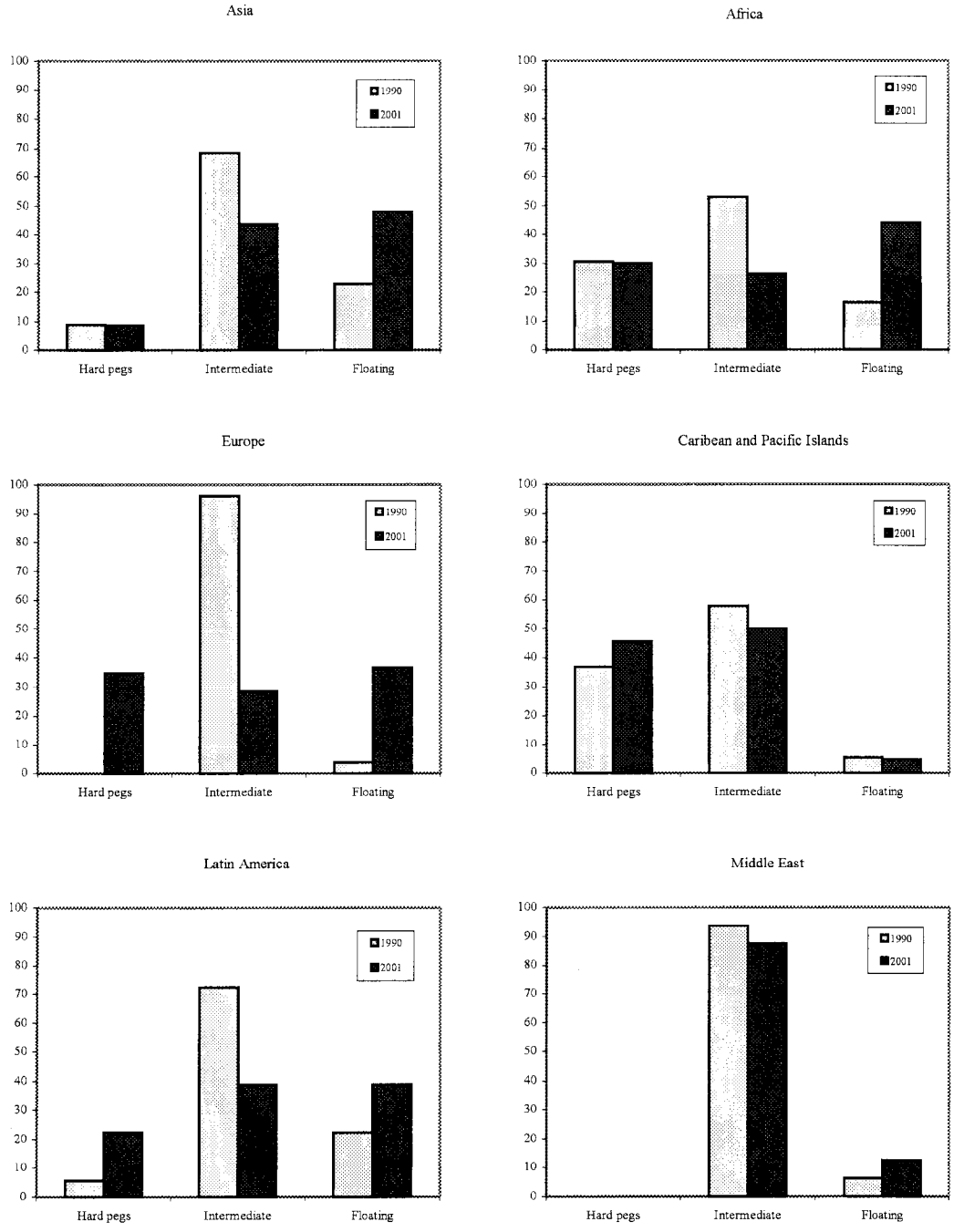
[15] Exits in 1992–94 were more in the direction of flexibility, while those in 1999 were more in the direction of less flexibility (mainly the euro area countries). A significant part of the exits to more flexible regimes was associated with emerging market countries.

[16] Very few exits involved a jump between the extremes (for example, Argentina's move to a floating regime from a currency board, or Ecuador's move from an independent float to formal dollarization).

Figure 6. Trend Toward Polarization of Exchange Rate Regimes Across Regions in 1990 and 2001 1/
(In percent of membership in each group)

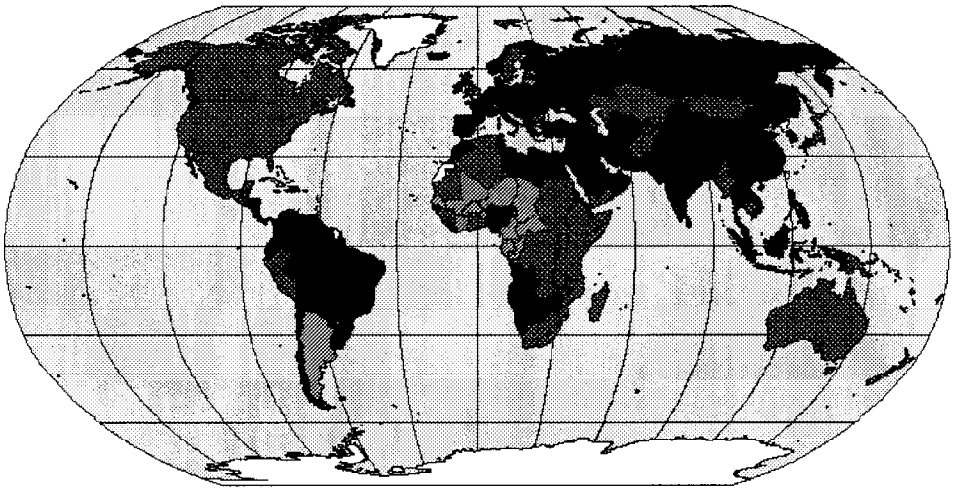


Source: Staff estimates.

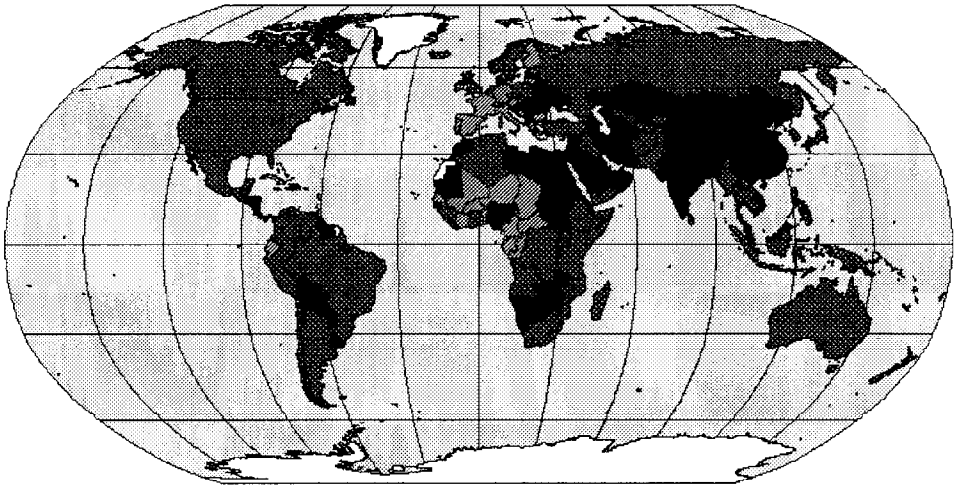
1/ Hard pegs = Formal Dollarization+Currency Unions+Currency Boards
Intermediate = Conventional fixed pegs+Horizontal Bands+Crawling Pegs+Crawling Bands+Tightly Managed Floats
Floating = Independently Floats+ Other Managed Floats with No Predetermined Path for the Exchange Rate.

Figure 7. Exchange Rate Regimes by Country

End-1996



End-2001



Non-IMF Member

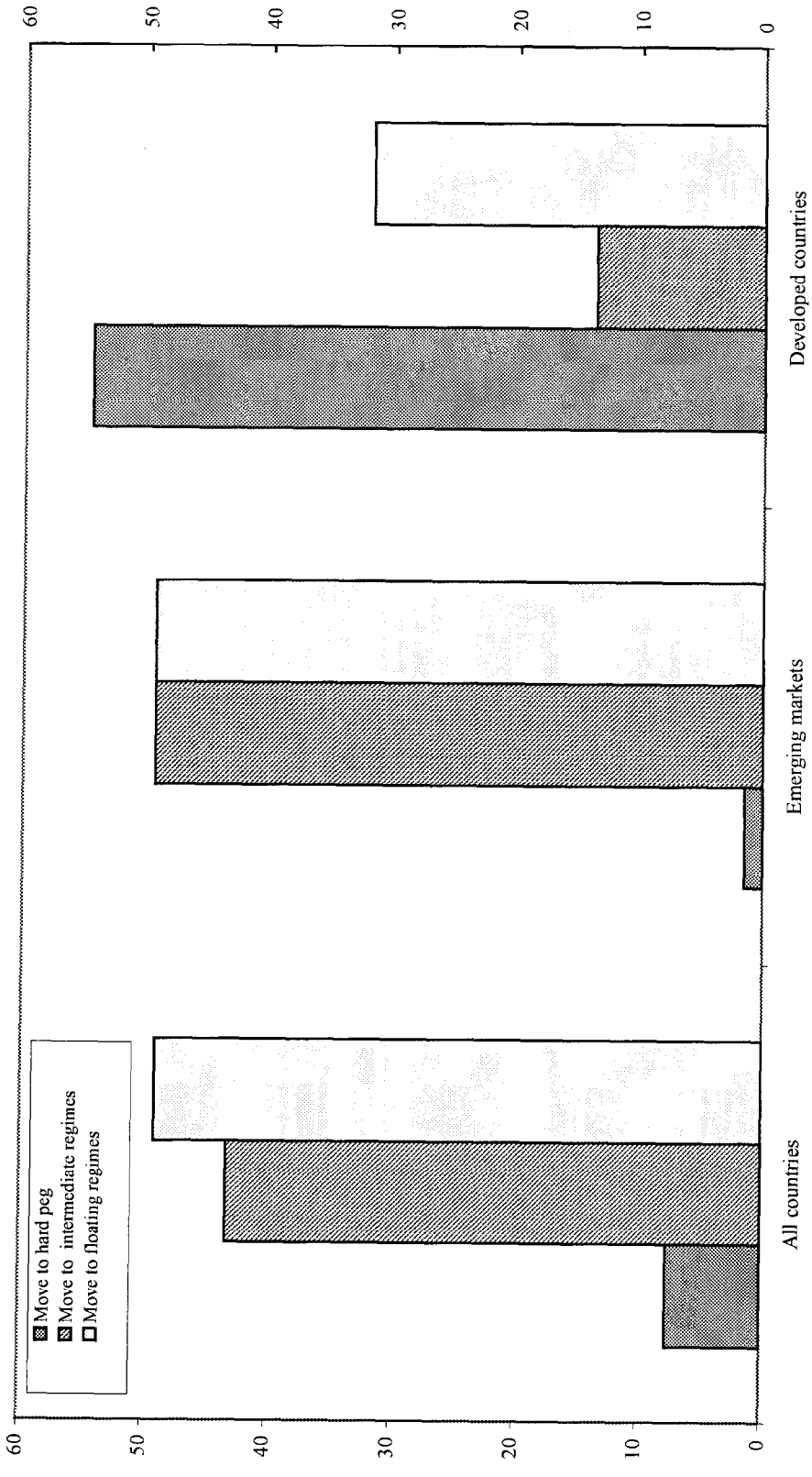
Hard peg regime (includes exchange arrangements with no separate tender and currency board agreements)

Intermediate regimes (includes conventional pegged arrangements, pegged exchange rates within horizontal bands, crawling pegs, crawling bands, and tightly managed floating)

Floating regime (includes managed floating and independently floating)

Sources: IMF, *Annual Report on Exchange Arrangements and Exchange Restrictions*, various issues; and Bubula and Otker-Robe (2002a).

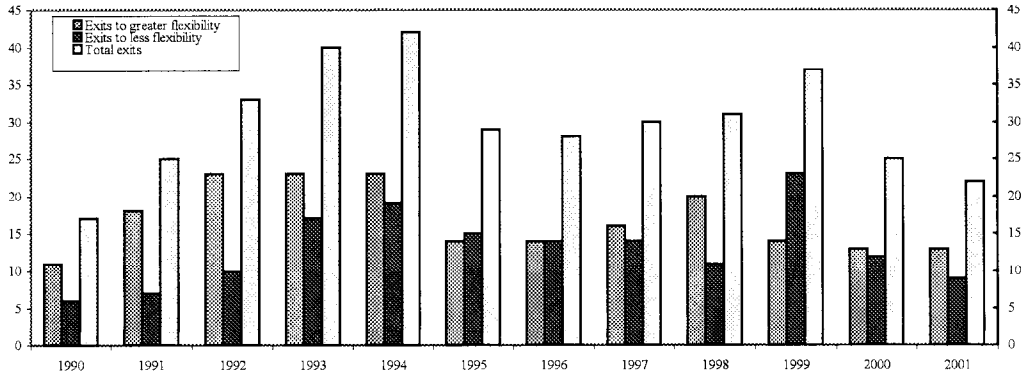
Figure 8. Exits From Intermediate Regimes, 1990–2001
(In percent of all exits within each country group)



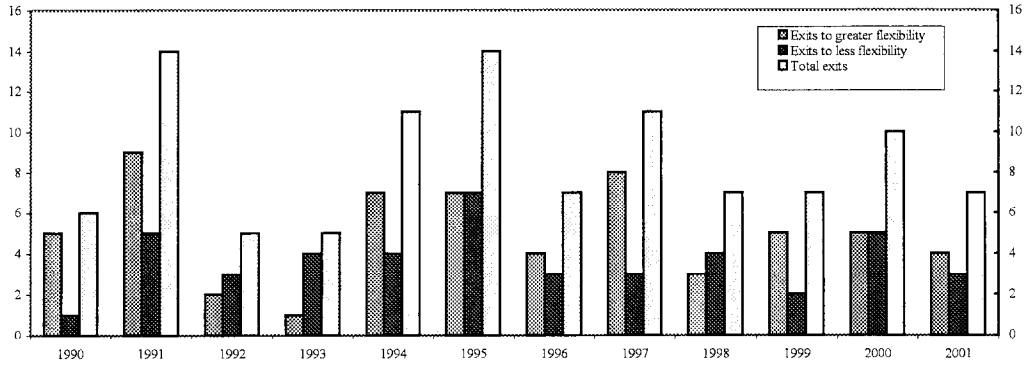
Source: Bubula and Otker-Robe (2002a).

Figure 9. The Nature and Occurance of Exchange Rate Regime Shifts, 1990-2001
(Number of exits)

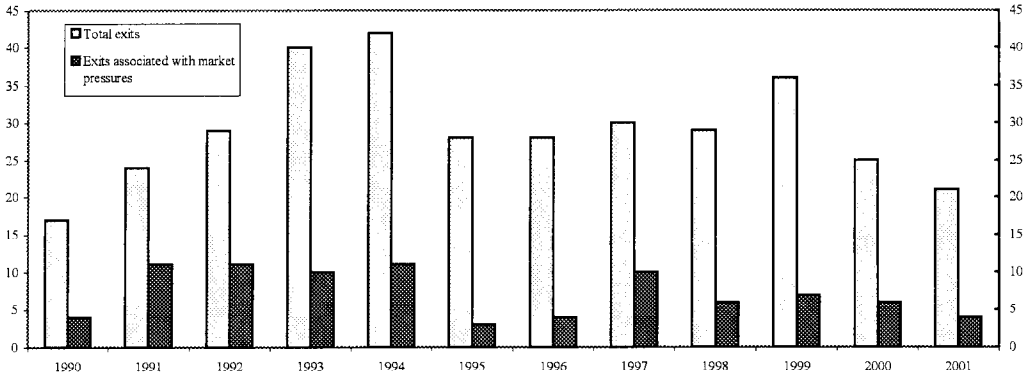
All Countries



Emerging Markets



The Number of Exits Associated with market Pressure Episodes 1/



Source: Bubula and Otker-Robe (2002a, 2002b).

1/ Severe pressure episodes were identified as periods when a market pressure index computed as a weighted average of monthly exchange rate depreciations and interest rate increases exceeded its sample mean by at least three standard deviations. The weights were computed so as to make the sample standard deviations of each series equal. Sample means and standard deviations for hyperinflation episodes were computed separately as in Kaminsky and Reinhart (1999). For countries where interest rate data were not available for sufficiently long periods, the episodes were identified as periods when the monthly exchange rate depreciation wa at least 5 percent and deviated from the previous month's depreciation by at least 3 percentage points, and when the monthly depreciation exceeded its mean by at least two standard deviations (both mean and standard deviations are country specific).

Table 5. The Frequency of Regime Shifts Under Alternative Exchange Rate Regimes by Members, 1990–2001

	Toward Greater Flexibility		Toward Less Flexibility		Total	
	Total Number 1/	Frequency (In percent) 2/	Total Number 1/	Frequency (In percent) 2/	Total Number 1/	Frequency (In percent) 2/
Exit From:						
Hard peg regimes	8	0.16	--	--	8	0.16
Formal dollarization	7	0.87	...	...	7	0.87
Currency unions	--	--	--	--	--	--
Currency boards	1	0.12	--	--	1	0.12
Intermediate regimes	164	1.18	58	0.42	222	1.60
Conventional fixed peg to a single currency	68	1.35	5	0.10	73	1.45
Conventional fixed peg to a basket	24	0.90	2	0.08	26	0.98
Horizontal bands	19	1.09	14	0.80	33	1.89
Crawling pegs	26	1.50	17	0.98	43	2.48
Forward looking	13	2.19	3	0.51	16	2.70
Backward looking	13	1.14	14	1.23	27	2.37
Crawling bands	8	0.78	8	0.78	16	1.55
Forward looking	5	0.66	3	0.40	8	1.06
Backward looking	3	1.10	5	1.84	8	2.94
Tightly managed floating	19	1.10	12	0.69	31	1.79
Floating regimes	30	0.44	99	1.46	129	1.90
Other managed floating	30	0.90	54	1.62	84	2.52
Independently floating	...	...	45	1.30	45	1.30
Total	202	...	157	...	359	...

Source: Bubula and Otker-Robe (2002a).

1/ Indicates the total number of exits from each regime during the period January 1990-December 2001.

2/ Defined as the total number of exits from a given regime as a ratio of the total number of observations during which the regime as in effect over the sample.

Table 6. The Number of Regime Shifts To Various Exchange Rate Regimes, 1990–2001

	In a move to greater flexibility	In a move to less flexibility			Total
		From float 1/	From peg 2/	Total	
	(1)	(2)	(3)	(4)	=(1)+(4)
Exits To:					
Hard peg regimes	--	3	16	19	19
Formal dollarization	...	1	1	2	2
Currency unions	--	--	13	13	13
Currency boards	--	2	2	4	4
Intermediate regimes	58	84	30	114	172
Conventional fixed peg to a single currenc	3	33	14	47	50
Conventional fixed peg to a basket	2	1	1	2	4
Horizontal bands	10	10	5	15	25
Crawling pegs	13	10	6	16	29
Forward looking	4	4	6	10	14
Backward looking	9	6	--	6	15
Crawling bands	14	2	4	6	20
Forward looking	9	1	4	5	14
Backward looking	5	1	--	1	6
Tightly managed floating	16	28	...	28	44
Floating regimes	144	24	...	24	168
Other managed floating	70	24	...	24	94
Independently floating	74	...	...	--	74
Total	202	111	46	157	359

Source: Bubula and Otker-Robe (2002a).

1/ Indicates exits from tightly and other managed floating and independently floating regimes to the indicated regime on the first column in a move to less flexibility.

2/ Indicates exits from soft peg regimes (including conventional fixed pegs, crawling pegs, horizontal and crawling bands) to the indicated regime on the first column in a move to less flexibility.

With only about one-third of the exits to more flexible regimes and about one-fourth of the total regime shifts during 1990–2001 associated with severe foreign exchange market pressure episodes,[17] most exits appear to represent orderly regime shifts.

21. **The exit episodes suggest that certain exchange rate regimes have been more "exit prone," and somewhat more subject to severe market pressure relative to other regimes**. The frequency of exits from intermediate regimes during 1990–2001 was in general higher relative to exits from hard pegs (Table 5). Moreover, the frequency of episodes related to severe market stress is also higher for intermediate regimes (Table 7). The hard peg regimes were least subject to exits,[18] and the frequency of severe market pressure under these regimes was much less than those of intermediate and floating regimes.

22. **Within the intermediate regimes, certain regimes appeared to face more frequent market pressure than others.** For example, horizontal bands and conventional fixed pegs to a single currency or a basket of currencies came under more frequent market pressure than other intermediate regimes (for example, crawling bands and tightly managed floats)[19] (Figure 10). However, the exit rate was not always higher for the regimes subject to more frequent market pressures than those experiencing less frequent market pressures.[20]

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[17] Severe exchange market pressure episodes were identified as those involving a sharp depreciation of the exchange rate, as well as those raising interest rates (when interest rate data were available for most of the sample period). Foreign reserve data were not used to identify pressure episodes since they may be affected by debt or reserve management strategies, valuation changes, or official borrowing or repayments. Such data also do not capture intervention through swaps and forwards or indirect intervention that may take the form, for example, of administrative foreign exchange controls or moral suasion. For more detailed analysis of pressure episodes across exchange rate regimes, see Bubula and Otker-Robe (2002b).

[18] Of the eight exits from hard pegs, there were no exits from currency unions, one exit from a currency board, and seven exits from formal dollarization, most of which involved the separation of FSU countries from the ruble zone (following independence and the introduction of national currencies.

[19] Between backward and forward looking crawling pegs, the latter—less flexible compared with backward looking ones—appeared more prone to frequent market pressure.

[20] Such differences in the degree of exposure to exits and market pressures could arise when an exit from a regime is orderly, rather than being forced by speculative pressures, or when market pressures are managed effectively without abandoning the existing regime.

Table 7. Distribution of Severe Exchange Market Pressure Episodes Across Exchange Rate Regimes, 1990-2001 1/
(In percent unless otherwise specified)

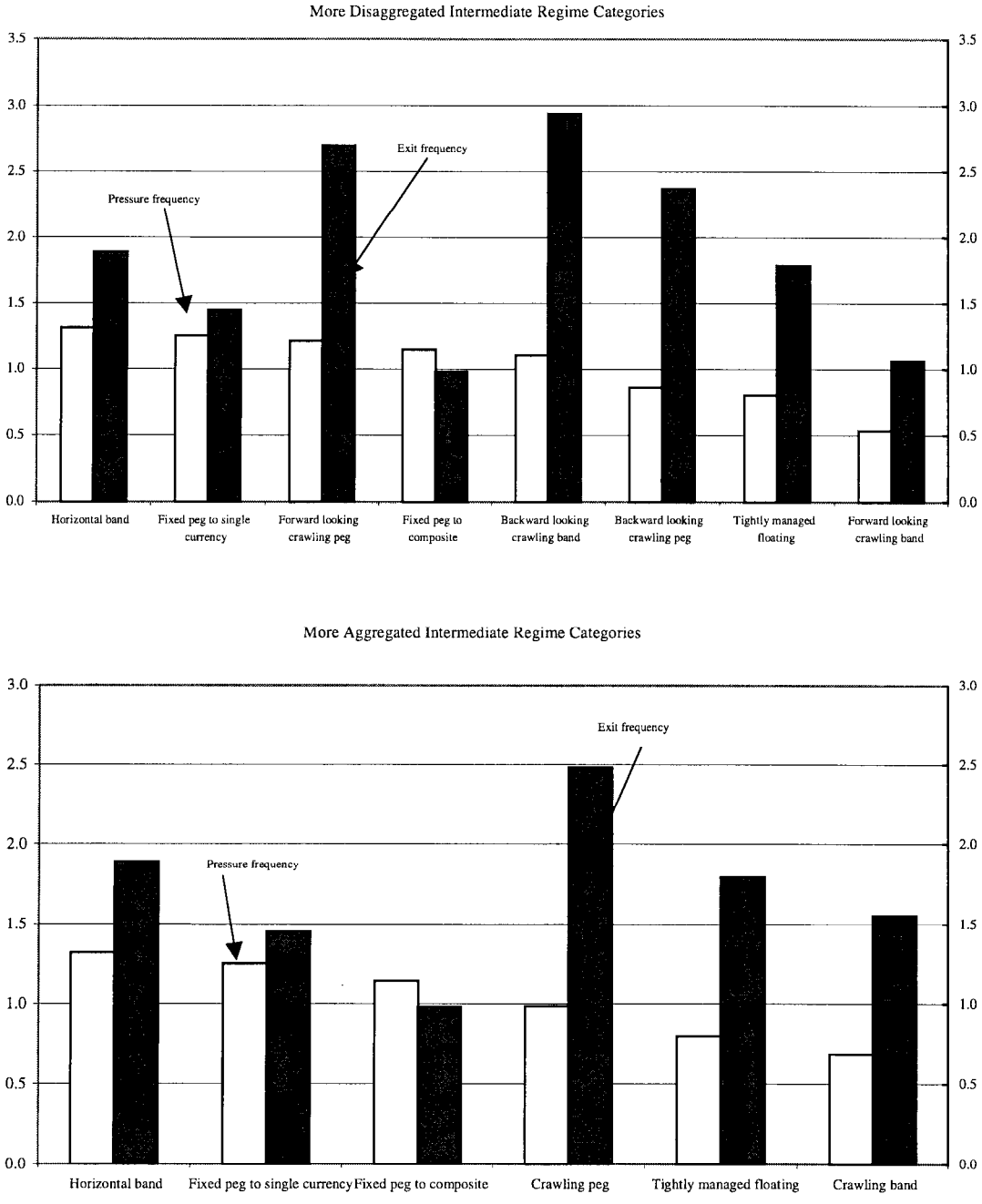
	Severe Pressure Frequency Under Each Regime 2/ (In percent)
Hard peg regimes	0.47
Formal dollarization	0.55
Currency union	0.44
Currency board	0.59
Intermediate regimes	1.09
Conventional fixed peg to a single currency	1.25
Conventional fixed peg to a basket	1.14
Horizontal band	1.32
Crawling peg	0.99
Forward looking crawling peg	1.21
Backward looking crawling peg	0.86
Crawling band	0.68
Forward looking crawling band	0.53
Backward looking crawling band	1.10
Tightly managed floating	0.80
Floating regimes	0.92
Other managed floating	1.09
Independently floating	0.77
Memorandum items:	
Share of market pressures under each category (in percent of total):	
Hard peg regimes	9.14
Intermediate regimes	64.52
Floating regimes	26.34
Total	100.00
Number of observations	19,929
Number of pressure episodes	186

Source: Bubula and Otker-Robe (2002b).

1/ Severe pressure episodes were identified as periods when a market pressure index computed as a weighted average of monthly exchange rate depreciations and interest rate increases exceeded its sample mean by at least three standard deviations. The weights were computed so as to make the sample standard deviations of each series equal. Sample means and standard deviations for hyperinflation episodes were computed separately as in Kaminsky and Reinhart (1999).

2/ The frequency of pressures under each regime is computed as the number of severe pressure episodes under each regime as a ratio of the total number of observations in which that regime was in effect over the sample.

Figure 10. Frequency of Market Pressures and Exits Across Intermediate Regimes, 1990–2001
(In percent)



Sources: Tables 5 and 7.

Statistical evidence indicated that crawling pegs overall were the most exit-prone, followed by horizontal bands, tightly managed floats, and crawling bands.[21]

23. **Some aspects of the prevailing exchange rate regimes certainly contributed to the most well known crises in the past decade.** Eight out of nine countries, which experienced crises during this time period, maintained an intermediate regime and one had a hard peg—a currency board (Table 8). Under the intermediate regimes, the relatively stable exchange rate and high domestic interest rates compared with international interest rates attracted capital flows—especially short-term—and thus increased vulnerability to a sudden reversal of such inflows. Exchange rate stability also encouraged excessive and unhedged borrowing by the public or private sectors, increasing susceptibility to large depreciations that contributed to financial stress directly or indirectly through the banking system. The limited flexibility of the exchange rate also contributed to a worsening of external balances.

24. **The prevailing exchange rate regimes were not the only source of market stress, however.** The country experiences suggest that the inconsistency between economic and financial policies and the prevailing exchange rate regime were key factors in most crisis cases examined. Weaknesses in the condition and supervision of the banking system and in fiscal policies, and lack of progress in crucial structural reforms were important sources of vulnerabilities undermining exchange rate regimes.[22] Such weaknesses and vulnerabilities were not prevalent in the noncrisis countries that experienced temporary exchange market pressures, although they pursued similar exchange rate regimes.

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[21] However, when differences across crawling pegs and crawling bands are considered, backward looking crawling bands were the most exit-prone, followed by forward and backward looking crawling pegs.

[22] The statistical analysis of the determinants of exits from pegged regimes in 32 selected countries indicates that factors such as the appreciation of the real exchange rate above trend, a decline in international reserves, an increase in banking system vulnerability, as well as the length of maintaining a pegged regime, were important factors determining the modality of exits from a particular pegged regime. For more details, see Duttagupta and Otker-Robe (2002).

Table 8. Sources of Vulnerabilities in Selected Crisis and Noncrisis Countries that Experienced Market Pressures [1]

Sources of Vulnerabilities	Crisis Cases									Noncrisis Cases			
	Argentina	**Brazil**	**Ecuador**	**Indonesia**	**Malaysia**	**Mexico**	**Russia**	**Thailand**	**Turkey**	**Hong Kong**	**Israel**	**Poland**	**Singapore**
Period of pressure/crisis	2001-02	1999	1999	1997	1997	1994	1998	1997	1994, 2001	1997	1998	1998	1997
Pre-crisis exchange rate regime	Currency board	Forward looking crawling peg	Forward looking crawling band	Backward looking crawling band	Tightly managed float	Forward looking crawling band	Forward looking crawling peg	Basket peg	Forward looking crawling peg	Currency board	Forward looking crawling band	Forward looking crawling band	Tightly managed float within unannounced adjustable target band
Regime exited to	Managed float	Free float	Free float Dollarization	Free float	Managed float Fixed peg	Free float	Managed float	Managed float	Free float	Same regime	Same regime	Same regime	Same regime
Political situation	✓		✓	✓	✓	✓	✓	✓	✓	✓			
Banking system condition	✓		✓	✓	✓	✓	✓	✓	✓				
Fiscal situation	✓	✓	✓			✓	✓		✓		✓		
External current account imbalances	✓	✓	✓	✓	✓	✓		✓	✓			✓	
Overvaluation of the exchange rate	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓		
Reserves situation	✓	✓	✓	✓	✓	✓	✓	✓	✓				
Recession	✓		✓		✓		✓						
External debt	✓	✓	✓	✓		✓	✓	✓	✓				
Short term external debt	✓	✓		✓		✓	✓	✓	✓				
Public sector debt	✓	✓	✓			✓	✓		✓		✓		
Private sector debt	✓		✓	✓		✓	✓	✓	✓				
Domestic FX lending	✓		✓	✓		✓		✓	✓			✓	
Contagion	✓ (Brazil)	✓ (Russia)	✓ (Russia and Brazil)	✓ (Thailand)	✓ (Thailand)		✓ (Asia)			✓ (Asia)	✓ (Russia)	✓ (Russia)	✓ (Asia)

Source: Staff Reports

C. Factors Underlying the Evolution of Exchange Rate Regimes

25. The evolution of exchange rate regimes since 1990 appeared to have been influenced by changes in certain exchange regulations and in the monetary policy framework, and by the degree of integration with international capital markets.

Exchange regulations

26. **Countries that adopted more flexible exchange rate regimes in general tended to eliminate dual or multiple exchange rates.** The share of countries maintaining dual or multiple exchange rate systems more than halved in 1990–2001, while the share of countries with floating regimes more than doubled (Figure 11).[23] At the end of 2001, 15 of 18 countries with dual or multiple exchange rates, maintained either pegged or managed exchange rate regimes.[24] The elimination of dual or multiple exchange rate regimes has often been associated with the adoption of floating exchange rates.[25] In a few cases, however, the introduction of dual or multiple exchange rates was accompanied by the adoption of a more flexible exchange rate regime.[26] One possible explanation for this trend is that moving to a more flexible regime may reflect increased exchange market pressure that prompts the authorities to allow only specified transactions at a more flexible exchange rate. The reason

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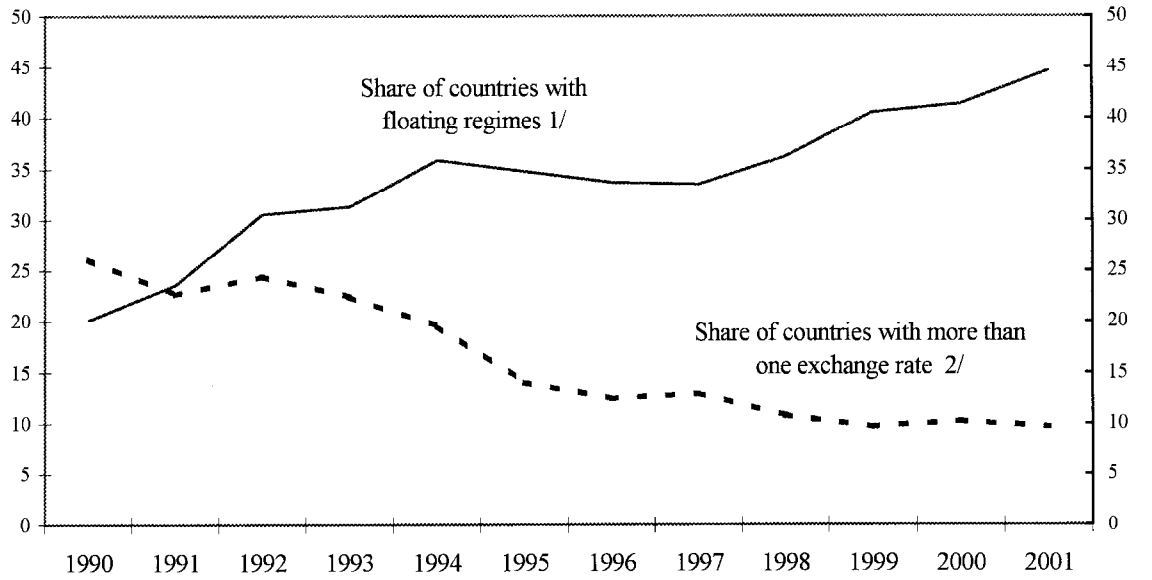
[23] Countries with dual or multiple exchange rates accounted for about 2 percent of world GDP in 2001 (9 percent in 1990).

[24] Since the Fund's exchange regime classification groups members' regimes according to the dominant foreign exchange market, multiple exchange rate systems have also been found in countries with (managed) floating exchange rate regimes. For example, Myanmar officially maintains a formal peg to SDR, but its regime is classified as a managed float since most transactions are effected at the legalized secondary market rate that is largely market-determined.

[25] During 1991–97, 20 countries adopted floating regimes upon the unification of exchange rates (see IMF, 1999). In 1997–2001, nine of the 18 countries that unified exchange rates also floated (including, Brazil, Chile, Ecuador, Eritrea, Iraq, and Liberia, as well as Burundi, Pakistan, and Ukraine, which unified their exchange rates after switching back and forth between multiple and unified rates).

[26] For example, Burundi, and Pakistan, which had introduced dual or multiple rates temporarily and subsequently unified them, had adopted more flexible exchange rate regimes upon the introduction of the multiple or dual rates.

Figure 11. IMF Membership: Evolution of Exchange Rate Structure and Regimes, 1990-2001
(In percent of IMF membership)



Sources: IMF, Annual Report on Exchange Arrangements and Exchange Restrictions, various issues; and Bubula and Otker-Robe (2002a).

1/ Includes countries with independently floating and managed floating regimes with no predetermined path for the exchange rate.

2/ Includes countries that maintain dual and multiple exchange rates for different types of transactions.

for such a move is to achieve a gradual depreciation and avoid a potential overshooting that could have occurred under a full float.[27]

27. **Many countries continued to support their exchange rates through administrative measures to augment the supply of foreign exchange.** As of end-2001, about 53 percent of the countries with export repatriation requirements and about 67 percent of the countries with export surrender requirements maintained pegged exchange rate regimes (Table 9). In particular, about 60 percent of the countries that maintain conventional fixed pegs support their regimes by repatriation or surrender requirements for export proceeds. Some countries that eliminated surrender requirements in 1997–2001 moved to more flexible regimes within a period of about a year (for example, Kazakhstan, Liberia, the Slovak Republic, and Slovenia).

Monetary policy framework

28. **The move toward greater exchange rate flexibility has also reflected changes in the role of exchange rate policy within the overall monetary policy framework.** Many countries have adopted hard or conventional pegged regimes to help reduce inflationary expectations and increase economic policy credibility in the early phases of stabilization programs. The eventual emergence of tensions between the objectives of lowering inflation and improving external competitiveness has been a significant factor in moving to more flexible exchange rate regimes; willingly or not, some countries moved to more flexible forms of pegged regimes while others chose floating regimes. A number of countries have adopted crawling band arrangements to address the tensions between inflation and external objectives, as well as to discourage speculative capital flows. Such regimes became quite common until the late 1990s, as they, to some extent, retained an anchor role for the exchange rate through a predetermined depreciation path, while allowing flexibility to prevent serious exchange rate misalignments and to deal with capital flows. More recently, however, the use of such regimes has declined, because a number of these regimes came under speculative attacks that ended in floating (for example, Colombia, Ecuador, Indonesia, Mexico, and Sri Lanka). A few countries (Chile and Poland) exited to greater exchange rate flexibility in a relatively tranquil period.

29. **There has been a corresponding decline in the use of the exchange rate as a nominal anchor of monetary policy in favor of explicit inflation-targeting.** In particular, a growing number of emerging market economies have abandoned their pegged exchange rate regimes and moved toward flexible rates and inflation targeting (Figure 12). Of the 18 countries that had inflation targeting as the main monetary framework in end-2001, 15 had

[27] A similar approach was taken by Argentina in January 2002, when the authorities temporarily adopted a dual exchange rate system following the collapse of the currency board regime, and required most imports and selected capital account transactions to be made at a fixed official rate, while allowing other transactions to take place at a floating rate.

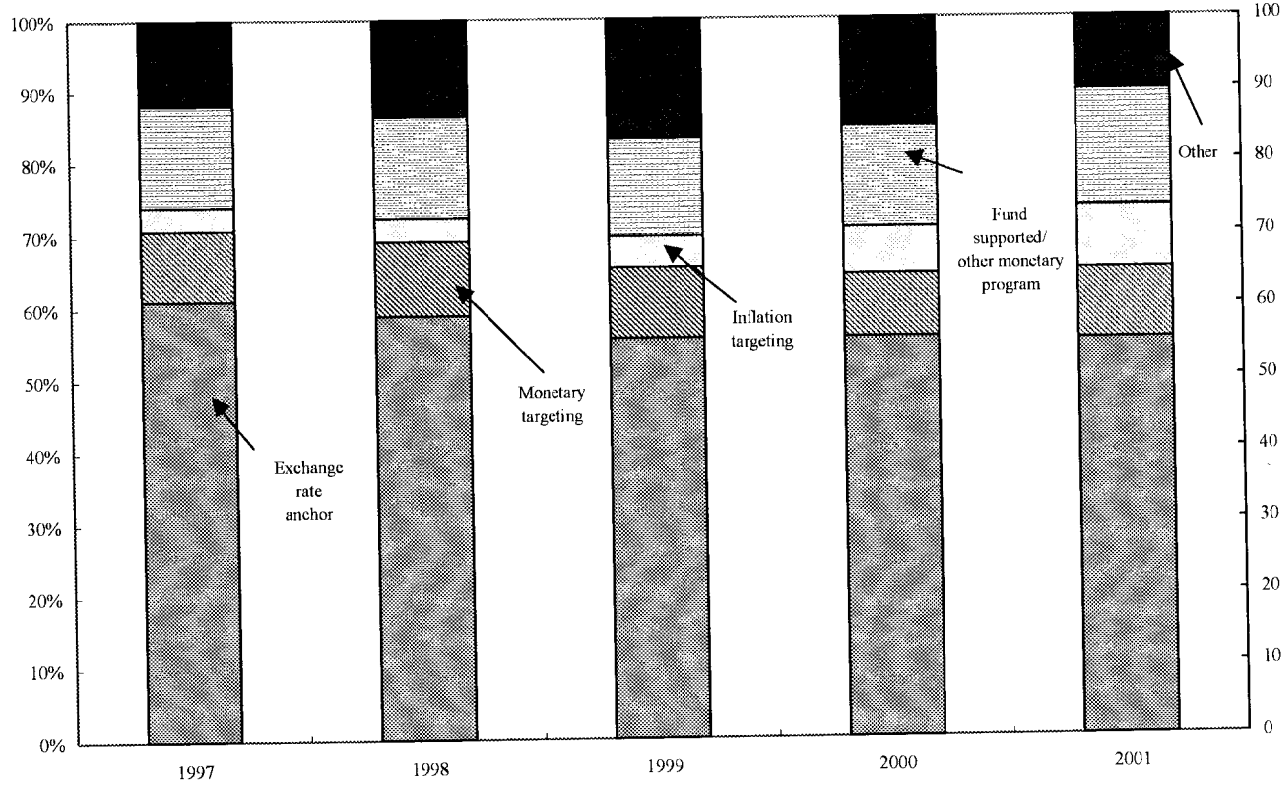
Table 9. Exchange Rate Regimes and Various Aspects of Exchange Systems, end-2001

Exchange Rate Regimes	Total number of members	Of which with: Export surrender requirements	Export repatriation requirements	Dual/Multiple Exchange Rates
		(Number of members)		
No separate legal tender	40	18	19	--
Currency board	8	2	3	1
Conventional fixed peg	41	24	27	7
Horizontal band	5	1	1	1
Crawling peg	4	1	2	--
Crawling band	6	2	3	1
Managed floating	43	15	29	6
Independently floating	39	8	20	3
Total	186	71	104	19
Memorandum items:		(In percent)		
Share of pegged regimes 1/	55.9	67.6	52.9	52.6
Share of pegged and managed floating regimes	79.0	88.7	80.8	84.2
		(In percent of total members within each regime)		
No separate legal tender	...	45.0	47.5	--
Currency board	...	25.0	37.5	12.5
Conventional fixed peg	...	58.5	65.9	17.1
Horizontal band	...	20.0	20.0	20.0
Crawling peg	...	25.0	50.0	--
Crawling band	...	33.3	50.0	16.7
Managed floating	...	34.9	67.4	14.0
Independently floating	...	20.5	51.3	7.7
Total	...	38.2	55.9	10.2

Sources: Bubula and Otker-Robe (2002a); and IMF Annual Report on Exchange Arrangements and Exchange Restrictions, various issues.

1/ Includes the shares of countries with no separate legal tender, currency board, conventional fixed peg, crawling peg, horizontal and crawling band regimes.

Figure 12. IMF Membership: Monetary Policy Framework, 1997-2001
(In percent of membership)



Source: IMF, International Financial Statistics.

1/ Only one monetary policy anchor is assigned to each country even when there are more than one anchor in order to avoid double counting. For example, if a country has exchange rate targets within a pegged exchange rate regime and maintains monetary or inflation targeting, it is assigned an exchange rate anchor. A Fund supported or other monetary program is assigned to a country only when there is no other explicitly stated nominal anchor. "Other" category is used when the country has used a variety of indicators to conduct monetary policy or when no relevant information is available.

independently floating regimes (Table 10). Several countries adopted inflation targeting following the floating of their currencies during a currency crisis (for example, Brazil, Czech Republic, Korea, Mexico, and Thailand), reflecting a less favorable experience with the use of the exchange rate as a nominal anchor, the instability of money demand in such an environment, and the desire to enhance the credibility and transparency of monetary policy. Several countries floated their currencies and adopted inflation targeting as the main anchor of monetary policy (for example, Iceland and Poland). Some others adopted monetary targets when preconditions for an effective implementation of inflation targeting were not in place (for instance, Turkey after floating the exchange rate in 2001). A few others continued to have multiple anchors, although their use has declined since 1997.[28]

Integration with international capital markets

30. **The greater integration with international capital markets has influenced the choice of exchange rate regimes in many countries**. It has been argued that the observed trend away from intermediate regimes toward the two polar regimes reflect the view that intermediate regimes are not viable for any lengthy period, particularly for countries highly integrated with international capital markets.[29] The viability of soft peg regimes has been questioned because there have been many failures to maintain a pegged exchange rate while directing monetary policy to achieve domestic goals in an environment with increased capital mobility. Statistical evidence suggests that the greater integration with international capital markets, measured by changes in gross cross-border private capital inflows and outflows, has been accompanied by a decline in the share of intermediate regimes in both developed and emerging market countries (Figure 13).[30]

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[28] For example, Hungary and Israel implement inflation targeting, while maintaining horizontal and crawling bands, respectively, and China maintains monetary targeting while de facto pegging to the U.S. dollar.

[29] Such a trend has, in turn, been considered as an implication of the "impossible trinity," which states that only two of the three goals of exchange rate stability, capital mobility, and monetary independence can be achieved simultaneously. For details, see Fischer (2001) and Frankel (1999).

[30] This flow-based measure may be distorted by certain transactions that may not necessarily reflect capital account openness (for example, bunching of borrowing operations, interest payments, and exogenous declines in foreigners' interest in investing in a particular country). Even with the use of a stock measure developed in the Fund (see IMF 2001), however, the observed relationship appears to hold. As discussed in Section IV, there was no clear relationship between the existence of capital controls and the prevailing exchange rate regimes. The existence of capital controls does not necessarily imply lower integration with international capital markets since it does not give any indication as to the effectiveness of such controls.

Table 10. Exchange Rate Regimes and Monetary Policy Framework, 1997–2001

Countries with Direct Inflation Targeting by Exchange Rate Regime		Countries with Monetary Aggregate Targeting by Exchange Rate Regime	
End-1997	End-2001	End-1997	End-2001
Independently floating	**Independently floating**	**Independently floating**	**Independently floating**
Australia	Australia	Korea	Gambia
New Zealand	Brazil	Mongolia	Malawi
Sweden	Canada	Peru	Philippines
United Kingdom	Chile	Sierra Leone	Peru
	Colombia	South Africa	Sierra Leone
	Czech Republic	Switzerland	Turkey
	Iceland		Yemen
	Korea		
	Mexico		
	New Zealand		
	Norway		
	Poland		
	South Africa		
	Sweden		
	United Kingdom		
Managed floating	**Managed floating**	**Managed floating**	**Managed floating**
Canada	Thailand	Czech Republic	Ghana
		Ghana	Guinea
		Guinea	Guyana
		Guyana	Indonesia
		India	Jamaica
		Jamaica	Mauritius
		Lao PDR	Mongolia
		Mauritus	Sao Tome&Principe
		Philippines	Slovenia
		Sao Tome&Principe	Sri Lanka
		Zimbabwe	Tunisia
Crawling band (backward looking)		**Crawling band** (backward looking)	
Chile		Sri Lanka	
Crawling band (forward looking)	**Crawling band** (forward looking)	**Crawling band** (forward looking)	
Colombia	Israel	Poland	
Israel			
Horizontal band	**Horizontal band**	**Horizontal band**	
Finland	Hungary	Germany	
Spain		Slovenia	
		Crawling peg (forward looking)	
		Greece	
		Conventional fixed peg	**Conventional fixed peg**
		China	China

Sources: IMF, Quarterly Report on Exchange Arrangements and Exchange Restrictions, Various issues; and Bubula and Otker-Robe (2002a) .

Figure 13. Exchange Rate Regimes and a Measure of Capital Mobility, 1990-2001 1/

Source: IFS, Bubula and Otker-Robe (2002a), and staff estimates.

1/ Capital mobility is measured by the average of the ratio of the sum of private gross capital inflows and outflows (e.g., FDI, portfolio, and other investments) as a percentage of nominal GDP in each country in the group. When data for a particular category for a given year (and country) is not available, the measure excludes that observation in the simple average.

31. **Countries adopted different exchange rate regimes in response to growing capital flows in the past decade.** Some countries were forced to move to greater exchange rate flexibility following a series of speculative attacks, particularly when inconsistencies in the financial and monetary-exchange rate policy mix resulted in substantial inflows of capital and their subsequent reversal.[31] Others deliberately moved to greater flexibility, either by increasing the flexibility of their pegged regimes or by floating, to minimize the potential sources of vulnerabilities from implicit exchange rate guarantees or to enhance monetary policy autonomy in achieving domestic objectives. Several countries moved toward more rigid exchange rate regimes to enhance policy credibility,[32] while in some countries this option was foreclosed by a severe deterioration in economic conditions and/or the absence of institutional requirements (for example, Indonesia and Russia). A few countries imposed capital and exchange controls to support the introduction of pegged regimes while directing their monetary policies to domestic objectives (for example, Malaysia in 1998 and Venezuela in 1994).[33]

D. Issues in the Classification of Exchange Rate Regimes

32. **The adoption of the de facto classification of exchange rate regimes represents an effort to achieve greater policy transparency and to strengthen the surveillance of the international monetary system.** The de facto classification system requires staff to make a judgment on the actual exchange rate arrangements and the monetary policy anchors adopted by countries. This judgment is based on: (i) information obtained in Article IV consultation discussions; (ii) provision of technical assistance to member countries; and (iii) regular contacts with area department staff, and (iv) an examination of the nominal real exchange rate movements.

33. **The de facto system has helped to clarify the nature and role of members' exchange rate regimes and has facilitated discussions with country authorities about their implementation of exchange rate policy.** In the cases where regimes announced by country authorities deviate significantly from the staff's de facto classifications, efforts have been made to obtain clarification—mainly through Article IV consultation discussions.[34] For countries where dual or multiple exchange rates remain in place, available data on all the

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[31] For example, this occurred in Mexico (1994), Russia (1998), Thailand and Indonesia (1997), Brazil, Ecuador and Colombia (all in 1999), and Argentina (end-2001).

[32] Argentina and Bulgaria adopted currency boards in 1991 and 1997, respectively, and Ecuador and El Salvador dollarized in 2000 and 2001. In EMU countries, the move to hard peg regimes has been part of a long-planned political and economic integration.

[33] See Ariyoshi and others (2000).

[34] Differences between the staffs' and the authorities' views emerged in only a limited number of cases (less than ten countries over the whole membership).

relevant exchange rates have been examined to assess the degree of true exchange rate flexibility. These efforts have helped to enhance the effectiveness of the surveillance of members' exchange rate arrangements and identify potential inconsistencies in the mix of monetary and exchange rate policies.

34. **Some difficulties have been experienced in the implementation of the de facto classification system.** Assessing exchange rate policies was complicated where countries used direct or indirect intervention to informally target the exchange rate, while officially declaring a floating exchange rate regime. The approach taken by the staff in these countries has been to supplement data on nominal or real exchange rates and international reserves with other evidence showing that the authorities may be pursuing an informal exchange rate target, for example, through the use of interest rate defense or other intervention measures. Such information has also been used to distinguish between managed and independently floating regimes, as well as between tightly managed and other managed floating regimes.

35. **There is some room to strengthen further the de facto classification system and its role in the surveillance of members' policies.** To this end, the timely availability of information and its transparent presentation by members and the staff is particularly crucial. In addition, the de facto classification process could be complemented by further statistical analysis of changes in the exchange rate in cases where the existing classification is questionable.[35]

IV. Developments in Currency Convertibility

A. Introduction

36. **Momentum toward currency convertibility has diminished since 1997 when a series of emerging market crises emerged.**[36] Fund members have continued eliminating—albeit at a slower pace—exchange restrictions on the making of payments and transfers for current international transactions subject to the Fund's jurisdiction under Article VIII or maintained under the transitional arrangements of Article XIV (Box 2). However, progress toward liberalization of the broader range of exchange controls on both current and capital account transactions appears to have been limited. This assessment is based on the number of countries maintaining exchange restrictions and controls and does not necessarily reflect the degree of effectiveness of restrictions and controls, which critically depends both

[35] For discussion on these issues, see Reinhart and Rogoff (2002).

[36] Developments through 1997 were discussed in Johnston and others (1999).

Box 2. Exchange Restrictions and Articles VIII and XIV

Article VIII Section 2, 3, and 4 obligations

Article VIII, Section 2 (a) requires Fund members not to impose restrictions on the making of payments and transfers for current international transactions without the approval of the Fund. While Article VIII, Section 2 specifically focuses on restrictions on current payments and transfers, Article VIII, Section 3 prohibits members from engaging in discriminatory currency arrangements or multiple currency practices, except as authorized under the Fund's Articles of Agreement or approved by the Fund. Article VIII, Section 4 requires each member, with certain specified exceptions, to buy balances of its currency held by another member if the latter represents that the balances have been recently acquired as a result of current transactions or that their conversion is needed for making payments for current transactions. At the time of membership or at a later date, a member may formally notify the Fund of its acceptance of the obligations of Article VIII, Sections 2, 3 and 4.

Article XIV provisional arrangements

When joining the Fund, members have also the option of availing themselves of the transitional arrangements of Article XIV, which permit the member to maintain and adapt to changing circumstances the restrictions on payments and transfers for current international transactions in effect at the time of membership. Such restrictions are not subject to approval under Article VIII Section 2(a). Any member availing itself of the transitional arrangements of Article XIV is classified as being in Article XIV status until it formally accepts the obligations of Article VIII, Sections 2 and 3. The imposition of new exchange restrictions by the member is subject to Fund approval under Article VIII, Section 2(a).

Exchange restrictions subject to Article VIII Section 2(a)

With the sole exception of the exchange restrictions maintained by a member under the arrangements of Article XIV, any exchange restriction on the making of payments and transfers for current international transactions by a member is also subject to Article VIII, Section 2(a), which requires Fund approval. This is true whether the member has formally accepted the obligations of Article VIII, Sections 2, 3, and 4 or avails itself of the transitional arrangements of Article XIV. This applies even to new exchange restrictions formally maintained by the member under the provisional arrangements of Article XIV and eliminated thereafter, which are subsequently reintroduced by the member.

on their design and on the degree of regulatory enforcement.[37] Moreover, changes in the number of restrictions and controls need to be interpreted with caution in light of improved reporting by members and the greater coverage of foreign exchange and cross-border transactions in the Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER), which is a major source of information for this report.

37. **This section discusses recent developments in the use of both exchange restrictions and exchange controls**. It also analyzes factors bearing on the use of exchange controls, focusing on the level of economic development and the choice of exchange rate regimes. Finally, it discusses exchange measures used in selected countries that experienced currency crises in the last five years.

B. Recent Trends in Exchange Restrictions on Current International Transactions

38. **In 1998–2001, the elimination of exchange restrictions on the making of payments and transfers for current international transactions continued, albeit at a slower pace.** The number of Fund members maintaining exchange restrictions subject to Articles VIII or maintained under the transitional arrangements of Article XIV, declined by only eight in the period, compared with 11 in 1994–97.[38] This decline was evident for both members that have accepted the obligations of Article VIII and those that continued to avail themselves of the transitional arrangements under Article XIV.

39. **As of end-2001, about 80 percent of Fund members were maintaining exchange systems free of restrictions on payments and transfers for current international transactions.** Of the remaining members that still maintained exchange restrictions, 20 members were under Article XIV status and 18 under Article VIII status (Table 11 and Table 12). Nearly all of these 38 countries maintained restrictions subject to Article VIII, which in most cases were not approved by the Fund.[39]

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[37] An assessment of effectiveness is outside the scope of this paper. For detailed discussions, see Ariyoshi and others (2000).

[38] The actual dates of introduction or removal of restrictions may differ from those reported in this paper because of reporting lags associated with the timing of the issuance of staff reports from which such information is compiled.

[39] The Fund grants approval when it finds that the measure is necessary for balance of payments reasons, is temporary, and is nondiscriminatory. Restrictions arising from multiple currency practices introduced for nonbalance of payments reasons may be approved provided they do not materially impede the members' balance of payments adjustment and do not harm the interests of others. The Board grants temporary approvals only within a specific timeframe, although approvals may be renewed.

Table 11. IMF Members under Article XIV Status at end-2001 1/

		Maintaining Restrictions					
		Article XIV		Article VIII		Free of Restrictions	
	Years under Article XIV	1997	2001	1997	2001	1997	2001
Colombia	56			X	X		
Egypt	56			X	X		
Ethiopia	56			X	X		
Iran, Islamic Republic of	56			X	X		
Syria	54	X	X	X	X		
Myanmar	49			X	X		
Vietnam	45	X	X	X	X		
Sudan	44			X	X		
Libya	43	X	X	X	X		
Lao	40					X	X
Nigeria	40			X	X		
Liberia	39			X			X
Burundi	38				X	X	
Congo, Democratic Rep.	38			X			X
Zambia 2/	36				X	X	
Cambodia 2/	33					X	X
Sao Tome & Principe	24	X		X			X
Cape Verde	23	X					X
Maldives	23				X	X	
Bhutan	20	X	X				
Mozambique	17	X					X
Angola	12	X	X	X	X		
Albania	10	X	X	X			
Azerbaijan	9	X		X			X
Bosnia and Herzegovina	9			X			X
Turkmenistan	9			X	X		
Uzbekistan	9			X	X		
Tajikistan	8					X	X
Eritrea	7	X	X				
Yugoslavia (FRY) 2/ 3/	2				X		
Memorandum items:							
Average years	30	...	...	...	...	...	...
Total number of members							
With restrictions	...	13	8	20	18	...	...
Without restrictions	...	16	22	9	12	6	10

Sources: Appendix Table 29; and various staff reports.

1/ In some instances, the actual date that restrictions were imposed or removed may differ due to reporting lags resulting from the timing of the issuance of staff reports from which such information was drawn. Afghanistan, Iraq, and Somalia are excluded because recent and comprehensive information is not available concerning restrictions.

2/ Cambodia, Federal Republic of Yugoslavia (FRY), and Zambia accepted the obligations of Article VIII in 2002.

3/ FRY, comprising the Republics of Serbia and Montenegro, joined the IMF on December 20, 2000.

Table 12. IMF Members with Article VIII Status Maintaining Exchange Restrictions, 1997–2001 1/2/3/

	1997	1998	1999	2000	2001
Bangladesh	U	U	U	U	U
Belize	U	U	U	U	U
Botswana	A	A	A	A	A
China			A		
Croatia			A		A
Dominican Republic	U	U	U		A
Ecuador				A	A
Guinea	A			U	U
Honduras	U	U			
India	B	U	U	U	U
Jordan	A				
Kenya	A	A	A	A	A
Kyrgyz Republic	A				
Macedonia, FYR 4/				U	U
Malta	U				
Mongolia	U				
Pakistan		A	A		
Philippines	A				
Russian Federation	A	U	B	B	A
St. Lucia			U	U	U
Seychelles	U	U	U	U	U
Sierra Leone	A	A	A	A	A
Solomon Islands					U
Suriname	U	U	U	U	U
Tunisia	U	U	U	U	U
Thailand	U				
Ukraine	U	A	A		
Zimbabwe	A	A	A	A	U
Memorandum Items:					
Total number of Article VIII members with restrictions:	21	14	17	15	18
Of which: Countries with unapproved restrictions	12	8	9	10	11

Sources: Appendix Table 30; and staff reports.

1/ In some instances, the actual date that restrictions were imposed or removed may differ from end-year indicated because of reporting lags resulting from the timing of the issuance of staff reports from which such information was drawn.

2/ Code: A= approved; U= unapproved; B=both approved and unapproved restrictions.

3/ Excludes optional bilateral payment agreements that provide for settlement periods longer than three months under the Latin American Integration Association (participated in by Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Mexico, Peru, Uruguay, and Venezuela) pending a review of the jurisdictional aspects of these arrangements.

4/ Macedonia accepted the obligation of Article VIII in June 1998.

40. **The slowdown in the elimination of exchange restrictions reflects a number of factors.** First, the number of members accepting the obligations of Article VIII, Sections 2, 3, and 4 has fallen sharply since 1997, with only seven members[40] moving to Article VIII status in 1998–2001, compared with 64 countries in 1994–97 (Figure 14).[41] This development partly reflects the end of the rapid expansion of Fund membership and the significant progress made by transition countries in adopting market-oriented reforms. Second, some members have introduced exchange restrictions after accepting the obligations of Article VIII, Sections 2, 3, and 4. It is noteworthy that the majority of Article VIII members that still maintain exchange restrictions have relied on them for extended periods. Indeed, of the 18 Article VIII countries that maintained restrictions at the end of 2001, 12 maintained restrictions for at least four years.[42] Third, many members have continued to avail themselves of the transitional arrangements under Article XIV for a protracted period. More specifically, of the 33 members under Article XIV status as of end-2001, 23—mostly in the Middle East and Africa—have retained Article XIV status for 20 years or more, and six members for more than 50 years (Figure 15). In addition to balance of payments concerns, the motivation for maintaining restrictions may reflect reluctance to ease controls that might reduce the capacity to detect and prevent money laundering and other illegal transactions.

41. **Many members under Article XIV status have been reluctant to remove exchange restrictions subject to approval under Article VIII, Section 2(a) even though the Fund has not approved them.** This tendency may reflect these members' reliance on direct controls in managing their economy, which are often represented by the large size of the public sector and the maintenance of restrictive trade regimes (Table 13). In many cases, such members have also experienced internal or external conflict for extended periods, and some have been isolated from the international community, limiting incentives to pursue economic openness through measures such as acceptance of the obligations of Article VIII.

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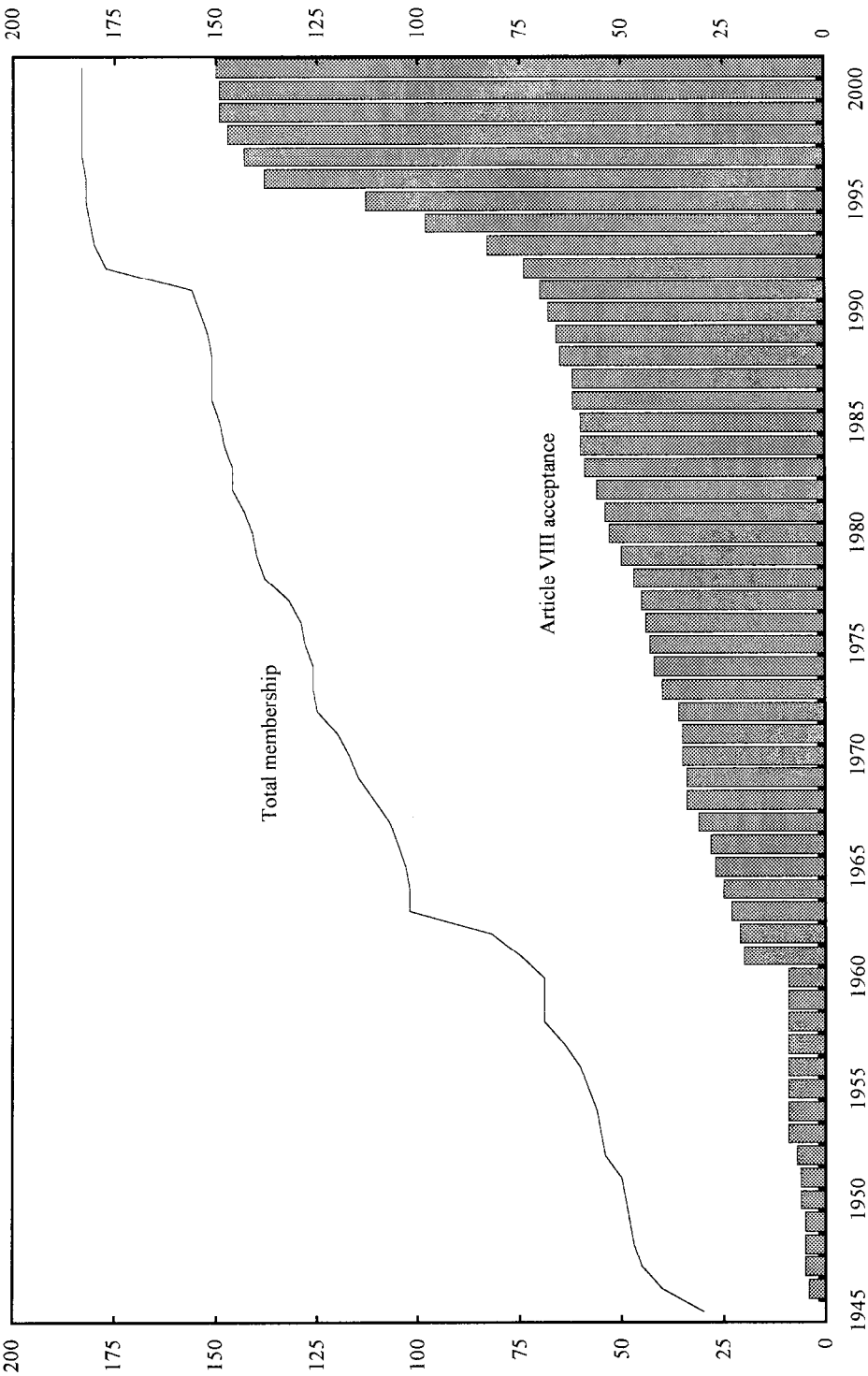
[40] The countries are Romania (March 1998), the Former Yugoslav Republic of Macedonia (June 1998), Bulgaria (September 1998), Rwanda (December 1998), Mauritania (July 1999), Brazil (November 1999), and Belarus (November 2001). More recently, in 2002, Cambodia (January), Zambia (April) and the Federal Republic of Yugoslavia (June) accepted the obligations of the Article VIII, Sections 2, 3, and 4 in 2002.

[41] Although a member may accept the obligations of Article VIII, Sections 2, 3, and 4 at any time, the Fund normally encourages a member to do so only when it has eliminated all exchange restrictions, whether such measures are maintained under the provisions of Article XIV or are subject to approval under Article VIII, Section 2(a).

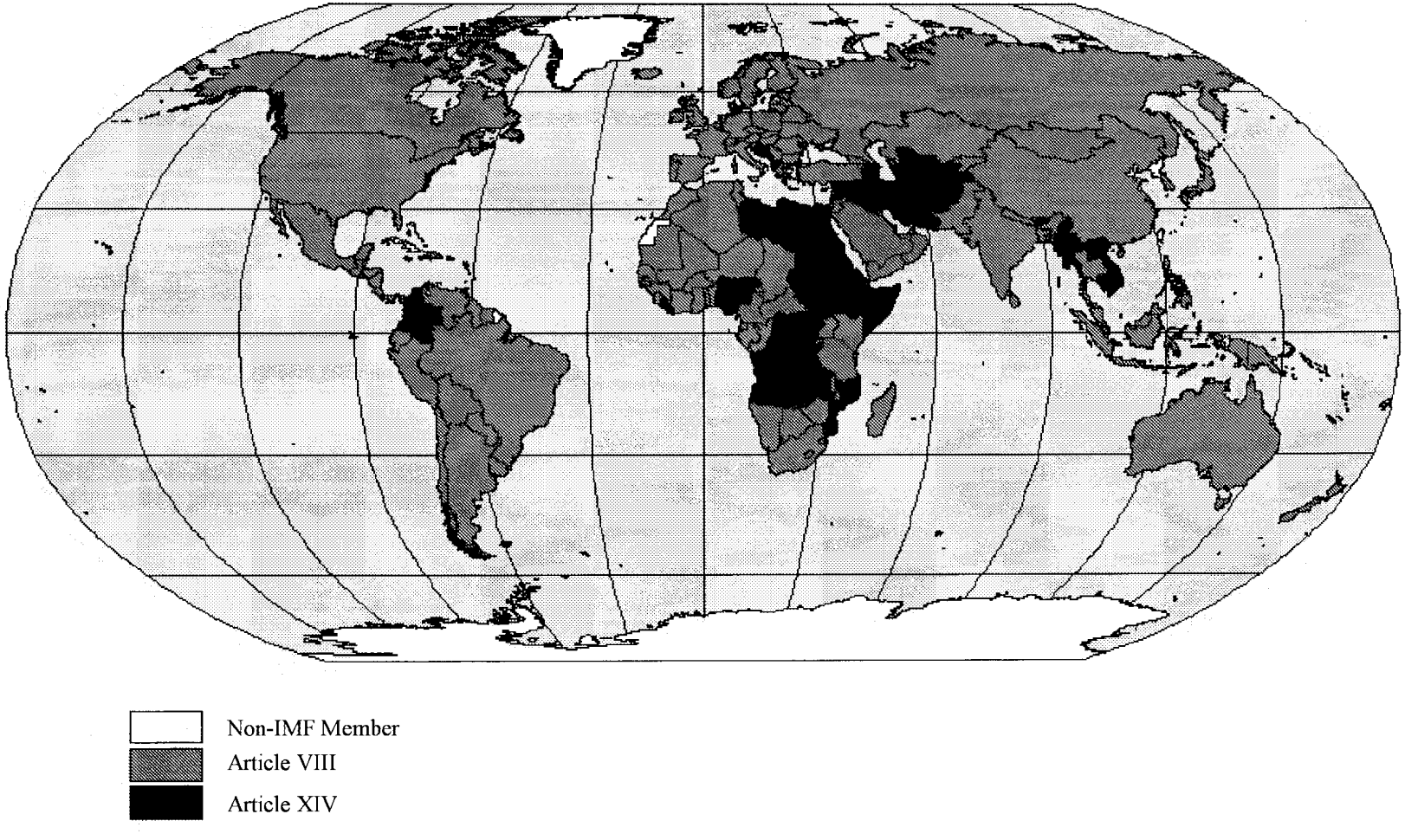
[42] For example, Belize, Botswana, the Dominican Republic, India, Kenya, the Russian Federation, Seychelles, Sierra Leone, Suriname, Tunisia, and Zimbabwe.

Figure 14. Number of Countries That Have Accepted the Obligations of Article VIII, Sections 2, 3, and 4, and Total Fund Membership (Cumulative as of December 31, 2001)



Source: IMF, Secretary's Department.

Figure 15. Status of IMF Membership
(End-2001)



Source: IMF, Secretary's Department.

Table 13. Selected Characteristics of IMF Members under Article XIV Status

	Years in Article XIV status (as of 2001)	Internal and/or external conflict	Public sector		Restrictiveness of trade regime 3/ (as of end-2001)	Comments
			Government expenditure 2/ (In percent of GDP)	Large public enterpirse sector		
Colombia	56	X	31.5		2	
Egypt	56		32.8		8	
Ethiopia	56	X	29.8	X	6	
Iran, Islamic Republic of	56		24.0	X	10	Heavy administrative allocation of resources
Iraq	56	X	...	...	...	No Article IV consultation since 1980; international sanctions; prolonged arrears
Syria	54		30.4	X	10	Pervasive controls; price distortions, impediments to private investment and expo
Myanmar	49		6.6	X	7	Highly regulated.
Afghanistan, Islamic State of	46	X	...		...	No Article IV consultation since 1991; international sanctions.
Vietnam	45		26.4	X	9	Public sector accounts for an estimated 60 percent of output.
Sudan	44	X	12.9	X	3	Prolonged arrears to IMF; past price controls.
Libya	43		39.2	X	10	Highly regulated; price/labor market controls.
Lao	40		21.4	X	7	Limits on private business.
Nigeria	40		50.8	X	7	
Liberia	39	X	34.1		4	Prolonged arrears to IMF; price controls.
Somalia	39	X	...	...	...	No Article IV consultation since 1991; prolonged arrears to IMF.
Burundi	38	X	26.9	X	10	
Congo, Democratic Rep.	38	X	6.6 4/		3	Prolonged arrears to IMF.
Zambia 1/	36		32.2		2	
Cambodia 1/	33	X	17.7		6	
Sao Tome & Principe	24		76.4		3	
Cape Verde	23		26.1	X	4	
Maldives	23		43.2	X	7	
Bhutan	20		39.5	X	6	
Mozambique	17	X	31.5		2	
Angola	12	X	60.7	X	3	Controls on profits margins.
Albania	10		31.5		1	
Azerbaijan	9	X	20.0	X	2	
Bosnia and Herzegovina	9	X	16.9	X	1	Complex, burdensome administration.
Turkmenistan	9		24.4		7	Poor relations with international financial institutions.
Uzbekistan	9		28.2	X	9	Nonmarket policies; price controls.
Tajikistan	8	X	13.9		1	
Eritrea	7	X	82.1		6	
Yugoslavia, Fed Rep. of 1/	2	X	44.2	X	5	
Memorandum item:						
Total members:	33					

Sources: WEO data; IMF, Trade Liberalization in Fund-Supported Programs (1998); and various staff reports.

1/ Accepted the obligations of Article VIII in 2002.
2/ Comprising the cental government, budgetary agencies, and local governements.
3/ A higher number implies that the trade regime is more restrictive.
4/ The central government only.

42. **Some members have not formally accepted the obligations of Article VIII, Sections 2, 3, and 4 even though they have removed all identifiable exchange restrictions.** At end-2001, 10 Article XIV members had no exchange restrictions, compared with six members at end-1997. Six of these members either had expressed their intention or had committed themselves to formally accepting the obligations of Article VIII. These members were in varying stages of discussions with Fund staff to clarify remaining issues, including those arising from new or revised laws and regulations. In the four remaining cases, acceptance of the obligations of Article VIII appears to be given a low priority, mostly reflecting the absence of normal relations with the international community.

43. **Members maintaining exchange restrictions have nevertheless reduced their recourse to such restrictions in the four-year period through end-2001.** However, the reduction was limited to Article VIII status countries, in which the average number of restrictions per member declined to about two at end-2001, compared with about three at end-1997 (Table 14). The most heavily used exchange restrictions are related to payments and transfers for invisible transactions—especially binding limits on foreign exchange allowances for remittances and travel—and multiple currency practices (MCP). The latter often involved exchange rate guarantees or forward exchange contracts. More restrictive measures—such as foreign exchange budgets, advance import deposit requirements, and bilateral payment arrangements with restrictive features—were maintained primarily by members under Article XIV status.

44. **The composition of exchange restrictions has also changed in the same period.** The use of binding limits on foreign exchange allowances for current payments and remittances has declined most, followed by MCPs.[43] In contrast, several members have frozen foreign exchange deposits or taken actions restricting the convertibility of other deposits in ways that restrict transactions involving current payments and transfers. In particular, as of end-2001, exchange restrictions were maintained on bank deposit withdrawals (Argentina and Ecuador), some specific foreign currency deposits (Croatia, Federal Republic of Yugoslavia, and the Former Yugoslav Republic of Macedonia), the convertibility of bank accounts (Russia), and access to the banking system for current international transactions in the absence of central bank approval (Turkmenistan).

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[43] Mechanisms requiring the establishment of the good faith nature of the underlying transactions do not give rise to an exchange restriction when access to foreign exchange is provided without undue delay once the bona fide nature of a transaction has been established.

Table 14. Types of Exchange Restrictions, 1997 and 2001 (end of year) 1/

	Members under:			
	Article XIV Status		Article VIII Status	
	1997	2001	1997	2001
Total number of restrictions maintained by members	103	75	48	35
Restrictions on payments of invisibles and other current transfers	72	45	16	15
Foreign exchange budget	15	12	3	3
Binding foreign exchange allowances for education	8	5	0	0
Binding foreign exchange allowances for medical expenses	6	4	0	0
Binding foreign exchange allowances for remittances	19	7	9	6
Binding foreign exchange allowances for travel	14	11	0	0
Binding foreign exchange allowances for other transfers	7	5	1	0
Freezing of forex deposits or inconvertibility of other deposits for current payments	0	1	1	4
Tax clearance certification	0	0	1	2
Other restrictions	3	0	1	0
Restrictions on payments for imports	3	4	1	3
Advance import deposits	3	3	0	2
Prior import payment requirements	0	1	1	1
Restrictions arising from bilateral or regional payment, clearing or barter arrangements	4	5	1	1
Restrictions arising from external payment arrears	1	0	9	3
Arrears to commercial creditors	1	0	2	1
Arrears to official creditors	0	0	2	0
Arrears not specified	0	0	5	2
Multiple currency practices	23	18	19	12
Memorandum items:				
Total number of members with restrictions	28	20	18	18
Average number of restrictions per member	3.7	3.8	2.7	1.9

Sources: Appendix Tables A1 and A2; and Staff Reports.

1/ Excludes Afghanistan, Iraq, and Somalia. Recent and comprehensive information on restrictions in these countries is not available.

45. **Some progress has been made in resolving external payments arrears, which frequently give rise to exchange restrictions.**[44] The total outstanding stock of public and private external payments arrears declined from about US$74 billion at end-1997 to an estimated US$69 billion at end-2001, after some increase during 1998–99 that partly reflected the emergence of external arrears in Indonesia (Figure 16). A large decline in the stock of arrears in 2000 reflects debt rescheduling by Nigeria. At end-2001, eight countries (Sudan, the Democratic Republic of the Congo, Indonesia, Russia, Angola, the Republic of the Congo, Myanmar, and Zimbabwe) accounted for over 87 percent of the total stock of arrears.

C. Recent Trends in Controls on Current and Capital Transactions

46. **Progress in liberalizing controls on current and capital transactions appears to have been limited.** Specifically, the number of countries maintaining controls on both current and capital transactions remained virtually unchanged in 1998–2000.[45] An increase in members' concern about risks associated with capital account liberalization following a series of crises in emerging market economies may have been an important factor. Indeed, there was an increasing resort to certain types of capital controls (for example, those affecting institutional investors).[46] Nevertheless, some types of controls were relaxed, particularly with respect to selected controls affecting current account transactions.

Controls on current transactions

47. **The number of countries maintaining exchange controls on payments, receipts, and transfers for current transactions declined only marginally in 1998–2000** (Table 15). However, there have been important changes in the composition of such controls. Use of controls on payments for current invisibles, especially those involving travel, personal payments and credit card transactions, continued to decline. Use of controls on receipts from exports, invisibles and transfers also fell somewhat, mainly because some members

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[44] This situation arises in cases where private or nonguaranteed public (nonbudgetary) enterprise external payment arrears on current transactions (as defined in Article XXX of the Fund's Articles of Agreement) reflect restrictions on the debtor's access to foreign exchange as a result of official action.

[45] Based on various issues of the AREAER. Information on exchange controls for 2001 will be available in the forthcoming 2002 AREAER. Reporting countries include Aruba, the Netherlands Antilles, and Hong Kong SAR.

[46] In some cases, the increased use of capital controls may have reflected improved reporting by members.

Figure 16. Total Stock of Arrears at Year-End, 1995-2001
(In billions of U.S. dollars)

Source: IMF, World Economic Outlook.

Table 15. Countries Maintaining Exchange Controls on Payments, Receipts, and Transfers for Current Transactions, 1997–2000 1/ 2/

	1997	1998	1999	2000
	(In number of countries)			
Total countries with controls	137	132	134	133
Controls on:				
Import payments	111	108	112	113
Financing requirements	41	45	46	47
Documentation requirements3/	106	102	106	109
Payments for invisible transactions and current transfers	112	100	98	96
Export proceeds	116	114	112	113
Repatriation requirements	110	108	106	106
Surrender requirements	79	77	75	74
Documentation requirements 4/	73	76	76	80
Proceeds from invisible transactions and current transfers	102	100	99	99
Repatriation requirements	100	98	97	96
Surrender requirements	78	74	72	70
	(In percent of total countries reporting)			
Total countries with controls	74.1	71.4	72.4	71.5
Controls on:				
Import payments	60.0	58.4	60.5	60.8
Financing requirements	22.2	24.3	24.9	25.3
Documentation requirements3/	57.3	55.1	57.3	58.6
Payments for invisible transactions and current transfers	60.5	54.1	53.0	51.6
Export proceeds	62.7	61.6	60.5	60.8
Repatriation requirements	59.5	58.4	57.3	57.0
Surrender requirements	42.7	41.6	40.5	39.8
Documentation requirements 4/	39.5	41.1	41.1	43.0
Proceeds from invisible transactions and current transfers	55.1	54.1	53.5	53.2
Repatriation requirements	54.1	53.0	52.4	51.6
Repatriation requirements	42.2	40.0	38.9	37.6
Surrender requirements				
Memorandum item:				
Total countries reporting	185	185	185	186

Sources: Appendix Table 32; and IMF, Annual Report on Exchange Arrangements and Exchange Restrictions, various issues.

1/ Data reflect information available as of the end of each year and are subject to reporting lags. Some countries that submitted annual information did not provide information for certain categories of controls.

2/ Includes Aruba, the Netherlands Antilles, and Hong Kong SAR.

3/ Includes requirements for domiciliation, import licenses used as exchange licenses, letter of credit, and preshipment inspection.

4/ Includes requirements for domiciliation, guarantees, letters of credit, and preshipment inspection.

eliminated repatriation and surrender requirements for export proceeds. By contrast, the use of controls on payments for imports (for example, advance payment requirements and several types of documentation requirements) and on export proceeds (especially documentation requirements for exports) increased, although the increase may partly reflect improved reporting by members.

48. **The use of exchange controls on payments, receipts, and transfers for current transactions has differed significantly among members, depending upon their level of development.** As of end-2000, a large majority of both developing and transition countries maintained such controls, whereas advanced countries had virtually eliminated them (Table 16).[47] In addition, developing and transition countries had adopted different approaches to controls. In particular, a higher proportion of developing countries maintained controls on payments of imports and on payments for invisible transactions and current transfers, though use of the controls on the latter was reduced since 1997. Transition countries continued to rely more heavily on controls on proceeds from exports and invisibles transactions and current transfers.

Trends in controls on capital transactions

49. **The number of countries maintaining controls on capital transactions suggests that only limited progress in liberalizing capital transactions took place in 1998–2000** (Table 17). As of end-2000, almost all reporting countries maintained some form of exchange controls on capital transactions. The most widely used controls were those on transactions by commercial banks and other credit institutions, which were reported by about 85 percent of reporting countries. Other common controls were those applied to foreign direct investment (about 80 percent of reporting countries), and real estate transactions and capital and money market instruments (more than 70 percent each).[48] In some cases, particularly those involving credit operations and transactions of commercial banks, controls may have been imposed for prudential purposes rather than to regulate cross-border capital flows. Controls on the liquidation of direct investment are less prevalent,

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[47] The most recent WEO country classification (October, 2001) is applied here.

[48] Controls on capital and money market instruments typically involve prohibitions, limits or special requirements applying to nonresident issuance, purchase or sales of securities in the domestic market or resident issuance, purchase or sales of securities externally. Controls specific to commercial banks most frequently consist of limits or requirements on cross border borrowing or lending, holding of external accounts, constraints on foreign exchange activity involving lending and taking deposits, reserve requirements on deposits in foreign exchange, and prudential regulations (for example, limits on net foreign exchange positions, and liquidity requirements) relating to cross border or foreign exchange transactions.

Table 16. Exchange Controls on Payments, Receipts, and Transfers for Current Transactions, 1997–2000 1/ 2/

	1997			1998			1999			2000		
	Developing Economy	Transitional Economy	Advanced Economy	Developing Economy	Transitional Economy	Advanced Economy	Developing Economy	Transitional Economy	Advanced Economy	Developing Economy	Transitional Economy	Advanced Economy
	(In percent of total countries reporting)											
Countries with controls on import payments	70.1	59.3	4.2	69.4	51.9	4.2	72.4	51.9	4.2	72.4	53.6	4.2
Financing requirements	29.1	7.4	0.0	30.6	14.8	0.0	31.3	14.8	0.0	30.6	21.4	0.0
Documentation requirements 3/	66.4	59.3	4.2	65.7	48.1	4.2	68.7	48.1	4.2	70.1	50.0	4.2
Countries with controls on payments for invisible transactions and current transfers	71.6	48.1	12.5	64.2	48.1	4.2	62.7	48.1	4.2	61.9	46.4	0.0
Countries with controls on export proceeds	69.4	77.8	8.3	67.9	77.8	8.3	66.4	77.8	8.3	67.9	71.4	8.3
Of which: Repatriation requirements	67.2	74.1	0.0	65.7	74.1	0.0	64.2	74.1	0.0	64.9	67.9	0.0
Surrender requirements	53.0	29.6	0.0	51.5	29.6	0.0	50.0	29.6	0.0	50.0	25.0	0.0
Documentation requirements 4/	46.3	33.3	8.3	47.8	37.0	8.3	47.8	37.0	8.3	50.0	39.3	8.3
Number of countries with controls on proceeds from invisible transactions and current transfers	61.2	74.1	0.0	59.7	74.1	0.0	59.7	70.4	0.0	59.7	67.9	0.0
Of which: Repatriation requirements	59.7	74.1	0.0	58.2	74.1	0.0	58.2	70.4	0.0	58.2	64.3	0.0
Surrender requirements	52.2	29.6	0.0	50.7	22.2	0.0	49.3	22.2	0.0	48.5	17.9	0.0
Memorandum item:												
Number of total countries reporting	134	27	24	134	27	24	134	27	24	134	28	24

Sources: Appendix Table 33; and IMF, Annual Report on Exchange Arrangements and Exchange Restrictions, various issues.

1/ Country classification corresponds to the WEO classification.

2/ Includes Aruba, Netherlands Antilles, and Hong Kong SAR.

3/ Includes requirements for domiciliation, preshipment inspection, letter of credits, and import licenses.

4/ Includes requirements for letters of credit, domiciliation, guarantees, and preshipment inspection.

Table 17. Countries Maintaining Exchange Controls on Capital Transactions, 1997–2000 1/ 2/

	1997	1998	1999	2000
	(In number of countries)			
Countries with controls	180	181	182	182
Controls on:				
Capital and money market instruments	139	140	133	134
Credit operations	122	118	117	118
Derivatives and other instruments	82	88	83	83
Foreign direct investment	145	149	147	145
Liquidation of foreign direct investment	53	52	54	57
Personal capital movements	83	85	90	92
Real estate transactions	129	134	136	137
Transactions by commercial banks and other credit institutions	153	157	158	157
Transactions by institutional investors	68	82	83	83
Memorandum item:				
Number of countries reporting	185	185	185	186
	(In percent of total countries reporting)			
Total countries with controls	97.3	97.8	98.4	97.8
Controls on:				
Capital and money market instruments	75.1	75.7	71.9	72.0
Credit operations	65.9	63.8	63.2	63.4
Derivatives and other instruments	44.3	47.6	44.9	44.6
Foreign direct investment	78.4	80.5	79.5	78.0
Liquidation of foreign direct investment	28.6	28.1	29.2	30.6
Personal capital movements	44.9	45.9	48.6	49.5
Real estate transactions	69.7	72.4	73.5	73.7
Transactions by commercial banks and other credit institutions	82.7	84.9	85.4	84.4
Transactions by institutional investors	36.8	44.3	44.9	44.6

Source: IMF, Annual Report on Exchange Arrangements and Exchange Restrictions, various issues.

1/ Data reflect information available as of the end of each year and are subject to reporting lags. Some members that submit annual information did not provide information for selected categories of controls.

2/ Includes Aruba, the Netherlands Antilles, and Hong Kong SAR.

possibly reflecting recipient countries' concern that such controls would deter foreign direct investment inflows.[49]

50. **While the overall use of capital controls did not change, a growing number of countries began to regulate selected capital transactions.**[50] For example, the number of countries maintaining controls on institutional investors rose sharply, reflecting the growing importance of such players in the financial markets of many developing countries. Many of these controls involve regulations that have a prudential aspect (for example, by placing limits on resident institutional investors' acquisition of foreign assets). Some specify the channels (markets or institutions) for cross-border transactions. Significantly more countries maintained controls on transactions involving real estate, personal capital movements, and other controls imposed by securities laws. Many of these controls involve regulation of and limits on foreign ownership or control of real estate and financial institutions and, as such, are not concerned directly with influencing the overall volume of cross-border capital flows. In other cases, the controls reflect more general licensing and registration requirements related to tax, statistical, and similar objectives. They are also aimed at restraining resident investment in, or transfer of, assets that would result in capital outflows. In the case of controls on personal capital, constraining external borrowing and lending by residents are often restricted.

51. **Patterns of use of controls on capital transactions also differed significantly when countries were grouped by the level of development.** In advanced countries, controls on transactions involving foreign direct investment and institutional investors were most prevalent, followed by those on capital and money market instruments and real estate transactions. Only a small number of advanced countries imposed controls on personal capital movements, derivative transactions, and credit operations. No advanced country maintained controls on liquidation of foreign direct investment (Table 18). Both developing and transition countries heavily used controls on capital and money market instruments, banks and other credit institutions, and credit operations; they also relied significantly on controls on foreign direct investment. Controls on the liquidation of foreign direct investment were more widely used in developing countries than in transition countries.

D. Exchange Controls and Exchange Rate Regimes

52. **The degree of flexibility of the exchange rate regimes adopted by countries appears to have little bearing on the overall use of controls on current payments, receipts and transfers** (Table 19). Excluding the 11 euro area countries, which shifted from

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[49] Although more countries maintain controls on foreign direct investment, such controls frequently apply to investment in sensitive sectors.

[50] An increase in the use of capital controls may reflect to some extent improved reporting by members.

Table 18. Countries Maintaining Exchange Controls on Capital Transactions by Type of Economy, 1997–2000 1/ 2/

	1997			1998			1999			2000		
	Developing Economy	Transitional Economy	Advanced Economy	Developing Economy	Transitional Economy	Advanced Economy	Developing Economy	Transitional Economy	Advanced Economy	Developing Economy	Transitional Economy	Advanced Economy
	(In percent of total countries reporting)											
Countries with controls on:												
Capital and money market instruments	75.4	81.5	66.7	77.6	85.2	54.2	75.4	77.8	45.8	76.9	71.4	45.8
Credit operations	73.1	81.5	8.3	70.1	77.8	12.5	70.9	70.4	12.5	72.4	64.3	12.5
Derivatives and other instruments	46.3	63.0	12.5	50.0	63.0	16.7	47.8	59.3	12.5	47.8	57.1	12.5
Foreign direct investment	79.9	74.1	75.0	81.3	81.5	75.0	81.3	77.8	70.8	80.6	71.4	70.8
Liquidation of foreign direct investment	37.3	11.1	0.0	36.6	11.1	0.0	37.3	14.8	0.0	39.6	14.3	0.0
Other controls imposed by the securities laws	9.0	25.9	33.3	12.7	25.9	37.5	12.7	33.3	33.3	12.7	35.7	29.2
Personal capital movements	51.5	44.4	8.3	50.7	55.6	8.3	53.7	63.0	4.2	54.5	60.7	8.3
Real estate transactions	70.9	85.2	45.8	73.1	92.6	45.8	75.4	92.6	41.7	76.9	85.7	41.7
Transactions by commercial banks and other credit institutions	85.1	100.0	50.0	87.3	100.0	54.2	88.1	100.0	54.2	87.3	96.4	54.2
Transactions by institutional investors	31.3	48.1	54.2	38.8	51.9	66.7	39.6	51.9	66.7	39.6	46.4	70.8
Number of countries reporting	134	27	24	134	27	24	134	27	24	134	28	24

Sources: Appendix Table 34; and IMF, Annual Report on Exchange Arrangements and Exchange Restrictions, various issues.

1/ Country classification corresponds to the WEO broad classification of countries introduced in October 2001.

2/ Includes Aruba, Netherlands Antilles, and Hong Kong SAR.

Table 19. Countries with Exchange Controls on Payments, Receipts, and Transfers for Current Transactions, by Exchange Rate Regime, 1997–2000 1/

	1997			1998			1999			2000		
	Hard peg 2/	Soft peg 3/	Floating 4/	Hard peg 2/	Soft peg 3/	Floating 4/	Hard peg 2/	Soft peg 3/	Floating 4/	Hard peg 2/	Soft peg 3/	Floating 4/
	(In percent of total countries reporting)											
Countries with controls	70.6	80.8	77.4	73.5	78.1	71.6	73.5	75.4	77.3	77.1	71.4	76.6
Countries with controls on import payments	67.6	61.5	62.9	67.6	57.5	62.7	67.6	56.9	68.0	65.7	58.7	67.5
Financing requirements for imports 5/	20.6	24.4	24.2	20.6	28.8	25.4	23.5	30.8	24.0	20.0	34.9	23.4
Documentation requirements 6/	64.7	57.7	61.3	67.6	52.1	59.7	67.6	52.3	64.0	65.7	54.0	66.2
Countries with controls on payments for invisible transactions and current transfers	64.7	65.4	61.3	64.7	61.6	49.3	64.7	61.5	48.0	62.9	55.6	50.6
Countries with controls on export proceeds	61.8	70.5	61.3	61.8	67.1	62.7	61.8	63.1	64.0	65.7	60.3	64.9
Repatriation requirements	58.8	70.5	56.5	58.8	67.1	58.2	58.8	63.1	60.0	60.0	60.3	61.0
Surrender requirements	50.0	52.6	32.3	50.0	47.9	32.8	52.9	47.7	30.7	54.3	46.0	28.6
Countries with controls on proceeds from invisible transactions and current transfers	61.8	64.1	50.0	61.8	61.6	50.7	61.8	60.0	52.0	62.9	55.6	54.5
Repatriation requirements	61.8	61.5	50.0	61.8	58.9	50.7	61.8	56.9	52.0	62.9	52.4	53.2
Surrender requirements	50.0	52.6	32.3	50.0	47.9	32.8	52.9	47.7	30.7	54.3	46.0	28.6
Memorandum item:												
Number of countries reporting	34	78	62	34	73	67	34	65	75	35	63	77

Sources: Appendix Table 35; and IMF, Annual Report on Exchange Arrangements and Exchange Restrictions, various issues.

1/ Includes Aruba, Netherlands Antilles, and Hong Kong SAR but excludes the 11 countries of the Euro area.
2/ Includes exchange rates with no separate legal tender and currency board arrangements.
3/ Includes conventional pegged arrangements, pegged exchange rates within horizontal bands, crawling pegs, and crawling bands.
4/ Includes managed floating with no preannounced path for the exchange rate and independently floating.
5/ Includes minimum financing requirements, advance payment requirements, and advance import deposits.
6/ Includes requirements for domiciliation, preshipment inspection, and letters of credit.

a soft peg to a hard peg and maintained virtually no controls on current transactions, there was no clear relationship between exchange rate regimes and controls affecting current transactions.

53. **The composition of controls employed by members was, however, related to the exchange rate regime.** As of end-2000, countries with floating regimes more heavily regulated import payments (mainly through documentation requirements) and export proceeds (through surrender requirements). A similar pattern, albeit less pronounced, was observed for countries with soft peg regimes. By contrast, in countries with a hard peg, no particular pattern in the use of various types of controls was evident.

54. **No strong linkage between the exchange rate regime and the use of capital controls was found** (Table 20).[51] Although countries with hard peg regimes appeared to be less reliant on capital controls than countries with other exchange rate regimes, this relationship disappeared when the 11 euro area countries were excluded. With respect to the composition of capital controls, as of end-2000, hard peg countries were less reliant on controls on capital and money market instruments and those specific to commercial banks and other credit institutions (even when the euro area countries were excluded).

E. Exchange Controls and Currency Crises

55. **Most countries resorted to exchange controls to contain pressures on the exchange rate when faced with a currency crisis.** A group of 10 countries that experienced major currency crises in the past five years were examined. Of these countries, eight (Argentina, Brazil, Ecuador, Indonesia, Malaysia, Pakistan, Russia, and Thailand) introduced new controls, with their scope varying significantly among countries (Table 21). By contrast, two countries (Korea and Turkey) liberalized some inflows rather than imposing new controls. In Korea, Indonesia, and Thailand, new controls were accompanied by other measures to liberalize capital inflows, which primarily involved removing or relaxing limits on foreign direct investment.

56. **A wide range of exchange controls were imposed by the eight countries noted above.** Most of the controls were intended to reduce capital outflows, typically by limiting the ability of residents and nonresidents to remit funds abroad through direct controls such as outright prohibitions, quantitative limits, prior authorization requirements, and documentation requirements. More extreme measures included suspension of private sector

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[51] The existence of exchange controls does not necessarily reflect the degree of capital mobility in countries since it does not capture their actual enforcement. Many countries maintaining certain capita controls (for example, the euro area countries) have experienced large capita flows in relation to GDP, which represent a better indicator of capital mobility.

Table 20. Number of Members Maintaining Exchange Controls on Capital Transactions by Exchange Rate Regime, 1997–2000 1/

	1997			1998			1999			2000		
	Hard peg 2/	Soft peg 3/	Floating 4/	Hard peg 2/	Soft peg 3/	Floating 4/	Hard peg 2/	Soft peg 3/	Floating 4/	Hard peg 2/	Soft peg 3/	Floating 4/
	(In percent of countries reporting)											
Countries with controls	94.1	96.2	100.0	97.1	97.3	98.5	97.1	96.9	100.0	97.1	95.2	100.0
Controls on:												
Capital and money market instruments	64.7	84.6	71.0	64.7	87.7	71.6	64.7	81.5	72.0	68.6	79.4	72.7
Credit operations	44.1	48.7	45.2	55.9	52.1	44.8	55.9	43.1	48.0	57.1	38.1	50.6
Derivatives and other instruments	67.6	74.4	64.5	67.6	71.2	62.7	67.6	67.7	65.3	71.4	63.5	67.5
Foreign direct investment	79.4	85.9	71.0	88.2	84.9	74.6	85.3	84.6	76.0	82.9	79.4	77.9
Liquidation of foreign direct investment	41.2	30.8	24.2	35.3	32.9	23.9	41.2	30.8	26.7	40.0	33.3	28.6
Personal capital movements	76.5	74.4	66.1	82.4	75.3	70.1	82.4	80.0	70.7	82.9	76.2	74.0
Real estate transactions	52.9	51.3	38.7	55.9	54.8	37.3	61.8	55.4	44.0	60.0	54.0	48.1
Transactions by commercial banks and other credit institutions	73.5	84.6	88.7	76.5	90.4	88.1	79.4	90.8	89.3	77.1	88.9	89.6
Transactions by institutional investors	23.5	39.7	32.3	38.2	52.1	32.8	41.2	47.7	38.7	42.9	42.9	41.6
Memorandum item:												
Total number of countries reporting	34	78	62	34	73	67	34	65	75	35	63	77

Sources: Appendix Table 36; and IMF, Annual Report on Exchange Arrangements and Exchange Restrictions, various issues.

1/ Includes Aruba, Netherlands Antilles and Hong Kong SAR but excludes the 11 countries of the Euro area.

2/ Includes exchange rates with no separate legal tender and currency board arrangements.

3/ Includes conventional pegged arrangements, pegged exchange rates within horizontal bands, crawling pegs, and crawling bands.

4/ Includes managed floating with no preannounced path for the exchange rate and independently floating.

Table 21. Major Changes in Exchange Controls in the Context of Currency Crises During 1997–2002

	Imposition of new controls:										
	Current transactions		Capital transactions					Resident/ nonresident accounts	Foreign exchange positions	Multiple exchange rates	Other
	Import financing 1/	Export proceeds 2/	Payments and transfers 3/	Portfolio outflows	Derivative transactions	Financial transaction taxes	Lending to nonresidents				
Argentina (2001–02)	X	X	X		X			X	X	X	X 4/
Brazil (1998–99)						X					X 5/
Ecuador (1998–99)			X			X		X 6/			
Indonesia (1997–98)			X		X		X				
Korea (1997–98)											
Malaysia (1997–98)	X 6/	X 6/	X	X	X		X				
Pakistan (1998)	X	X						X		X	
Russia (1998–99)	X	X	X					X		X	X 4/
Thailand (1997–98)		X			X		X				X 7/
Turkey (2000–01)											

Sources: IMF, Annual Report on Exchange Arrangements and Exchange Restrictions, various issues; and various country staff reports.

1/ Includes requirements for minimum maturity of financing (Argentina), advance import deposits (Russia), and restrictions on prepayments (Argentina and Pakistan).
2/ Includes repatriation and surrender requirements (Argentina, Pakistan, and Russia) and requirements for export proceeds to be received only in foreign currency (Malaysia).
3/ Includes controls on amortization of credits, repatriation of capital, as well as on some current payments and transfers (for example, interest, dividends, profit remittance) associated with capital transactions.
4/ Limits on the export of foreign currencies.
5/ Minimum maturity requirements for external loans.
6/ Prohibition of the use of local currency for settlement of trade transactions.
7/ Baht proceeds from sales of stocks by nonresidents were required to be converted into foreign currency at the offshore exchange rate.

debt repayments (Russia). Some countries (Argentina and Pakistan) restricted import payments and current transfers, which in some cases gave rise to exchange restrictions subject to Fund jurisdiction under Article VIII. In conjunction with measures to reduce demand for foreign exchange, measures were used to increase the supply of foreign exchange by introducing (Argentina) or tightening (Pakistan, Russia, and Thailand) surrender requirements for export proceeds. In several instances, priced-based controls were applied to contain capital outflows, including financial transaction taxes (Brazil and Ecuador) and dual or multiple exchange rate systems (Argentina and Pakistan).

57. **No clear pattern in the use of exchange control measures was evident in these countries**, reflecting significant differences in the nature of crises as well as macroeconomic and structural conditions. In Asian countries affected by crises, which experienced significant speculative attacks, controls were focused on nonresidents' access to local currency funds and offshore trading of local currencies (Ishii, Otker-Robe, and Cui, 2001). Countries with severe banking sector problems resorted to a freeze or quantitative limits on withdrawals from foreign-currency accounts (Pakistan) and bank deposits in general (Argentina and Ecuador). These measures are regarded as exchange controls since they restrict making of payments and transfers abroad.

V. Foreign Exchange Market Organization—Selected Issues

A. Introduction

58. **There is a close relationship between the foreign exchange regime and the microstructure of the foreign exchange market.** Foreign exchange market microstructure is an important consideration in the choice of an exchange rate regime, along with macroeconomic policy objectives.[52] Conversely, the adoption of a particular exchange rate regime, and the related foreign exchange regulations, have a considerable influence of the development and structure of the foreign exchange market. These interactions need to be taken into account to ensure a smooth functioning of the overall exchange rate and monetary policy regime.

59. **This section discusses foreign exchange market organization and regulations in a sample of developing and transition countries, drawing on the 2001 Survey on Foreign Exchange Market Organization** (referred to below as the Survey).[53] Responses to the Survey were received from about 90 Fund member countries. The Survey covered a wide

[52] An independently floating regime, for example, is meaningful only in a foreign exchange system in which there is adequate scope for private parties to deal in foreign exchange and adequate competition among them.

[53] A full description may be found in Canales-Kriljenko (2002).

range of issues, including the organization of foreign exchange trading, the regulation and supervision of foreign exchange activities, and central bank and public sector foreign exchange operations. Such detailed information on foreign exchange markets in a broad range of countries, which has not been previously available, may prove helpful in guiding policy advice on foreign exchange markets.

B. Foreign Exchange Market Organization in Developing and Transition Economies

60. **Developing and transition economies have in place diverse regulations on the exchange of their currencies for others, resulting in a variety of market structures and outcomes.** Where a foreign exchange market is allowed to operate, country authorities typically control several aspects of market design, including the choice of market structures. The pure forms of market structure are auction markets and dealer markets.[54] The pure forms are abstractions that help to explain the pricing decisions of economic agents in economic models based on market microstructure theory.

61. **Actual foreign exchange markets are more complex, and often include elements of both auction and dealer markets.** Thus, individual trading platforms can combine elements of auctions and dealing. Foreign exchange voice brokers, for example, serve as a bridge between dealers' demand and supply without transacting for their own account, in essence adding an auction feature to an otherwise dealer market.[55] Moreover, in many foreign exchange markets, participants may use different trading platforms depending on the nature of the transactions. Foreign exchange operations among dealers may be conducted over a continuous electronic dealer market, while transactions with the central bank or the government may take place at one-sided foreign exchange auctions.[56] The predominance of dealer or mixed markets over simple periodic auctions reflects the advantages of greater continuity and liquidity that such markets typically offer. Table 22 and Figure 17 provide information on the different types of foreign exchange market structure in the countries covered by the Survey.

62. **Market structures differ not only in the institutional setting, but also in the information available to market participants at the time they make their pricing decisions.** They define the conditions under which price discovery takes place, and in particular influence the way in which public and private information is aggregated and disseminated and affects the mapping from information into prices. The market structure and

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[54] See Lyons (2001).

[55] Foreign exchange brokers may be thought of as auctioneers. In fact, several electronic brokered systems can operate as continuous electronic auction markets.

[56] In particular, the central bank may conduct one-sided auctions to sell the foreign exchange it obtains from the government, while permitting dealers to freely trade the foreign exchange they obtain from the central bank in a multiple dealer decentralized market structure.

Table 22. Foreign Exchange Market Structures in Developing and Transition Economies with Flexible Exchange Rate Regimes, 2001 1/

(Number of countries)

	Dealer markets			No dealer markets 2/	Total
	Centralized	Decentralized	Total		
Auction markets					
Periodic only	--	10	10	2	12
Continuous only 3/	--	14	14	--	14
Periodic and continuous	--	3	3	--	3
Total	--	27	27	2	29
No auction markets	1	23	24	2	26
Total	1	50	51	4	55

(In percent)

	Dealer markets			No dealer markets	Total
	Centralized	Decentralized	Total		
Auction markets					
Periodic only	--	18	18	4	22
Continuous only 3/	--	25	25	--	25
Periodic and continuous	--	5	5	--	5
Total	--	49	49	4	53
No auction markets	2	42	44	4	47
Total	2	91	93	7	100

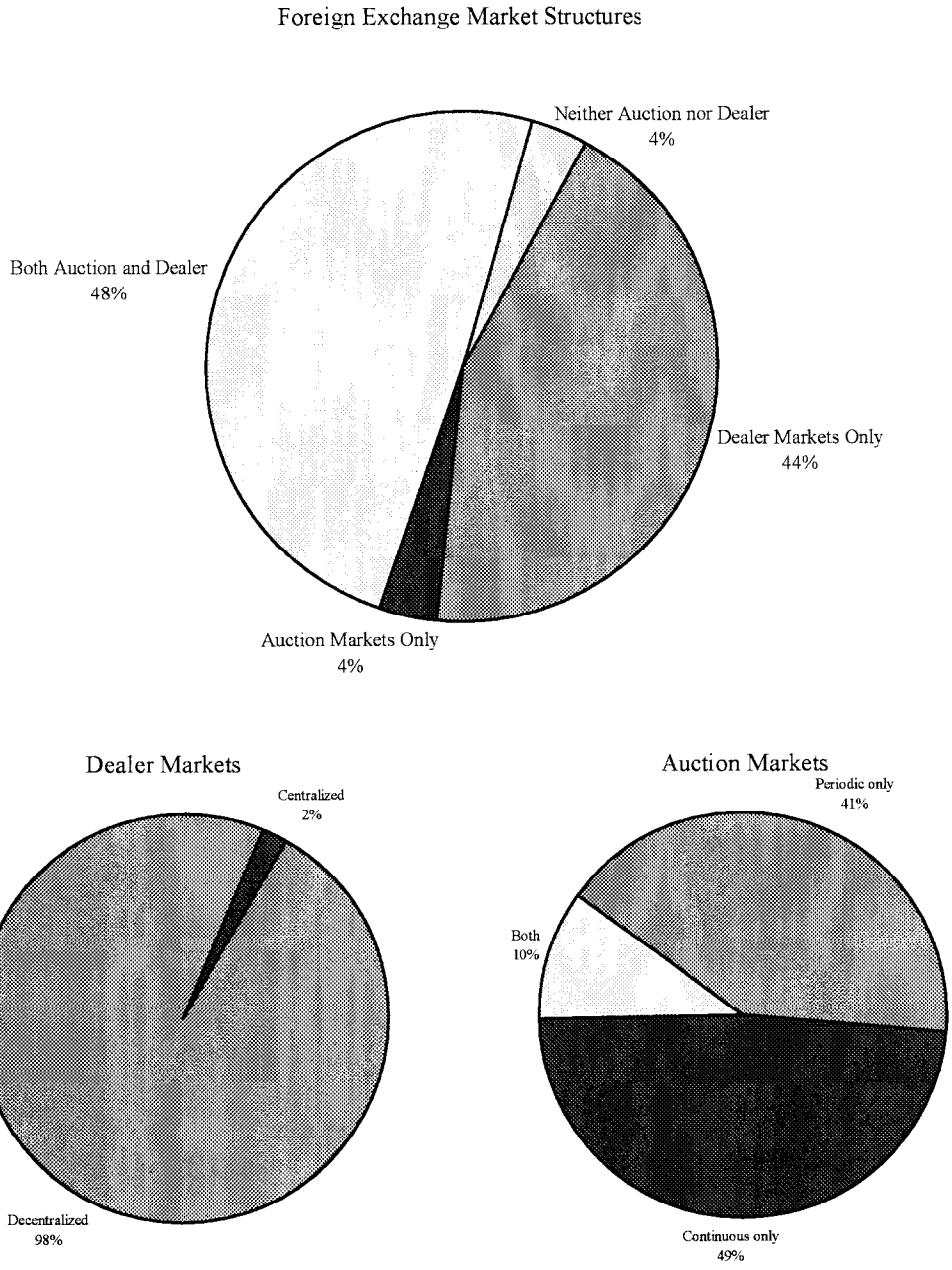
Sources: IMF, 2001 Survey on Foreign Exchange Market Organization; and Canales-Kriljenko (2002).

1/ Ninety countries responded to the survey. Of those, 35 had fixed exchange rate regimes (6 hard pegs and 29 soft pegs). The remaining 55 countries are deemed to have flexible exchange rate regimes, which include independent and managed floating, as well

2/ Banks could not hold net open foreign exchange positons or conduct foreign exchange operations on their own behalf in three survey countries (Honduras, Guyana, and Papua New Guinea) and therefore could not be properly considered as dealers.

3/ Includes countries with electronic brokered systems for trading domestic currency.

Figure 17. Foreign Exchange Market Structures in Developing and Transition Economies with Flexible Exchange Rate Regimes, 2001 1/



Sources: IMF, 2001 Survey on Foreign Exchange Market Organization; and Canales-Kriljenko (2002).

1/ Based on the 55 countries with flexible exchange rate regimes that responded to the survey. See Table 22, footnote 1.

foreign exchange regulations determine the way in which a particular economy allocates foreign exchange.

63. **Foreign exchange market structure and the associated regulations are closely related to the development, liquidity, and volatility of the foreign exchange market.** Markets vary considerably in liquidity and depth depending on a wide variety of factors, including the overall availability of foreign exchange in the economy, the size of the financial system, and the volume of trade or capital transactions. The market structure will also have an effect on exchange rate behavior, most notably on the bid-ask spread and exchange rate volatility.[57] Most of these issues are beyond the scope of this paper, but a systematic examination of the relationship between and exchange rate volatility and foreign exchange market organization is undertaken in Section VI.

Dealer markets

64. **Dealer markets are characterized by the presence of individuals or institutions dedicated to the purchase and sale of foreign exchange.** Dealers, typically banks, are usually allowed to take net open foreign exchange positions within certain limits. The ability to take positions allows dealers to provide liquidity to the market. Some dealers may become market makers by setting two-way prices at which they are willing to deal (usually up to a given amount based on market practices); and market makers compete with each other in setting two-way prices. Their ability to observe the exchange rates set by other market makers depends on the transparency of the market. About 50 percent of Survey respondents indicated that market makers emerged naturally, while 20 percent indicated that market makers were appointed by the central bank. Market makers tended to emerge more readily in countries with flexible exchange rate regimes.

65. **There are two types of foreign exchange dealer markets: centralized and decentralized.** ***Centralized*** dealer markets are much less common than decentralized markets. Among the countries responding to the Survey, Madagascar was the only one that operates a centralized dealer market. In a centralized dealer market, quotes by market makers are publicly announced. This may be achieved by establishing a physical trading location (like a trading pit in an exchange) or a medium (like an electronic dealing system that announces the market orders of market makers). Because centralized dealer markets are very transparent, prices in simultaneous foreign exchange trades will exhibit only a minimal dispersion. ***Decentralized*** dealer markets, in which dealers have only partial information on the rates at which transactions are settled, are the norm in developing and transition economies. About 95 percent of Survey respondents indicated the existence of such markets.

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[57] For example, transaction costs and bid-ask spreads have tended to be lower in countries with dealer markets.

66. **In decentralized dealer markets, market makers may offer two-way bid-offer quotes on demand; and several bilateral trades may take place at the same time at different exchange rates.** Bilateral trades may take place in telephone conversations that are later confirmed by either fax or telex. They may also take place on electronic trading platforms that allow for bilateral conversations and execution, like the Reuters Dealing 2000-1 and 3000 Spot Dealing systems (Box 3).[58] Bilateral conversations may also take place over networks provided by central banks (Kyrgyz Republic) and over private sector networks. These private networks may grant access to the central bank (Azerbaijan, Brazil, Chile, and Paraguay), or they may not (Swaziland).

Box 3. Dealing Technology—The Reuters 2000-1 System

The most widely used system for online decentralized dealing is Reuters 2000-1. It provides means for secure one-on-one electronic conversations (similar to e-mail messages) between dealers. Reuters explicitly allows only dealers to trade in the system.

The system follows the dealer protocol, under which the dealer initiating the conversation requests a two-way quote. Usually a two-way quote with a very narrow spread will be given, which the initiating party must accept or reject within seconds. An accepted message constitutes a trade. The information exchanged in these conversations remains private to the parties.

Because this dealing system allows several of these conversations to take place at the same time, several transactions may take place at different prices. Nevertheless, given the information available to all participants, it is unlikely that a large price dispersion exists (Lyons, 2001).

Auction markets

67. **In auction markets, price formation and market clearing take place without dealer involvement.** An auctioneer or auction mechanism allocates foreign exchange by matching supply and demand orders that are placed either directly or through intermediaries. In practice, the central bank, voice brokers, or brokerage systems play the role of auctioneers. In auction markets, supply and demand may meet either continuously or periodically: in thin markets, auctions take place at discrete periodic intervals to allow sufficient supply and demand to accumulate.

68. **The Survey indicates that *periodic* foreign exchange auctions took place in 15 countries.** An overview of periodic auction markets is provided in Table 23. Almost all such auctions were for spot foreign exchange contracts. One exception was Colombia, which only

[58] Ninety percent of Survey respondents reported dealing through telephone lines, and about 75 percent through one of the Reuters dealing systems (these two methods of dealing are not mutually exclusive). It is not clear from the Survey, however, whether the Reuters systems were used for trading domestic currency or for trading foreign currencies abroad.

Table 23. Foreign Exchange Auction Design in Developing and Transition Economies, 2001 1/
(Number of countries responding to the survey)

Type of periodic foreign exchange auctions	
One-sided: foreign exchange is sold	9
Two-sided: foreign exchange is bought and sold	6
Price formation	
Uniform-price auction	6
Multiple-price auction (Dutch auction)	9
Bids allowed	
On competitive terms only	12
On competitive and noncompetitive terms	3
Contracts traded	
Spot contracts	13
Futures contracts	2
Foreign exchange option contracts	2
Entity conducting foreign exchange auctions	
Central bank	11
Stock exchange	3
Other private company	2
Entities permitted to participate in auctions on their own account	
Resident Financial institutions	13
Foreign Exchange Bureaus	3
Central bank	3
Importers	3
Exporters	3
Nonresident financial institutions	3
Other	8
Restricted list of participants (primary dealers)	
Yes	9
No	6
Timing of auctions	
Daily	6
Weekly	3
Other	1
No regular schedule	5

Sources: IMF, 2001 Survey on Foreign Exchange Market Organization; and Canales-Kriljenko (2002).

1/ The countries conducting periodic foreign exchange auctions (among those that responded to the survey) are Angola, Azerbaijan, Belarus, Bolivia, Brazil, Chile, Colombia, Croatia, Honduras, Kazakhstan, Mauritius, Sierra Leone, Turkey, Yemen, and Zambia. *The Annual Report on Exchange Arrangements and Exchange Restrictions* (AREAER) reports that Armenia, Burundi, Ethiopia, Guinea, Tajikistan, and Turkmenistan also conducted foreign exchange auctions.

auctioned option contracts that give the right (but not the obligation) to buy or sell foreign exchange at a predetermined rate from the central bank.[59] The frequency of periodic auctions varied significantly across countries. Most were not conducted on a regular schedule. Daily auctions took place in seven countries, and weekly auctions in one.[60]

69. **Foreign exchange auctions may be one-sided (to buy or sell a given amount of foreign exchange) or two-sided (to simultaneously buy and sell foreign exchange).** One-sided auctions were more common than two-sided auctions. A one-sided foreign exchange auction can help to allocate foreign exchange to its most valued uses. In some countries, the central bank used one-sided auctions to sell foreign exchange, while in others (including for example Brazil and Turkey) the central bank conducted one-sided auctions to either buy or sell foreign exchange, depending on market conditions. One-sided auctions are considered particularly helpful when the government receives the bulk of the foreign exchange receipts in the country, or a requirement to surrender foreign exchange to the central bank is in place. In five countries, two-sided auctions permitted the centralized trading of foreign exchange.

70. **In most countries with foreign exchange auctions, they are conducted by the central bank.** In some countries, however, the foreign exchange auctions were conducted by the stock exchange. In Mauritius, the auctions were held by a local exporters' association.

71. **Foreign exchange receipts accruing to the government were the most widely reported source of foreign exchange in the auctions.** These receipts arose primarily from financial aid, export receipts from state enterprises, and government borrowing abroad.[61] In addition, the stock of central bank international reserves was an important source of foreign exchange in the auctions, notably for banks that undertook foreign exchange intervention through foreign exchange auctions.[62] The surrender of export receipts was also reported as a source in several countries. In some countries where the foreign exchange auctions were

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[59] This approach followed the example of Mexico, which auctioned option contracts between August 1996 and June 2001.

[60] In Colombia, the auctions in which the central bank buys foreign exchange took place every month, while those in which it sells foreign exchange were not on a regular schedule and took place only as required.

[61] The central bank was the exclusive financial agent and foreign exchange dealer of the government in all of these countries except for Croatia.

[62] Auctions may in some instances be used by the central bank to inject foreign exchange into a dealer market (much in the same way that other central bank operations introduce liquidity into the domestic money market). For example, Turkey is presently using a foreign exchange auction as a transparent mechanism for providing the interbank market with foreign exchange derived from purchases under the IMF arrangement.

conducted outside the central bank, the sources of foreign exchange included the foreign exchange assets of commercial banks (for example, Azerbaijan) and export receipts (Mauritius).

72. **Different auction formats were used to determine the market clearing exchange rates.** In single or uniform price auctions, all winning bidders pay the same market clearing exchange rate, while in multiple price (Dutch) auctions, all winning bidders pay their winning bids. The price determination mechanism in the auctions varied among Survey respondents: about half of the countries conducted single-price auctions and the rest Dutch auctions. In certain circumstances, foreign exchange auctions (especially multiple-price auctions) have given rise to a multiple currency practice subject to the Fund's Articles of Agreement.[63] Some additional rules governing foreign exchange auctions in various countries are discussed in Box 4.

Box 4. Additional Rules Governing Foreign Exchange Auctions

Auction participation was typically limited to primary dealers, usually chosen among resident financial institutions. Other permitted institutions included foreign exchange bureaus (Honduras, Sierra Leone, and Yemen), importers and exporters (Belarus, Honduras, and Sierra Leone), nonresident financial institutions (Belarus, Colombia, and Sierra Leone), the public treasury (Bolivia and Colombia), and mutual funds, cooperatives, private financial funds (Bolivia).

In most countries, only ***competitive bids*** were allowed so that all bids were considered in making the pricing and allocation decisions. (In noncompetitive bidding, by contrast, some participants may be allowed to buy at the exchange rate that resulted from the competitive bids presented at the auction.) Moreover, auction participants were required to bid minimum amounts in all countries except for Belarus and Bolivia.

About half of the countries restricted the ***number of bids*** per bidder. The number of permitted bids was typically established before the auction, except in Azerbaijan and Croatia.

The reasons for ***disqualification*** from the auction were usually specified in writing, except in Belarus, Brazil, Chile, Mauritius, and Turkey.

In Azerbaijan, Belarus, Bolivia, Honduras, Sierra Leone, and Yemen, bidders were required to document the ***domestic currency cover*** for the bid to be valid, to minimize settlement risk.

[63] See Section IV for details.

73. ***Continuous* two-sided multiple price auctions usually take the form of electronic brokered systems.** In these markets, participants place orders to buy or sell foreign exchange, which are matched in a centralized scheme. Their orders may specify an amount to buy or sell when the exchange rate reaches a given level (limit orders) or an amount to buy or sell at the best available exchange rate (market orders). The best available bid and offer exchange rate is computed from competing limit orders. The providers of electronic brokered systems vary by country (Table 24). In one country, the central bank directly provided the electronic brokered platform, while in others the domestic private sector provided the platform, which may or may not give the central bank privileged access to trading information. In many cases, these systems are provided by well-known international vendors (Box 5).

Box 5. Electronic Brokered Systems

The Reuters 2000-2 system anonymously matches dealers' spot limit and market orders. The system ranks and displays the best available exchange rates for buying and selling to all dealers, but it does not reveal the name of the dealer making the order until the orders are matched. Because the system is blind in this respect, and foreign exchange dealing implicitly involves bilateral credit, the system requires dealers to negotiate bilateral credit lines before they can start trading. Only matching orders that fall within the bilateral credit limits can be matched. Quantity information is available for deals below 10 million. **The Reuters Dealing 3000 Spot Matching** superseded the Reuters 2000-2 systems in 2000.

EBS Spot Dealing System is a screen-based anonymous dealing system for trading interbank spot foreign exchange. One to six currency pairs can be traded at any time with deals completed by keystroke or automatic deal matching within the system. EBS has a pre-screened credit facility, by which dealers can only see prices that they can "hit," thereby eliminating the potential for failed deals because of counter party credit issues.

SIOPEL is the software for the electronic broking systems in Argentina, Brazil, and Uruguay. It allows anonymous matching of spot and forward limit and market orders. Dealers can see all available prices and quantities offered, including those they cannot hit. The software requires bilateral credit lines for broking services.

C. Regulations Affecting Foreign Exchange Market Organization

74. **Many important aspects of foreign exchange market organization are affected by regulations.** These regulations are an integral part of the organization or infrastructure of foreign exchange markets. They typically limit the *use of foreign and domestic currencies*,

Table 24. Providers of Electronic Dealing and Matching Systems in Selected Developing and Transition Economies, 2001

Central Bank	Domestic Private sector 1/	Reuters		EBS
		Domestic trading	Offshore and domestic trading	
Belarus	Argentina * 2/	Albania	Bulgaria	Mexico *
China *	Azerbaijan	Angola	Colombia	Singapore *
Republic of Congo	Brazil *	Bangladesh	Croatia	
Egypt	Chile *	Belarus	Czech Republic *	
Kyrgyz Republic	Colombia	Egypt	Estonia	
Lebanon	Costa Rica *	India	Hungary *	
Macedonia, FYR	Guatemala *	Macedonia, FYR	Iran	
Ukraine	Kazakhstan *	Malaysia	Israel *	
	Korea *	Namibia	Kazakhstan	
	Lebanon	Pakistan	Korea	
	Mexico	Philippines	Kuwait	
	Paraguay	Romania	Latvia	
	Peru *	Sri Lanka	Lebanon	
	Philippines *	Swaziland	Lithuania	
	South Africa	Ukraine	Malta	
	Swaziland	United Arab Emirates	Mauritius	
	Uruguay *		Mexico *	
			Moldova	
			Oman	
			Peru	
			Poland *	
			Singapore *	
			Slovak Republic *	
			Slovenia	
			South Africa *	
			Thailand	
			Turkey	
			Venezuela	
			Zambia	

Sources: IMF, 2001 Survey of Foreign Exchange Market Organization; and Reuters.

* Denotes a matching or electronic brokered system.

operations by *intermediaries*, the types and characteristics of *contracts*, and the *location of trading*. They can significantly alter exchange rate dynamics by circumscribing how individuals and institutions interact in the market, and may result in the segmentation of the market.

Regulation of the use of foreign and domestic currencies

75. **Regulations can affect customers' demand for and supply of foreign and domestic currencies**, inter alia by defining the monetary and other uses that residents and nonresidents can make of foreign exchange, and by defining the transactions that can legally be made with domestic currency.[64]

76. **Monetary regulations define the roles that foreign currencies can play in the economy and the permissible uses of the domestic currency abroad.** Most countries that issue their own currencies have granted certain legal privileges to their domestic currency.[65] For instance, domestic currencies may have the privilege of forced tender (making it the exclusive means of payment) or legal tender (so that it must be accepted in payment for financial obligations). About half of Survey respondents explicitly prohibited their residents from making payments to other residents in foreign currencies.

77. **Many countries permit their financial sectors to offer foreign currency denominated financial assets.** Well over half of Survey respondents reported that domestic banks were free to take foreign currency deposits or make foreign currency loans.[66] Even so, almost half of Survey respondents indicated that residents were prohibited from holding foreign currency denominated assets *abroad*, about one-third explicitly prohibited residents from denominating domestic financial contracts in foreign exchange, and some prohibited residents from holding notes and coins in foreign currency.

78. **Many countries also require the surrender of foreign exchange, and in particular of export earnings.** Surrender requirements may be comprehensive or they may be partial, in that only a certain portion of foreign exchange, or proceeds from only certain types of exports, must be sold to the central bank or the market. Exporters may be allowed to repay export financing or pay for imports with some export receipts. Even here, exporters may be allowed to open foreign currency accounts with domestic banks, where they could either keep the foreign exchange before having to surrender it. Surrender requirements are also

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[64] Taxes and subsidies can also indirectly affect the demand for and supply of foreign exchange through underlying transactions that must be settled in foreign currency.

[65] Baliño and Canales-Kriljenko (2001).

[66] Some respondents permitted such deposits and loans subject to quantitative limits or verification of a legal underlying current or capital transaction.

common when residents are not allowed to hold foreign exchange or foreign currency denominated assets as a store of value.

79. **Market segmentation may arise when the authorities try to influence the use of foreign exchange through regulation.**[67] For example, country authorities may require that foreign exchange used for international current and capital transactions be traded in separate markets at different rates. To facilitate enforcement, the authorities may impose different structures on the separate markets, for example a centralized two-sided auction scheme for current transactions and a decentralized multiple dealer market for capital transactions. The premium that may emerge in the market for foreign exchange used in capital transactions may be thought of as a tax on capital flows. A similar type of segmentation may arise when illegal capital transactions take place on parallel markets that (although illegal) may be tolerated.

Regulation of intermediaries

80. **The effective enforcement of foreign exchange regulations typically involves the regulation of intermediaries**, who often also play an important role in upholding various types of market segmentation. Regulation of intermediaries may also serve an important prudential purpose. Most developing and transition economies limit foreign exchange dealing to authorized institutions. In some countries, a foreign exchange license is required, while in other countries a particular type of institution (often a bank) is automatically authorized to conduct foreign exchange business. Authorized foreign exchange dealers must comply with (and often play a crucial role in) the enforcement of foreign exchange and monetary regulations, including reporting requirements, exchange and capital controls, and anti-money-laundering legislation. In some countries, authorized dealers may only make an exchange once they have verified that the underlying transaction is legally permitted. Strict enforcement may lead to the emergence of illegal parallel markets for foreign exchange.

81. **Licensing of intermediaries in the foreign exchange market is common.** Institutions eligible for licenses to deal in foreign exchange typically include banks and foreign exchange bureaus. All Survey respondents requiring licenses allowed resident financial institutions (mostly banks) to deal in foreign exchange. About three-quarters of respondents required dealing licenses for resident foreign exchange bureaus; and a similar proportion allowed branches and subsidiaries of foreign banks to deal in foreign exchange. Fewer than one-quarter of respondents licensed resident brokerages, foreign brokerages, and exporters or importers to deal in foreign exchange.

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[67] Multiple foreign exchange markets may, under certain conditions, give rise to multiple currency practices that are inconsistent with a country's obligations under Article VIII, Section 3.

82. **In a few countries, banks are not permitted to deal in foreign exchange on their own account, and may buy and sell foreign exchange only on behalf of their customers.** Consequently, these banks act as brokers, matching demand for and supply of foreign exchange. In some of these countries, banks were agents of the central bank and charged a commission for intermediation.

83. **Foreign exchange bureaus are typically allowed to deal in foreign exchange cash and traveler's checks, but not deal in foreign exchange transfers or hold accounts abroad.** In particular, foreign exchange bureaus were uniformly permitted to deal in cash, and in about three-quarters of the sample were also permitted to deal in traveler's checks. In about half of the countries with foreign exchange bureaus, they were more numerous than banks, thus providing additional competition at the retail level. In about one-third of the sample, the bureaus were required to verify compliance with exchange controls before conducting a transaction.

Regulation of contract types

84. **Regulations may also define permissible types of contracts involving the trading of foreign exchange.** Virtually all Survey respondents allowed banks to buy and sell foreign exchange in spot markets. About 70 percent of the respondents allowed banks to conduct forward transactions, and about 50 percent allowed them to buy and sell futures contracts, offer nondeliverable foreign exchange forward contracts, or buy and sell foreign exchange options. Reflecting these regulations, the general perception among countries in the sample was that their spot markets are more developed than their forward markets.[68]

85. **Regulatory limits on forward contracts reflect concerns about their use in speculative transactions.** Often, regulations permit spot contracts only, which may defined as contracts involving settlement within a few days. Suppressing the forward market will usually also require regulations on other types of derivatives, such as swaps and options, that may be combined to closely replicate the payoffs from a forward contract. In some countries, forward contracts were limited to hedging operations directly related to permissible international transactions. In some cases, regulations also limited the maturity of the forward contract, sometimes linking it to the timing of the underlying transaction.

Regulation of trading locations

86. **Foreign exchange regulations may determine the geographical location where the domestic currency can be traded in exchange for foreign currencies.** These regulations may also reduce the likelihood that assets denominated in a particular currency will be included in a diversified worldwide portfolio. These regulations may include an outright prohibition of offshore domestic currency trading and restrictions on the export and

[68] Over 70 percent of the respondents considered their spot markets to be developed, while only 20 percent considered their forward markets to be developed.

import of domestic currencies (these measures are typically taken to close off avenues for speculative attacks).

87. **About a third of countries responding to the Survey explicitly prohibited certain nondomestic uses of their currencies.** Examples include prohibitions on using domestic currency in payments abroad, holding domestic currency notes and coins abroad, holding national currency deposits abroad, and receiving national currency loans abroad. A slightly lower percentage of respondents prohibited nonresidents from denominating international financial and nonfinancial contracts in domestic currency.

88. **A few countries have allowed the trading of their currencies on well-known international exchanges.** Futures contracts in the currencies of Brazil, Mexico, Russia, and South Africa are listed on the Chicago Mercantile Exchange. South Africa also allowed futures trading of the rand on the New York Board of Trade.

The regulatory framework and the exchange rate regime

89. **There is a systematic relationship between the use of certain types of foreign exchange regulations and the exchange rate regime.** Specifically, some of the regulations discussed above were most prevalent in countries maintaining a conventional fixed peg to another currency (or a basket of currencies). These include restrictions on payments to residents in foreign currencies, restrictions on the use of foreign currency as a store of value, restrictions on interbank dealing, and regulatory limits on forward contracts.[69] The use of these regulations appears to be intended to reduce the vulnerability of pegged regimes to speculative attack. The use of these regulations was far less common in countries with a currency board, possibly reflecting the higher degree of commitment to exchange rate stability and monetary discipline that this exchange rate regime requires.

90. **A slightly different pattern emerges with respect to regulations affecting the geographical location of currency trading.** Most countries with a conventional fixed peg to a single currency permitted only onshore trading of their currency, while countries with a currency board permitted both onshore and offshore trading. However, a majority of countries pegging to a basket of currencies also permitted offshore trading. The reasons for this difference are not well understood, but may reflect the difficulty of developing a sufficiently active onshore market in more than one foreign currency.

D. Measures to Counter Exchange Rate Pressures

91. **Foreign exchange market regulations that influence market structure and conduct have also been used extensively to counter pressures on the exchange rate and on foreign exchange reserves.** These measures are typically used as an adjunct to

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[69] Some of these regulations were also used extensively in countries heavily reliant on external financing.

macroeconomic adjustment, and are often intended to address specific sources of pressure on the exchange rate and reserves and to buy time for the adoption of more fundamental policy changes. In so doing, they seek to modify the conduct of both customers and intermediaries in the foreign exchange market, and to regulate contract types and trading locations. Significant measures of this kind are listed in Box 6.

92. **Combinations of these measures were used in a number of countries that experienced a currency crisis.** While these measures may temporarily reduce pressures on the exchange rate, they are also distortionary.[70] For example, segmenting the foreign exchange market may result in an inefficient allocation of foreign exchange and may adversely affect the ability of financial institutions and others to manage foreign exchange exposures and related risks. Also, regulations that interfere with pre-existing contracts may have long-lasting effects on the confidence of market participants and on foreign exchange market development.

E. Role of the Central Bank

93. Central banks in developing and transition economies are active in their foreign exchange markets even if they follow independently floating regimes. The Survey responses indicated that central banks in developing and transition economies with flexible exchange regimes mainly traded foreign exchange with banks and governments (Table 25). Very often, the central bank conducted foreign exchange operations with banks on behalf of the government. This fact partially explains why about 90 percent of countries following independently floating regimes reportedly also conducted foreign exchange operations with banks. In fact, in more than 80 percent of the Survey respondents, the central bank traded foreign exchange with the government. In about 60 percent of the respondents, the central bank was the exclusive foreign exchange agent of the government; and the government exclusively traded foreign exchange with the central bank.

94. **The Survey also provides information on the trading platforms used by central banks in buying and selling foreign exchange on a discretionary basis.** The trading platform used can influence the effectiveness of foreign exchange intervention, inter alia by affecting the visibility or speed of execution of central bank transactions. The Survey showed that most central banks conducted these operations through telephone lines. However, it also

[70] For details, see Ariyoshi and others (2000).

Box 6. Foreign Exchange Regulatory Measures to Counter Exchange Rate Pressures

Countries have taken a variety of regulatory measures to counter pressures on the exchange rate and foreign exchange reserves. The measures listed here are illustrated by country examples. In many cases, these measures have been supplemented by moral suasion.

Temporary closure of foreign exchange markets. Although rare, market closures are most commonly used when major changes are made in the exchange rate regime or in exchange market organization or regulations. For example, *Argentina* has heavily used "foreign exchange holidays" since December 2001.

Dual or multiple exchange rates. This segmentation of the foreign exchange market into one or more official markets and one or more free markets is used to allocate foreign exchange at subsidized rates to specific transactions, such as imports of essential goods and services. *Pakistan* adopted a multiple exchange rate system in July 1998 during the crisis brought on, inter alia, by the nuclear rivalry with India. The system comprised an official rate, a floating interbank rate (FIBR), and a composite exchange rate.

Multiple currency trading sessions. The allocation of foreign exchange is influenced through restrictions on currency trading sessions. This type of measure was adopted by *Russia* in September 1998.

Restrictions on the offshore use of currencies. Countries have imposed or reimposed such regulations when offshore trading in domestic currency was considered to be a major source of speculative pressure. *Malaysia* in September 1998 introduced comprehensive regulations of this type.

Restrictions on foreign exchange outflows. Such controls may limit the ability of nonresidents to remit abroad funds held locally, prohibit or impose quantitative limits on residents' transactions, and attempt to reduce leakages of foreign exchange by requiring documentation. In early December 2001, *Argentina* prohibited all transfers of funds abroad with certain exceptions including those for trade operations, unless the transfers were directly authorized by the central bank.

Restrictions on the foreign exchange positions of banks. Overnight positions may be subject to stricter exposure limits or other administrative restrictions; and intraday positions may receive greater scrutiny. *Romania* imposed an overnight cash limit on foreign exchange bureaus.

Measures affecting the timing of foreign exchange flows. These measures include, among other things, an advance import deposit requirement. In 1997, *India* imposed an interest rate surcharge for importers in response to pressures on the rupee during the Asian crisis.

Steps to increase the supply of foreign exchange. These measures most often take the form of surrender requirements for exporters, either at free market or official exchange rates (*Argentina* in 2002, *Pakistan* in 1998, *Thailand* in 1997). Some countries have also liberalized foreign direct investment inflows during a crisis (for example, *Korea*).

Table 25. Central Bank Intervention Practices in Developing Countries with Flexible Exchange Arrangements, 2001

	Crawling peg	Crawling band	Managed floating	Independently floating	Total
	(In percent of countries responding to the survey in each category)				
Foreign exchange intervention in the spot market	67	86	96	79	87
Main counterparts					
Banks	100	100	100	89	96
Government	100	100	81	84	85
Central bank is exclusive agent 1/	67	71	58	58	60
Trading Platforms					
Telephone orders	--	57	62	63	58
Online trading systems					
Reuters 2000-1	--	29	31	37	31
Electronic brokered system	33	--	8	16	11
Periodic foreign exchange auctions 2/	33	14	8	37	20
Sterilization of central bank operations					
Always	--	43	19	26	24
Sometimes	67	57	69	53	62
Never	--	--	4	5	4
Other central bank practices					
Initiates buying or selling foreign exchange operations	--	86	81	74	75
Does not leave limit orders with banks 3/	100	100	69	58	71
Does not establish a fixed bid/ask spread in setting its exchange rates	33	71	77	63	69
Does not announce foreign exchange intervention	33	71	50	37	47
Does not publish central bank intervention figures	67	86	62	84	73
Memorandum items:					
Number of countries responding to the Survey	3	7	26	19	55
In percent of Fund members in each category	75	100	60	63	65

Sources: IMF, 2001, Survey on Foreign Exchange Market Organization; and Canales-Kriljenko (2002).

1/ The central government only sells foreign exchange to the central bank and purchases foreign exchange from the central bank.

2/ Auctions conducted by the central bank.

3/ Orders to buy or sell a given amount of foreign exchange at a given price.

revealed that in about one-third of the cases, central banks in countries with flexible exchange rate arrangements also made use of online trading platforms.[71] The most prevalent online dealing system was the Reuters 2000-1 dealing system.[72] In several countries, the central bank directly provided the online trading platform while in others, it was provided by the domestic private sector. Only a few countries used trading platforms that allowed simultaneous multiple foreign exchange transactions; and these platforms were mainly provided by the domestic private sector. The use of the Reuters matching system was very limited. Central banks also often managed the foreign exchange auction, as discussed above.

95. **Several other interesting characteristics of central bank foreign exchange operations emerged from the Survey.** About 90 percent of the respondents indicated that foreign exchange operations took place in the spot markets. The avoidance of forward or other derivative transactions may reflect central banks' concerns about their risks.[73] Seventy five percent noted that the central bank usually initiated foreign exchange operations. According to the literature on market microstructure, the price effect of such operations will tend to be greater than that of inter-dealer transactions, for example, as they may be relatively richer in information about fundamentals such as the monetary policy stance. About 70 percent of central banks avoided limit orders with banks, or declined to establish a fixed bid/ask spread.[74] Very few respondents reported that the monetary effect of foreign exchange interventions was never sterilized. Finally, about half of the respondents reportedly did not announce foreign exchange intervention operations; and even more did not publish the intervention amounts after the fact.

VI. Factors Affecting Exchange Rate Volatility

A. Introduction

96. **Drawing further on information in the Survey on Foreign Exchange Market Organization, this section considers factors affecting exchange rate volatility**. In addition to indicators of macroeconomic performance and the choice of exchange rate regime and,

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[71] Flexible regimes include independent and managed floating, as well as crawling bands and pegs.

[72] Other one-on-one online trading platforms used by developing and transition economies included Reuters 3000 Direct and Reuters 2002-2 Spot.

[73] The central banks in some countries have experienced large losses from intervention through the forward foreign exchange market.

[74] Limit orders instruct banks to buy or sell foreign exchange at a given price, if possible.

these include in particular various (micro) structural features of the foreign exchange market. The results presented in this section are the first to make use of detailed information on foreign exchange market organization and regulations. They may offer a number of new insights into the role that structural factors may play in the choice and implementation of exchange rate policy.[75]

97. **The determinants of exchange rate volatility are of interest because of the linkages between exchange rate volatility and other economic variables.** A common supposition is that volatile exchange rates depress international trade. The empirical evidence on this issue is mixed, but several more recent studies have found significant adverse effects on trade.[76] Some studies have also found a relationship between exchange rate volatility and real output growth. One major study found that exchange rate flexibility has tended to be associated with lower output volatility.[77] However, other studies have found that investment and profitability have been adversely affected by exchange rate volatility, at least in some developing countries.[78]

98. **The results obtained in the present study may help guide the design of technical assistance on foreign exchange issues by focusing attention on factors that may be more likely than others to affect exchange rate volatility.** For example, a key finding is that decentralized dealer markets are associated with lower volatility. Another finding is that regulations on the use of a domestic currency by nonresidents may reduce exchange rate volatility.

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[75] For a more detailed discussion of the issues raised in this section, see Canales-Kriljenko and Habermeier (2002), which also provides a full treatment of the statistical issues.

[76] Much of the earlier literature, summarized for example in IMF (1984), focused on individual countries or small groups of mainly advanced countries. More recent studies, which have either included a wider range of both advanced and developing countries or approached the issue with greater statistical sophistication, have tended to find adverse effects of exchange rate volatility on trade, mainly in developing but also in advanced countries. Examples include Sauer and Bohara (2001), Dell'Ariccia (1999), and Chowdhury (1993).

[77] See Ghosh and others (1995). Reinhart and Rogoff (2002) note in addition that in countries with extremely high rates of depreciation, growth was negative on average. By contrast, countries with floating exchange rate regimes and low inflation have exhibited higher GDP growth than other country groups.

[78] For example, Bleaney and Greenaway (2001).

B. Determinants of Exchange Rate Volatility—Earlier Work

99. **There is no consensus in the economic literature on the factors affecting exchange rates and their volatility.** This absence of agreement reflects basic difficulties in modeling and predicting exchange rates. Much of the existing work focuses on the levels of exchange rates (in statistical terms, the mean or first moment), but also has implications for exchange rate volatility (the standard deviation or second moment). In the literature, three principal views have emerged:

- The first view is that, at least over short horizons and countries without high inflation, exchange rate models that include macroeconomic fundamentals do not perform better than a random walk in out of sample forecasting.[79] Exchange rate volatility is simply the standard deviation of the error term.

- A second view is that macroeconomic fundamentals play an important role in explaining the behavior of exchange rates. Some authors hold that these fundamentals are important only in the long run, but have little to offer in explaining short run movements, while others believe that macroeconomic fundamentals have explanatory power both in the long run and the short run.[80]

- A third school of thought holds that neither macroeconomic fundamentals nor the random walk model adequately account for exchange rate behavior at short horizons. Rather, short-run exchange rate movements are attributed to market microstructure factors, including inventory management and information aggregation by foreign exchange dealers. Specifically, the microstructure approach suggests that nondealers learn about fundamentals affecting the exchange rate, and this knowledge is reflected in the orders they place with dealers. Dealers in turn learn about fundamentals from order flow. The outcome of this two-stage learning process results in the formation of a price.[81]

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[79] See Meese and Rogoff (1983). The authoritative survey of the literature on the random walk hypothesis in Frankel and Rose (1995) concludes that attempts to overturn the results of Meese and Rogoff have failed. Further support for the random walk hypothesis is provided in Rogoff (1999). Here, Rogoff concludes that at least for the major currencies, and possibly more generally for countries with low inflation, the random walk model has not been overturned by more recent empirical work. He also argues that the difficulties in relating financial variables to fundamentals is a more general problem and not one confined exclusively to exchange rates.

[80] McDonald (1999) notes that there is by now considerable empirical work favoring the view that models of the exchange rate that include fundamentals can outperform the random walk even at short time horizons.

[81] See Lyons (2001).

C. Design of the Study

100. **The analysis of the factors affecting exchange rate volatility is based on a broad cross-section of 85 developing and transition economies in 2001.** Volatility in the cross section is related in the first instance to macroeconomic fundamentals, most notably inflation, real GDP growth, the fiscal deficit (in percent of GDP) and the openness of the economy (measured by the sum of exports and imports relative to GDP).[82] [83] Controlling for the effect of these macroeconomic variables, a wide range of structural factors is then examined one by one. These factors include, among many others, the prevailing exchange rate regime, the status with respect to the acceptance of obligations of Article VIII, Sections 2, 3, and 4 of the Fund's Articles of Agreement, and features of foreign exchange market structure and regulation drawn from the Survey discussed in Section V of this paper.[84]

101. **This approach complements the microstructure approach to foreign exchange markets.** It differs from much of the existing microstructure literature, which uses data on order flows as indicators of buying or selling pressures in the domestic foreign exchange market, but does not seek to identify the ultimate factors affecting order flows.[85] Instead, this section estimates directly the effect of macroeconomic and structural factors on exchange rate volatility. Future research could examine how the macroeconomic and structural fundamentals influence the more technical factors (order flows and bid-ask spreads) emphasized in the microstructure literature.

102. **Particular attention was given to the robustness of the results.** To this end, the regressions reported below were re-estimated using a large number of random subsamples of countries. This procedure, known as resampling, provides information on whether the results hold only for the particular sample of countries chosen, or whether they also hold for other samples of countries. The resampling strongly confirmed the validity of the main results. Moreover, the results were also not substantially affected when exchange rate volatility was calculated at weekly and monthly horizons, in addition to the results (presented below) using volatility estimated from daily data.

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[82] It has long been argued that economies that are more closed require a larger change in the exchange rate to bring about a given adjustment in the balance of payments, relative to GDP.

[83] These variables were selected from a larger set of potential macroeconomic controls using a model selection algorithm. The variables identified by the algorithm are also ones that would normally suggest themselves on theoretical grounds.

[84] The structural characteristics are measured using dummy variables, which divide countries into two groups: those that possess a particular characteristic and those that do not.

[85] Order flow is transaction volume that is signed. The sign is positive if the initiator of the deal wants to buy and negative if he wants to sell.

103. **The measure of volatility used is based on nominal effective exchange rates (NEER), rather than on the exchange rates with a single major international currency used as an anchor, like the U.S. dollar.** The objective is to capture the effect of cross currency changes on the value of the domestic currency.[86] Moreover, the NEER expresses the value of the domestic currency in terms of the currencies of the main trading partners. The use of NEER volatility is appropriate when the sample includes countries that peg to (or closely follow) different international currencies. A country pegging to the U.S. dollar, but trading mainly with countries in the euro area (for example Egypt until mid-2000) would still be subject to significant nominal effective exchange rate volatility. NEER volatility is computed as the standard deviation in 2001 of the logarithm of the daily exchange rate (also known as the daily return).[87] [88]

D. Principal Results of the Cross-Sectional Analysis

104. **NEER volatility is related in the expected fashion to key domestic macroeconomic variables.** While exchange rate volatility may also depend on external developments, the cross sectional analysis reveals that a large fraction of the disparities between volatilities across countries can be explained by domestic developments (Table 26).

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[86] Very few studies have focused on the volatility of the nominal effective exchange rate, partly because of limitations in data availability. The IMF's Information Notice System database computes monthly values for the NEER, but the frequency of the resulting time series is too low to allow the use of econometric techniques for analyzing exchange rate volatility. Accordingly, daily values of the NEER for 85 countries were computed for this study. The indices are based on data from Datastream and Bloomberg on exchange rates to the U.S. dollar or the pound sterling and have been computed using the trade weights and methodology of IMF's Information Notice System.

[87] That is, $\log(e_t)-\log(e_{t-1})$, where e stands for the nominal effective exchange rate.

[88] Canales-Kriljenko and Habermeier (2002) also consider alternative measures of volatility based on the steady-state variance of a GARCH model of the daily returns. The GARCH model seeks to capture persistence over time in the standard deviation of the daily returns (Bollerslev, 1986). Another issue examined in that paper is whether the underlying NEER processes are integrated, which if true could result in significant distortions in simple measures of volatility in a time series or panel data context.

Table 26. Exchange Rate Volatility and Main Characteristics of Foreign Exchange Markets in Developing and Transition Economies, 2001 1/

	Full sample 2/		Robustness analysis 3/		
	Sign	Significance	Sign	Percent sign 4/	Percent significant 5/
Macroeconomic Controls Variables 6/					
Consumer Price Inflation	+	***	+	100	99
GDP growth	-	***	-	100	99
Fiscal deficit/GDP	+	*	+	92	78
External Trade/GDP	-	**	-	100	100
Exchange Rate Regimes					
Hard pegs	+		+	94	0
No separate legal tender	-		-	98	2
Currency board arrangements	+		+	95	11
Intermediate regimes	-	**	-	100	85
Other conventional fixed peg arrangements 7/	-		-	65	0
Against a single currency	+		+	71	0
Against a composite	-		-	96	0
Fund-supported or other monetary program	+		+	96	0
Crawling pegs	-		-	100	0
Exchange rates within crawling bands	-	***	-	100	98
Floating regimes	+	*	+	100	32
Managed floating 8/	+		+	53	0
Independently floating	+	**	+	100	85
Fund Jurisdiction					
Article VIII status	-	**	-	100	88
With exchange restrictions and MCP	-		-	100	0
Article XIV status	+	**	+	100	88
With exchange restrictions and MCPs	+	**	+	100	83
Article XIV restrictions	+	*	+	100	64
Article VIII restrictions	+	**	+	100	87
Without exchange restrictions and MCPs	+	**	+	100	88
Foreign Exchange Market Structure					
Dealer markets 9/					
Decentralized 9/	-	**	-	100	83
With electronic trading platforms	-	*	-	100	72
Auction markets	-		-	72	0
Periodic	+		+	98	0
Continuous	-		-	93	0
With Reuters brokered systems	-		+	52	0
Other Selected Factors					
Restrictions on monetary use of domestic currency by nonresidents					
Holding domestic notes and coins.	-	*	-	100	81
Denominating nonfinancial contracts in domestic currency	-	**	-	100	99
Net foreign exchange open position limits 10/	-	**	-	100	84
Existence of a foreign exchange dealers' association	-	**	-	100	89
Emerging markets	-	*	-	100	72
Forward markets	-		-	99	9

Source: Staff estimates.

1/ The cross-section regressions are estimated by ordinary least squares, controlling for macroeconomic variables. The dependent variable is NEER volatility measured as the standard deviation of the log of daily NEER returns in 2001. Most variables are dummy variables so that a significant positive variable would mean a higher mean volatility of the group after controlling for macroeconomic variables. Significance at the 1, 5, and 10 percent are expressed as three, two, and one asterisks, respectively.

2/ A total of 85 countries were included in the regression.

3/ To test the robustness of the results, a bootstrap analysis was conducted by which 100 regressions were run on randomly selected subsamples comprising 90 percent of the number of observations in the full sample.

4/ Percent of regressions with the corresponding sign.

5/ Percent of regressions in which the variable was statistically significant at the 10 percent significance level.

Nominal variables play an especially important role, which is not surprising given that nominal exchange rate volatility is the variable to be explained.[89] NEER volatility is higher in countries with higher inflation and higher fiscal deficits, and lower in countries with faster real GDP growth and more open economies. These results were highly robust. As noted previously, these macroeconomic variables are included as controls in examining the effect on NEER volatility of various structural factors; and thus allow for an estimation of the marginal effect of each structural factor on exchange rate volatility. Other macroeconomic variables—notably the current account deficit, private capital flows relative to GDP, and the volatility of the terms of trade—were not found to be significantly correlated with NEER volatility.

105. **Surprisingly, measures of the adequacy of foreign exchange reserves are not strongly correlated with NEER volatility.** Reserves were not found to be statistically significant, whether measured relative to the money base, short-term debt to BIS reporting countries, imports of goods, or GDP. However, higher reserves negatively correlated with NEER volatility. Countries satisfying the "currency board criteria," with international reserves exceeding the money base at the prevailing exchange rate, did not have a statistically significant lower level of NEER volatility.

106. **The exchange rate regime may also have an effect on NEER volatility.** Several authors have argued that flexible exchange rate regimes have higher nominal and real exchange rate volatility than fixed regimes.[90] A visual inspection of the average NEER volatility across regimes suggests that volatility is higher for independent floating, but otherwise not significantly related to the degree of flexibility of the exchange rate regimes (Figure 18). Statistical analysis confirms that countries following an independently floating exchange rate regime exhibit significantly higher volatility (Table 26).[91] Also, countries with a crawling band exchange rate regime appear to have been successful in lowering NEER volatility below the level that would correspond to their macroeconomic developments and

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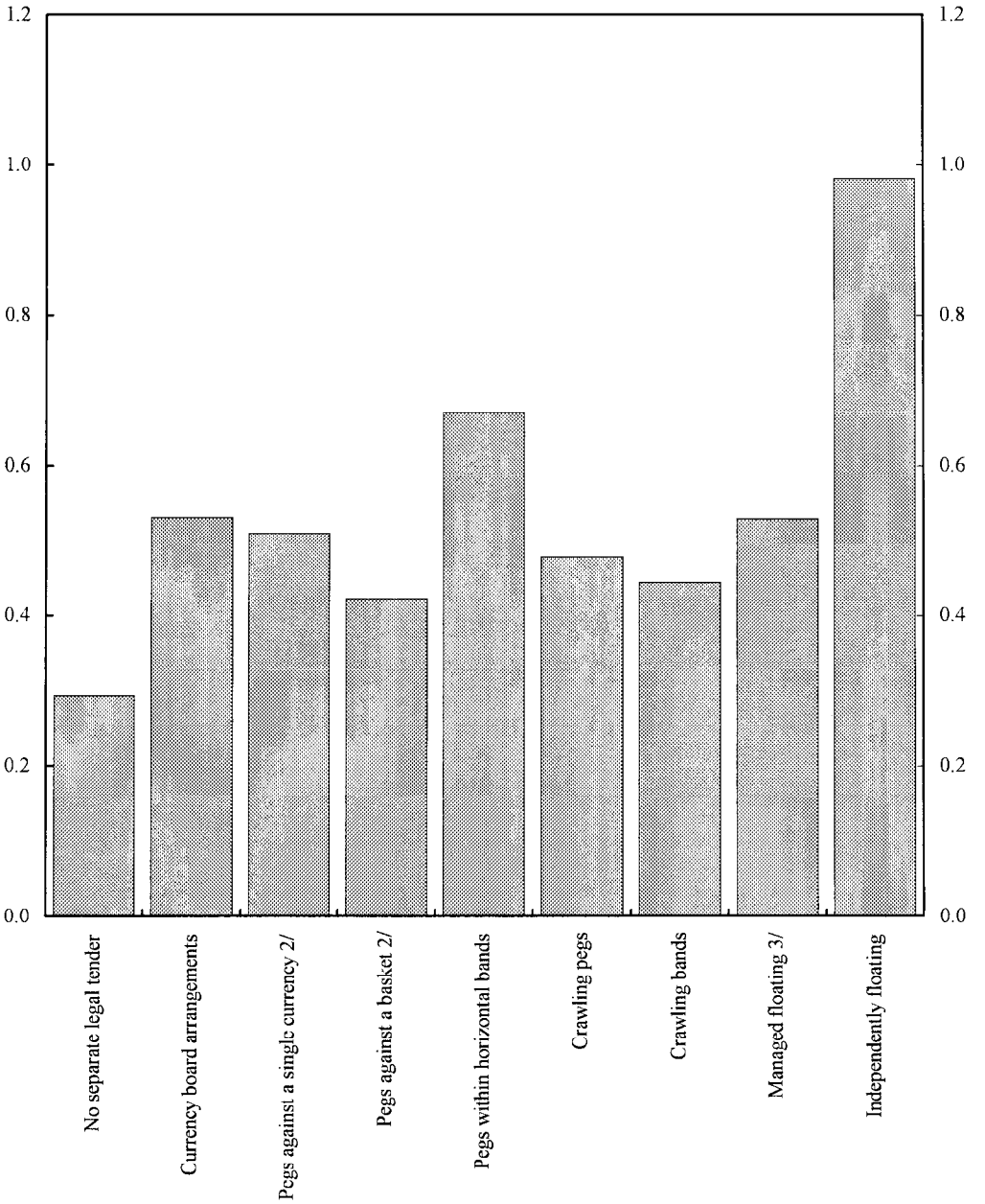
[89] Simple regressions (not presented) indicate that individual nominal variables explain up to 70 percent of the variance of NEER volatility. Money market interest rates showed a particularly strong correlation with NEER volatility, but data were only available for 21 countries.

[90] Examples include Mussa (1986) and Flood and Rose (1999). Other authors have provided a theoretical explanation for higher volatility in flexible exchange rate regimes in terms of the effect of the choice of regime on the evolution and information contact of order flows, within the framework of the market microstructure literature. See Killeen, Lyons, and Moore (2000).

[91] The result is essentially the same when the regression controls for inflation only, suggesting that countries following independently floating regimes have higher nominal and real exchange rate volatility.

Figure 18. Daily Exchange Rate Volatility Across Exchange Rate Regimes, 2001 1/
(In percent)



Sources: IMF, 2001 *Survey on Foreign Exchange Market Organization*; and IMF, 2001 *Annual Report on Exchange Arrangements and Exchange Restrictions* (AREAER)

1/ Volatility is measured as the standard deviation of the daily returns. Each observation represents the simple average of country volatilities in each group.

2/ Includes tightly managed floats.

3/ Mananged floating with no preannounced path for exchange rate (excluding tightly managed floats).

degree of openness.[92] Although, less flexible exchange rate regimes do not markedly reduce NEER volatility, such regimes do reduce volatility vis-à-vis the anchor currency or basket of currencies. A key purpose and benefit of exchange rate arrangements such as a conventional fixed peg, a currency board, or dollarization may lie in establishing a more credible nominal anchor for monetary policy and improving the prospects for achieving lower inflation.

107. **The acceptance of Article VIII obligations is also related to NEER volatility.**[93] Volatility was significantly lower for the group of countries that have accepted the obligations of Article VIII. Conversely, it was significantly higher for countries that maintain Article XIV status. It is difficult to know whether the Article XIV status is a cause or a symptom of exchange rate volatility. It is possible that the policies followed by Article XIV countries, including the use of exchange restrictions, limit the development and depth of the foreign exchange market and thus raise daily NEER volatility. On the other hand, it is also conceivable that countries experiencing higher exchange rate volatility, possibly for reasons beyond their control, have been more reluctant than others to accept the obligations of Article VIII, Sections 2, 3, and 4.

108. **Some structural features of the foreign exchange market are also correlated with NEER volatility.** Notably, countries in which foreign exchange transactions are carried out by dealers exhibit lower volatility. This result may reflect the greater liquidity typically associated with these types of foreign exchange market structures. Countries with a foreign exchange dealers association also tended to exhibit lower volatility.

109. **Countries restricting the use of domestic currency by nonresidents had lower NEER volatility.** In particular, controls on the use of the domestic currency in the denomination of nonfinancial contracts, and controls on nonresidents' holdings of domestic notes and coins seemed to be associated with lower volatility.

110. **Limits on banks' foreign exchange positions tended to lower NEER volatility.** Specifically, countries adopting limits on the net open foreign exchange position had lower volatility. This result may reflect the constraints that these prudential rules place on speculative position-taking. However, it is conceivable that in some instances, limits on foreign exchange positions could result in higher volatility as dealers seek to lay off unwanted exposures.[94]

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[92] Related arguments are presented in Williamson (2000).

[93] These obligations are to avoid multiple currency practices and restrictions on international current payments and transfers.

[94] This effect, which is known as "hot potato" trading, is discussed in Lyons (1997) and Lyons (1995).

111. **A broad range of other variables were also examined, but were not found to be strongly associated with NEER volatility.** These included:

- Restrictions on the domestic monetary use of domestic or foreign currencies.
- The presence or absence of forward foreign exchange markets.[95]
- Country size, whether measured by surface area, population, or GDP in U.S. dollars.
- Type of legal code, and most other sociocultural factors.
- Country classification used in the IMF's World Economic Outlook (WEO) or International Financial Statistics (IFS). Exceptions were countries in the Western Hemisphere, which had lower volatility; and Africa, which had higher volatility.

112. **The findings presented in this section provide a starting point for additional investigation.** An eventual update of the survey on foreign exchange market organization may be most useful, as this would permit a more thorough check of the robustness of the findings. It would also allow for an intertemporal study of the factors associated with exchange rate volatility, which is likely to provide significant information above and beyond the cross-sectional analysis reported here. It could also be used to examine the relationship between structural features of the foreign exchange market and exchange regime transitions.

[95] The data did not permit testing for the effect of other types of derivatives on NEER volatility.

Table 27. Countries with Dual or Multiple Exchange Rate Systems and Exchange Rate Regimes, 1990 and 2001

1990				2001			
Dual System		Multiple System		Dual System		Multiple System	
Exchange Rate Regime	Member	Exchange Rate Regime	Member	Exchange Rate Regime	Member	Exchange Rate Regime	Member
Dollarization	Namibia	Currency union	Grenada	Currency board	Argentina	Fixed peg	Suriname
Fixed peg	Bahamas	Fixed peg	Bangladesh	Fixed peg	Bahamas		Syria
	Lesotho		China		Iran	Horizontal band	Egypt
Basket peg	Zimbabwe		Dominican R.		Turkmenistan	Crawling band	Belarus
Crawling peg	Costa Rica		Egypt	Basket peg	Botswana	Managed float	Uzbekistan
Crawling band	Chile		Guyana	Fixed peg	Lybia		
Tightly managed float	Nigeria		Haiti	Tightly managed float	Nigeria		
Managed float	S. Africa		Honduras	Managed float	Cambodia		
			Lao PDR		Dominican R.		
			Poland		Lao PDR		
			Sudan		Myanmar		
			Syria	Free float	Afghanistan		
		Basket peg	Czechoslovakia		Sierra Leone		
			Hungary		Somalia		
			Iran				
			Kenya				
			Romania				
			Samoa				
		Crawling peg	Bolivia				
			Colombia				
			Ecuador				
			Mexico				
			Mozambique				
		Tightly managed float	El Salvador				
			Guatemala				
		Managed float	Afghanistan				
			Brazil				
			Ghana				
			Jamaica				
			Somalia				
			Vietnam				
		Free float	Argentina				
			Peru				

Sources: Bubula and Otker-Robe (2002a); and IMF, *Annual Report on Exchange Arrangements and Exchange Restrictions*, various issues.

Table 28. Exchange Rate Regimes and Surrender Requirements for Export Receipts for Countries Maintaining Repatriation Requirements, end-2001

Exchange Rate Regime	Country	Surrender Requirement
Exchange rate with no separate legal tender		
	Benin	yes
	Burkina Faso	yes
	Cameroon	yes
	Central African Republic	yes
	Chad	yes
	Congo, Republic	yes
	Cote d'Ivoire	yes
	Dominica	yes
	Ecuador	yes
	Equatorial Guinea	yes
	Gabon	yes
	Grenada	yes
	Guinea-Bissau	yes
	Mali	yes
	Niger	yes
	St Kitts and Nevis	yes
	St Vincent and the Grenadines	yes
	Senegal	yes
	Togo	no
Currency board arrangement		
	Argentina	yes
	Bosnia	yes
	Bulgaria	no
Conventional pegged arrangement		
	Aruba	yes
	Bahamas	yes
	Bangladesh	yes
	Barbados	yes
	Belize	yes
	Bhutan	yes
	Cape Verde	yes
	China	yes
	Comoros	yes
	Eritrea	no
	Fiji	yes
	Iran	yes
	Lesotho	yes
	Libya	yes
	Macedonia	no

Table 28. Exchange Rate Regimes and Surrender Requirements for Export Receipts for Countries Maintaining Repatriation Requirements, end-2001

Exchange Rate Regime	Country	Surrender Requirement
	Malaysia	yes
	Malta	yes
	Morocco	yes
	Namibia	yes
	Nepal	no
	Samoa	yes
	Seychelles	yes
	Suriname	yes
	Swaziland	yes
	Syria	yes
	Turkmenistan	yes
	Zimbabwe	yes
Pegged exchange rate within horizontal bands		
	Cyprus	yes
Crawling peg		
	Costa Rica	no
	Solomon Islands	yes
Crawling band		
	Belarus	yes
	Honduras	yes
	Romania	no
Managed floating with no predetermined path for the exchange rate		
	Algeria	yes
	Azerbaijan	no
	Burundi	yes
	Cambodia	no
	Croatia	no
	Dominican Republic	yes
	Ethiopia	yes
	Ghana	yes
	Guatemala	yes
	Guinea	no
	India	yes
	Iraq	yes
	Kazakhstan	no
	Lao	yes
	Mauritania	no
	Mauritius	no

Table 28. Exchange Rate Regimes and Surrender Requirements for Export Receipts for Countries Maintaining Repatriation Requirements, end-2001

Exchange Rate Regime	Country	Surrender Requirement
	Myanmar	no
	Nigeria	no
	Russia	yes
	Rwanda	no
	Sao Tome and Principe	no
	Slovak Republic	no
	Sudan	no
	Thailand	yes
	Tunisia	yes
	Ukraine	yes
	Uzbekistan	yes
	Vietnam	yes
	Yugoslavia	no
Independently floating		
	Afghanistan	yes
	Albania	no
	Angola	yes
	Brazil	yes
	Chile	no
	Colombia	yes
	Congo, DR	no
	Korea	no
	Malawi	yes
	Moldova	no
	Mozambique	no
	Papua New Guinea	yes
	Poland	no
	Sierra Leone	no
	Somalia	yes
	South Africa	yes
	Tajikistan	no
	Tanzania	no
	Turkey	yes

Source: IMF, *Annual Report on Exchange Arrangements and Exchange Restrictions.*

Table 29. Restrictions Maintained by Countries with Article XIV Status 1/ 2/

(As of end-2001)

Country	Under	Description
Albania	Article XIV	Bilateral Payment Arrangements (BPAs)
Angola	Article XIV	Binding foreign exchange allowances for travel, medical, and others.
	Article VIII	Limits on remittances of dividends and profits from foreign investments that do not exceed the equivalent of US$250,000.
Bhutan	Article XIV	Binding foreign exchange allowances for travel. Restrictions arising from (1) limits on the availability of foreign exchange for imports of services, and (2) limits on foreign exchange for private transfers.
Burundi	Article VIII	Restrictions arising from the limited resources devoted to the official exchange market that was set up to sell foreign exchange for all current international transactions.
Colombia	Article VIII	MCPs arising from taxes on profit remittances from direct investment in Colombia and on foreign exchange earnings from personal services and transfers.
Egypt	Article VIII	BPA. MCPs arise from the existence of a market rate, a special rate of LE 1.30 per $1 applied to transactions effected under the bilateral payment agreement with Sudan, and a rate of LE 0.3913 per $1 used for the liquidation of minimum balances related to terminated bilateral payment agreements.
Eritrea	Article XIV	Binding restriction for travel, medical and education allowances.
	Article VIII	Tax certification requirement for repatriation of investment income. Different rules for different categories of borrowers for the repayment of external loans and supplier credits. Income of imports permit by commercial banks.
Ethiopia	Article XIV	Binding foreign exchange allowances for travel.
Iran, Islamic Republic of	Article VIII	Nonremunerated advance import deposit. Binding foreign exchange allowances for travel. MCPs: one arises from the maintenance of dual exchange rates; a second from remunerated advance import deposit, and a third from bonus payments for early repatriation of non-oil export proceeds.
Libyan Arab Jamahiriya, Socialist People's	Article XIV	Binding foreign exchange allowances for travel, medical, education, remittances, and other personal needs. Restrictions related to companies ability to transfer abroad their dividends only at exchange rates initially agreed in their contract. Restrictions on invisible payments related to the transfer of remittances.

Table 29. Restrictions Maintained by Countries with Article XIV Status 1/ 2/

(As of end-2001)

Country	Under	Description
	Article VIII	MCPs arising from the existence of dual exchange rates, the advance import deposit requirement, the 15 percent tax on private enterprises purchases of foreign exchange and the 15 percent subsidy on private enterprise sales of foreign exchange to the government.
Maldives	Article VIII	Restrictions arising from administrative limits on the availability of foreign exchange in the context of a general shortage of hard currency, with traders experiencing undue delays in obtaining foreign exchange in making payments for bona fide current international transactions.
Myanmar	Article VIII	Binding foreign exchange allowances for current invisibles arising from monthly limits on conversion of foreign exchange certificates (FECs) for payments and transfers relating to invisible and other current international transactions for travel and for prior approval requirements on the remittable portion of wages of nonresidents. MCP arising from the divergence between the exchange rate used for official transactions and the FEC rate.
Nigeria	Article VIII	MCPs arising from the existence of multiple exchange rates: the Interbank Foreign Exchange Market rate (IFEM) rate at which the central bank transacts, and the interbank exchange rate quoted by a group of commercial banks (NIFEX), the bureau de change rate, and the parallel market rate.
Sudan	Article XIV	BPA.
Syrian Arab Rep.	Article XIV	Restrictions arising from the administrative allocation of foreign exchange.
	Article VIII	MCPs arising from the divergences between the official exchange rate and the rates applicable to debt service payments under bilateral payments agreements, and to transactions in the export proceeds market. A 100 percent advance import deposit requirement for public sector imports. Restrictions arising from a prohibition against purchases by private parties of foreign exchange from the banking system for most current international transactions. BPAs.

Table 29. Restrictions Maintained by Countries with Article XIV Status 1/ 2/

(As of end-2001)

Country	Under	Description
Turkmenistan	Article VIII	Binding foreign exchange allowances for travel, education, and medical expenses. Foreign exchange allocation system arising from the limitations on purchases of foreign exchange resulting from the closure of access to the banking system for current international transactions and for applicants not included in the CBT screening. There is a 50 percent foreign exchange tax on gas exports, the proceeds of which are earmarked for the Foreign Exchange Reserve Fund (FERF) giving rise to an MCP. Other restrictions arise from (1) the screening by the CBT and the Foreign Exchange Committee of applications for foreign exchange provided through the weekly CBT auction with respect to certain categories of current international transactions conducted by resident legal entities; and (2) the requirement that foreign exchange sales to "specialized stores" shall be subject to the condition that commercial mark-ups over contract price of goods will not exceed 30 percent.
Vietnam	Article XIV	Binding foreign exchange allowances for current invisibles.
	Article VIII	Restriction arising from limits on the availability of foreign exchange for payments for imports of certain commodities. An MCP arising from the tax on profit remittances by foreign investors.
Uzbekistan	Article VIII	Requirement that importers who wish to purchase foreign exchange to make an advance payment under an import contract must make an advance deposit in the amount of 100 percent of the advance payment, which is released only after the importer presents to a bank a certified original of the document confirming that the goods have actually been imported. Foreign exchange allocation systems are in effect from the rationing of foreign exchange implemented through the identification of low priority goods, not eligible to receive foreign exchange from either of the two official markets, the identification of eligible goods and importers, assignment of foreign exchange quotas, and delays in central bank approval of applications for foreign exchange. There is a restriction on the amount of foreign exchange which residents may purchase for the purpose of making invisible payments, as well as restrictions arising from (1) the prohibition on the purchase of foreign exchange by enterprises during the

Table 29. Restrictions Maintained by Countries with Article XIV Status 1/ 2/

(As of end-2001)

Country	Under	Description
		first six months of their operations; (2) making of advance payments to certain specified offshore territories and on the making of payments under contract for works (services) to such offshore territories; (3) on the making of payments to nonresidents that are not party to import contracts; (4) imposition of a ceiling on the amount of interest and other payments provided for in loan contracts with nonresidents that can be paid in the fulfillment of such legally valid loan contracts (maximum 20 percent annum of outstanding principal), and; (5) the stipulation that restricts the amount of foreign exchange that can be purchased by nonresident individuals to the amounts earlier exchanged for sums. In addition, there are MCPs from the segmentation of the exchange market, resulting in a deviation in over-the-counter rates from cash bureau rates.
Yugoslavia	Article VIII	Restrictions arising from frozen foreign currency deposits.
Zambia	Article VIII	Restrictions arising from external payments arrears to commercial creditors. MCP arises from lack of a mechanism to prevent spreads between the dealing window rate and the interbank rate from exceeding two percent.

Source: PDR Restrictions Database.

1/ In some instances, the actual date on which restrictions were imposed or removed may not correspond to the cut-off date because of lags in reporting that result from the timing of the issuance of the staff report from which such information is drawn.

2/ Afghanistan, Iraq, and Somalia are excluded, as recent and comprehensive information on restrictions is not available.

Table 30. Restrictions Maintained by Countries with Article VIII Status 1/

(As of end-2001)

Country	Description
Bangladesh	Restrictions arising from (1) margin requirements for opening import letters of credit; (2) limits on the availability of foreign exchange for travel, medical and educational expenses, and other invisibles; (3) advance payment requirements for imports of goods and services; and (4) limits on the convertibility and transferability of proceeds of current international transactions in nonresident taka accounts.
Belize	Ad hoc rationing of foreign exchange sales by the central bank (not approved).
Botswana	Multiple Currency Practices (MCPs) arising from the Foreign Exchange Risk-Sharing Scheme (FERS) applicable to outstanding external loans obtained by certain public enterprises before December 1, 1990. The FERS was discontinued in 1990, and MCPs are to be eliminated by 2006, when the last loan under the FERS matures (approved until March 2002).
Croatia	Restrictions arising from the freeze on certain foreign currency deposits (approved until March 31, 2001).
Dominican Republic	MCPs arising from the potential for the official exchange rate to differ from the market rate by more than 2 percent at any given time and a 5 percent commission on the sale of foreign exchange (the latter was approved until December 31, 2002).
Ecuador	Restrictions arising from the freeze on demand and savings deposits with the banking system (approved until September 1, 2001, or the next Article IV Consultation, whichever is earlier).
Guinea	MCP arising from the absence of a formal mechanism to ensure that the spread between the official and parallel rates never exceeds 2 percent (not approved).
India	Bilateral Payment Agreements (BPAs) arising from unsettled transactions under inoperative bilateral payments agreements with six Eastern European countries. Binding foreign exchange allowances for current invisibles: (1) arising from a restriction on remittances for overseas TV advertising by nonexporters and exporters without an adequate track record; (2) restrictions related to nontransferability of balances under the Indo-Russian debt agreement; and, (3) a resticition on transfer of amortization payments on loans by nonresident relatives (not approved).
Kenya	MCPs arising from outstanding commitments under the now abolished Exchange Risk Assumption Fund (approved until December 31, 2003).
Macedonia, FYR	Restrictions arising from frozen foreign currency deposits. The bond swap scheme for these deposits did not eliminate the exchange restriction, which is embedded in the bonds until they are retired in 2012 (approved until June 30, 2003).

Table 30. Restrictions Maintained by Countries with Article VIII Status 1/

(As of end-2001)

Country	Description
Russian Federation	MCPs arising from (1) the incorvertibility of "S" accounts, and (2) restrictions on repatriation by nonresidents that did not participate in the GKO scheme and (3) use of a more depreciated exchange rate for repatriation of "C" account balances. Restrictions on the repatriation of moderate amortization payaments from balances on "T" accounts (approved until January 31, 2002 or the next Article IV Consultation, whichever is earlier). There are other restrictions on advance import payments and certain payments to Latvian residents (not approved).
Seychelles	Binding foreign exchange allowance on the transfer of profits and dividends, foreign exchange allocation systems, and external payments arrears (not approved).
Sierra Leone	Restriction arising from the requirement of a tax clearance certificate for payments and transfers for certain types of current international transactions (approved until January 31, 2002).
Solomon Islands	Restrictions arising from exchange controls imposing delays on the availability of foreign exchange for current interantional payments greater than $25,000 but less than $40,000. Payment are to be made in two equal weekly installments; those higher than $40,000 are to be made in four equal weekly installments (not approved).
St. Lucia	Binding foreign exchange restrictions for current invisibles arising from the requirement that arrangements for the clearance of any tax arrears be made before profit remittances above the threshold could be made (not approved).
Suriname	MCPs arising from the surrender requirement applying to the mining sector, and the preferential rate applied to imports of baby milk and formula (not approved).
Tunisia	MCP arising from honoring exchange rate guarantees extended prior to August 1998.
Zimbabwe	External payments arrears. MCP arising from outstanding contracts under a discontinued RBZ scheme for forward exchange cover (to be cleared by end 2001) and a foreign exchange allocation system.

Sources: PDR Restrictions Database; and IMF staff reports.

1/ In some instances, the actual date on which restrictions were imposed or removed may not correspond to the table's cut-off date because of lags in reporting that result from the timing of the issuance of staff report from which such information is drawn. Information on the approval of restrictions is subject to similar lags.

Table 31. Members Accepting Article VIII, Sections 2, 3, and 4, and Nature of Restrictions Maintained at the Time of Acceptance, 1997 through end-June, 2002

Country	Date of Acceptance	Free of Restrictions	Type of Restriction	Temporary Approval
Guinea-Bissau	01/01/97	Yes		
Lesotho	03/05/97	Yes		
Armenia	05/29/97	Yes		
Algeria	09/15/97	No	Absence of due notification to the banking system and the public of the central bank's practice of approving all bona fide applications for foreign exchange in excess of de jure limits for travel, and for educational and medical reasons	Yes
Palau	12/16/97	Yes		
Romania	03/25/98	Yes		
Macedonia	06/19/98	No	A "freeze" on certain foreign currency deposits, which were converted into government bonds at end-1999.	Yes
Bulgaria	09/24/98	Yes		
Rwanda	12/10/98	Yes		
Mauritania	09/19/99	No	MCP (lack of a mechanism to prevent spreads between the official rate and the commercial bank rate from exceeding 2 percent).	Yes
Brazil	11/30/99	No	MCP (financial transactions tax on exchange operations).	Yes 1/
Belarus	11/5/01	Yes		
Cambodia	1/1/02	Yes		
Zambia	4/19/02	No	MCP (lack of mechanism to prevent spreads between the dealing window rate and the interbank rate from exceeding 2 percent) and accumulation of commercial.	No
Yugoslavia, FR of	6/19/02	No	Restriction on transfer to profits under foreign investment	Yes
			Blocked foreign currency savings deposits	No

Table 32. Number of Countries Maintaining Exchange Controls on Payments, Receipts, and Transfers for Current Transactions, 1997–2000 1/ 2/

	1995	1996	1997	1998	1999	2000
Countries with controls	142	138	137	132	134	133
Controls import payments	102	107	111	108	112	113
Foreign exchange budget	9	10	13	13	13	12
Financing requirement	38	36	41	45	46	47
Minimum financing requirements	3	2	6	5	5	7
Advance payment requirements	23	27	29	31	33	34
Advance import deposits	12	11	17	15	15	16
Documentation required for release of foreign exchange 3/	95	105	106	102	106	109
Controls on payments for invisible transactions and current transfers	110	103	112	100	98	96
Trade-related payments	51	54	58	57	57	59
Investment-related payments	69	73	80	81	77	76
Payments for travel	90	91	86	86	77	75
Personal payments	81	82	83	81	78	75
Foreign workers' wages	69	71	74	72	69	68
Credit card use abroad	60	43	70	51	49	49
Other payments	58	64	70	70	67	66
Controls on export proceeds	130	120	116	114	112	113
Repatriation requirements	122	114	110	108	106	106
Surrender requirements	89	87	79	77	75	74
Financing requirements	11	11	16	18	17	17
Documentation requirements 4/	60	65	73	76	76	80
Controls on proceeds from invisible transactions and current transfers	103	101	102	100	99	99
Repatriation requirements	102	99	100	98	97	96
Surrender requirements	80	79	78	74	72	70
Restrictions on use of funds	17	21	26	24	23	23
Countries reporting	184	185	185	185	185	186

Source: IMF, *Annual Report on Exchange Arrangements and Exchange Restrictions*, various issues.

1/ Data reflect information available as of the end of each year and are subject to reporting lags. Some countries that submitted annual information did not provide information for certain categories of controls.

2/ Includes Aruba, the Netherlands Antilles, and Hong Kong SAR.

3/ Includes requirements for domiciliation, import licenses used as exchange licenses, letters of credit, and preshipment inspection.

4/ Includes requirements for domiciliation, guarantees, letters of credit, and preshipment inspection.

Table 33. Exchange Controls on Payments, Receipts, and Transfers for Current Transactions, 1997–2000 1/ 2/

	1997			1998			1999			2000		
	Developing	Transition	Advanced	Developing	Transition	Advanced	Developing	Transition	Advanced	Developing	Transition	Advanced
Countries with controls	**111**	**22**	**4**	**108**	**21**	**3**	**110**	**21**	**3**	**110**	**21**	**2**
Countries with controls on import payments	**94**	**16**	**1**	**93**	**14**	**1**	**97**	**14**	**1**	**97**	**15**	**1**
Foreign exchange budget	12	1	0	13	0	0	13	0	0	12	0	0
Financing requirements	39	2	0	41	4	0	42	4	0	41	6	0
Minimum financing requirements	6	0	0	5	0	0	5	0	0	7	0	0
Advance payment requirements	27	2	0	28	3	0	29	4	0	29	5	0
Advance import deposits	16	1	0	15	0	0	15	0	0	15	1	0
Documentation requirements 3/	89	16	1	88	13	1	92	13	1	94	14	1
Countries with controls on payments for invisible transactions and current transfers	**96**	**13**	**3**	**86**	**13**	**1**	**84**	**13**	**1**	**83**	**13**	**0**
Trade-related payments	53	5	0	51	6	0	51	6	0	53	6	0
Investment-related payments	74	6	0	73	8	0	70	7	0	69	7	0
Payments for travel	75	10	1	75	10	1	67	9	1	66	9	0
Personal payments	73	9	1	71	9	1	68	9	1	66	9	0
Foreign workers wages	67	6	1	64	7	1	63	5	1	63	5	0
Credit card use abroad	61	6	3	45	5	1	42	6	1	42	7	0
Other payments	63	7	0	62	8	0	59	8	0	58	8	0
Countries with controls on export proceeds	**93**	**21**	**2**	**91**	**21**	**2**	**89**	**21**	**2**	**91**	**20**	**2**
Repatriation requirements	90	20	0	88	20	0	86	20	0	87	19	0
Surrender requirements	71	8	0	69	8	0	67	8	0	67	7	0
Financing requirements	14	2	0	14	4	0	14	3	0	14	3	0
Documentation requirements 4/	62	9	2	64	10	2	64	10	2	67	11	2
Countries with controls on proceeds from invisible transactions and current transfers	**82**	**20**	**0**	**80**	**20**	**0**	**80**	**19**	**0**	**80**	**19**	**0**
Repatriation requirements	80	20	0	78	20	0	78	19	0	78	18	0
Surrender requirements	70	8	0	68	6	0	66	6	0	65	5	0
Restrictions on use of funds	23	3	0	22	2	0	21	2	0	21	2	0
Countries reporting	**134**	**27**	**24**	**134**	**27**	**24**	**134**	**27**	**24**	**134**	**28**	**24**

Source: IMF, *Annual Report on Exchange Arrangements and Exchange Restrictions*, various issues.

1/ Country classification corresponds to the WEO classification.

2/ Includes Aruba, Netherlands Antilles, and Hong Kong SAR.

3/ Includes requirements for domiciliation, preshipment inspection, letters of credits, and import licenses.

4/ Includes requirements for letters of credit, domiciliation, guarantees, and preshipment inspection.

Table 34. Number of Countries Maintaining Exchange Controls on Capital Transactions, 1997–2000 1/ 2/

	1997			1998			1999			2000		
	Developing Economy	Transitional Economy	Advanced Economy	Developing Economy	Transitional Economy	Advanced Economy	Developing Economy	Transitional Economy	Advanced Economy	Developing Economy	Transitional Economy	Advanced Economy
Countries with controls	129	27	24	130	27	24	131	27	24	131	27	24
Controls on:												
Capital and money market instruments	101	22	16	104	23	13	101	21	11	103	20	11
Credit operations	98	22	2	94	21	3	95	19	3	97	18	3
Derivatives and other instruments	62	17	3	67	17	4	64	16	3	64	16	3
Foreign direct investment	107	20	18	109	22	18	109	21	17	108	20	17
Liquidation of foreign direct investment	50	3	0	49	3	0	50	4	0	53	4	0
Other controls imposed by the securities laws	12	7	8	17	7	9	17	9	8	17	10	7
Personal capital movements	69	12	2	68	15	2	72	17	1	73	17	2
Real estate transactions	95	23	11	98	25	11	101	25	10	103	24	10
Transactions by commercial banks and other credit institutions	114	27	12	117	27	13	118	27	13	117	27	13
Transactions by institutional investors	42	13	13	52	14	16	53	14	16	53	13	17
Countries reporting	134	27	24	134	27	24	134	27	24	134	28	24

Sources: IMF, *Annual Report on Exchange Arrangements and Exchange Restrictions*, various issues.

1/ Country classification corresponds to the WEO classification introduced in October 2001.
2/ Includes Aruba, Netherlands Antilles, and Hong Kong SAR.

Table 35. Number of Countries with Exchange Controls on Payments, Receipts and Transfers for Current Transactions, by Exchange Rate Regime, 1997–2000 1/

	1997			1998			1999			2000		
	Hard peg 2/	Soft peg 3/	Floating 4/	Hard peg 2/	Soft peg 3/	Floating 4/	Hard peg 2/	Soft peg 3/	Floating 4/	Hard peg 2/	Soft peg 3/	Floating 4/
Countries with controls	24	63	48	25	57	48	25	49	58	27	45	59
Countries with controls on import payments	23	48	39	23	42	42	23	37	51	23	37	52
Financing requirements for imports 5/	7	19	15	7	21	17	8	20	18	7	22	18
Documentation requirements 6/	22	46	38	23	38	40	23	34	48	23	34	51
Countries with controls on payments for invisible transactions and current transfers	22	45	38	22	45	33	22	40	36	22	35	39
Countries with controls on export proceeds	21	55	38	21	49	42	21	41	48	23	38	50
Repatriation requirements	20	55	35	20	49	39	20	41	45	21	38	47
Surrender requirements	17	28	19	18	29	20	16	33	24	19	31	24
Countries with controls on proceeds from invisible transactions and current transfers	21	50	31	21	45	34	21	39	39	22	35	42
Repatriation requirements	21	48	31	21	43	34	21	37	39	22	33	41
Surrender requirements	17	41	20	17	35	22	18	31	23	19	29	22
Countries reporting	34	78	62	34	73	67	34	65	75	35	63	77

Source: IMF, *Annual Report on Exchange Arrangements and Exchange Restrictions*, various issues.

1/ Includes Aruba, Netherlands Antilles, and Hong Kong SAR, but excludes the 11 countries of the Euro area.
2/ Exchange rates with no separate legal tender and currency board arrangements.
3/ Conventional pegged arrangements, pegged exchange rates within horizontal bands, crawling pegs, and crawling bands.
4/ Managed floating with no preannounced path for the exchange rate and independently floating.
5/ Includes minimum financing requirements, advance payment requirements, and advance import deposits.
6/ Includes requirements for domiciliation, preshipment inspection, and letters of credit.

Table 36. Number of Members Maintaining Exchange Controls on Capital Transactions by Exchange Rate Regime, 1997–2000 1/

	1997			1998			1999			2000		
	Hard peg 2/	Soft peg 3/	Floating 4/	Hard peg 2/	Soft peg 3/	Floating 4/	Hard peg 2/	Soft peg 3/	Floating 4/	Hard peg 2/	Soft peg 3/	Floating 4/
Countries with controls	32	75	62	33	71	66	44	63	75	34	60	77
Controls on:												
Capital and money market instruments	22	66	44	22	64	48	26	53	54	24	50	56
Credit operations	23	58	40	23	52	42	24	44	49	25	40	52
Derivatives and other instruments	15	38	28	19	38	30	19	28	36	20	24	39
Foreign direct investment	27	67	44	30	62	50	35	55	57	29	50	60
Liquidation of direct investment	14	24	15	12	24	16	14	20	20	14	21	22
Other controls imposed by the securities laws	1	9	13	4	11	13	8	9	17	4	8	18
Personal capital movements	18	40	24	19	40	25	21	36	33	21	34	37
Real estate transactions	26	58	41	28	55	47	31	52	53	29	48	57
Transactions by commercial banks and other credit institutions	25	66	55	26	66	59	32	59	67	27	56	69
Transactions by institutional investors	8	31	20	13	38	22	23	31	29	15	27	32
Countries reporting	34	78	62	34	73	67	45	65	75	35	63	77

Source: IMF, *Annual Report on Exchange Arrangements and Exchange Restrictions*, various issues.

1/ Includes Aruba, Netherlands Antilles and Hong Kong SAR, excludes the 11 countries of the Euro aera.

2/ Exchange rates with no separate legal tender and currency board arrangements.

3/ Conventional pegged arrangements, pegged exchange rates within horizontal bands, crawling pegs, and crawling bands.

4/ Managed floating with no preannounced path for the exchange rate and independently floating.

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