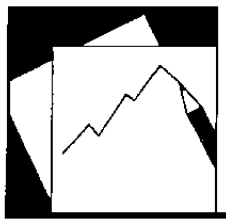
WP/03/95



IMF Working Paper

Foreign Exchange Intervention in Developing and Transition Economies: Results of a Survey

Jorge Iván Canales-Kriljenko

INTERNATIONAL MONETARY FUND

 WP/03/95

IMF Working Paper

Monetary and Financial Systems Department

Foreign Exchange Intervention in Developing and Transition Economies: Results of a Survey

Prepared by Jorge Iván Canales-Kriljenko[1]

Authorized for distribution by Shogo Ishii

May 2003

Abstract

Based on evidence obtained from the IMF's 2001 Survey on Foreign Exchange Market Organization, the author argues that, for several reasons, some central banks in developing and transition economies may be able to conduct foreign exchange intervention more effectively than the central banks of developed countries issuing the major international currencies. First, these central banks do not always fully sterilize their foreign exchange interventions. In addition, they issue regulations and conduct their foreign exchange operations in a way that increases the central bank's information advantage and the size of their foreign exchange intervention relative to foreign exchange market turnover. Some of the central banks also use moral suasion to support their foreign exchange interventions.

JEL Classification Numbers: E58, F31, G28

Keywords: Foreign exchange intervention, foreign exchange market microstructure, foreign exchange net open positions, foreign exchange regulation

Author's E-Mail Address: jcanaleskriljenko@imf.org

---

[1] The author appreciates the very useful comments and suggestions received from Hervé Ferhani, Shyamala Gopinath, Roberto Guimarães, Shogo Ishii, Cem Karacadag, John Leimone, Gabriel Sensenbrenner, Susana Sosa, and Mark Zelmer. Natalie Baumer provided valued editorial assistance and Nadia Malikyar and Joanna Meza-Cuadra efficiently and diligently assisted in managing the survey responses.

Contents Page

I. INTRODUCTION

The literature on foreign exchange intervention has focused on the experience of central banks in developed countries, especially those issuing the major international currencies.[2, 3] Its results suggest that sterilized foreign exchange intervention conducted by these central banks over the last 20 years may well have had an effect on the exchange rate over the short run, but not over the long run. Some authors have argued that the short-run effects have been weak and difficult to identify.[4] Other authors, however, have presented a slightly more positive view about foreign exchange intervention, especially when it was conducted simultaneously by several central banks in a concerted fashion.[5] These documented experiences with foreign exchange intervention have taken place in an environment of floating exchange rates, full capital mobility, and large international use of the currencies involved.

This paper explores how foreign exchange intervention can be more effective in developing and transition economies, which follow a wide array of exchange rate regimes and have in place many controls on capital mobility, currency substitution, dollarization, and the international use of their currencies. Special attention is given to the microstructure of the foreign exchange market in which the foreign exchange intervention takes place, in particular, to the aspects that can be influenced by foreign exchange regulations, monetary regulations, and central bank foreign exchange operating practices.

---

[2] Following country practices and most papers in the literature and country practices, foreign exchange intervention is defined in this paper as foreign exchange operations (buying and selling foreign exchange) undertaken by country authorities with the objective of affecting the behavior of exchange rates. Moreover, "central bank" foreign exchange intervention in this paper refers to any official foreign exchange intervention because the central bank is either the exchange rate authority or conducts foreign exchange intervention on behalf of the exchange rate authority.

[3] The experiences of central banks in other developed economies including Australia, Canada, Sweden, Switzerland, and the United Kingdom have also been documented in the literature with similar results to those obtained in the three major economies—many of the key characteristics of intervention, like the degree of sterilization, are the same.

[4] See Almekinders (1995), Baillie and others (1999), Eijffinger (1998), Frenkel and others (2001), Galati and Melick (1999), Humpage (1996 and 1999), and Rosenberg (1996).

[5] For example, Catte and others (1994), Dominguez (1998), Dominguez and Frankel (1993), Fatum (2000), Fatum and Hutchinson (1999), and Ito (2002).

Foreign exchange intervention practices in developing and transition economies are characterized with information from the IMF's 2001 Survey on Foreign Exchange Market Organization, which targeted those developing and transition economies that are members of the IMF.[6] Ninety members responded to the survey, accounting for 85 percent of the exports, 91 percent of the imports, and 85 percent of the GDP of developing and transition economies in the year 2000. These countries also held about 90 percent of the developing and transition economies' international reserves.[7]

The survey results suggest that official foreign exchange intervention conducted by some central banks in developing and transition economies may have more of an impact on the path of the exchange rate than official foreign exchange intervention by the central banks of developed countries issuing the major international currencies, at least in the absence of a major crisis. Several reasons can be offered. First, unlike the U.S. Federal Reserve Board (the Fed), the European Central Bank (ECB), or the Bank of Japan, not all central banks in developing and transition economies routinely fully sterilize their foreign exchange interventions. Second, unlike the central banks issuing the major international currencies, some central banks in developing and transition economies conduct foreign exchange intervention in amounts that are important relative to the level of foreign exchange market turnover, the money base, and the stock of domestic bonds outstanding. Third, some central banks in developing and transition economies have a greater information advantage over the central banks issuing the major international currencies because, among other things, they can infer the aggregate foreign exchange order flow from reporting requirements. Many central banks in developing and transition economies also use foreign exchange and monetary regulations, as well as their own foreign exchange operating practices, among other things, to increase the central bank's information advantage and the size of foreign exchange intervention relative to the market.[8] Finally, many central banks in developing and transition economies exert moral suasion to reinforce the effects of their foreign exchange market interventions.

The remainder of this paper is organized as follows. Section II describes the prevalence of foreign exchange intervention across different exchange rate regimes and degrees of market access. Section III discusses the survey responses on the issue of sterilization and compares them with the sterilization practices by the central banks issuing the major international currencies. Section IV presents evidence on the size of foreign exchange intervention relative to the market in developing and transition economies and discusses how foreign exchange

---

[6] The survey results presented in this paper thus expand the work of Cheung and Chin (2001) and Neely (2000).

[7] The overall response rate was 60 percent (Appendix Table 1).

[8] The main participants in the foreign exchange market are often identified in the literature as dealers, brokers, and customers.

regulations, monetary regulations, and central bank foreign exchange operating practices could increase the relative size and effectiveness of foreign exchange intervention. Section V discusses the asymmetric information in favor of central banks in developing and transition economies and discusses how the information asymmetry could increase the effectiveness of foreign exchange intervention. Section VI discusses moral suasion and Section VII concludes the analysis.

II. Prevalence of Foreign Exchange Intervention

Central banks issuing the major international currencies are not active participants in their foreign exchange markets. The economies in which they operate have adopted monetary policy frameworks that target short-term interest rates and exchange rate policies that limit foreign exchange intervention to calm disorderly market conditions.[9] Foreign exchange intervention takes place infrequently, and although it could be of large absolute magnitude when it does take place, its size is estimated to be small relative to total foreign exchange market turnover.[10] Partly because conditions in the foreign exchange market were orderly during 2001, only the Bank of Japan conducted foreign exchange intervention operations on a very small number of days in 2001. In particular, the Bank of Japan intervened on seven days following the terrorist attacks of September 11 and on three of those days, the ECB conducted foreign exchange interventions on behalf of the Bank of Japan under an existing agreement.[11] However, neither the Fed nor the ECB conducted official foreign exchange intervention on its own behalf in their spot foreign exchange markets.[12,]

---

[9] While no widely accepted definition of disorderly market conditions exists and the interpretation of this concept is likely to vary across central banks and over time, central banks are likely to consider disorderly market conditions characterized by large intraday exchange rate fluctuations, a sharp widening of bid-offer spreads, and sharp changes in foreign exchange market turnover.

[10] The exception may be the foreign exchange intervention conducted by the Bank of Japan, which is the most active of the three central banks issuing the major international currencies (see discussion on the size of foreign exchange intervention below).

[11] For information about the ECB's foreign exchange intervention operations, see European Central Bank (2001); for Japan, see http://www.mof.go.jp/english/e1c021.htm; and for the United States, see http://www.ny.frb.org/pihome/news/forex/.

[12] The ECB drew on three days from a foreign exchange swap arrangement signed with the U.S. Federal Reserve Bank of New York in the aftermath of the terrorist attacks, which alleviated liquidity demands that could have otherwise generated large pressures on the exchange rate. However, it cannot be considered foreign exchange intervention because the purpose of the operation was not to affect exchange rates but to smooth potential disruptions in the payment systems. Moreover, although a foreign exchange swap theoretically involves

Most central banks in developing and transition economies participated in their foreign exchange markets across all exchange rate regimes and degrees of market access during 2001. Almost all of the survey respondents reported that their central banks traded foreign exchange in the spot foreign exchange market and virtually all of those who answered the corresponding question indicated conducting foreign exchange intervention (Appendix Table 2).[13] Most of the foreign exchange intervention took place in spot foreign exchange markets through foreign exchange transactions arranged by telephone conversations with banks as main counterparties (Appendix Table 3).[14]

The prevalence of foreign exchange intervention can be seen even in the more flexible exchange rate regimes.[15] For example, in a managed floating exchange rate regime, the monetary authority influences the movements of the exchange rate through interest rate changes and active foreign exchange intervention, without specifying (or precommitting to) a preannounced path for the exchange rate. In an independently floating exchange rate regime, foreign exchange intervention may be conducted to moderate the rate of change of the exchange rate and preventing undue fluctuations in the exchange rate, rather than establishing a level for it. These intervention policies are consistent with the Fund's Principles for the Guidance of Members' Exchange Rate Policies, which call for a Fund member's foreign exchange intervention "if necessary to counter disorderly conditions, which may be characterized, among other things, by disruptive short-term movements in the exchange value of its currency."[16]

Conversely, little foreign exchange intervention is seen in some of the less flexible exchange rate regimes. The survey results do not support the view that central banks manage all the least flexible exchange rate regimes with frequent foreign exchange intervention. This finding may be surprising because, in the typical textbook exposition of fixed exchange rate regimes, the central bank stands ready to buy or sell foreign exchange to defend a given level of the exchange rate. Killeen and others (2001) provide a possible explanation within a foreign exchange market operating without controls. In their model, the private sector, not

---

simultaneous spot and forward foreign exchange operations, market makers hedge their exposure by operations in the money market rather than on the foreign exchange market.

[13] The Survey did not obtain information about the frequency of foreign exchange intervention in developing and transition economies.

[14] For an analysis of these and other operational aspects of foreign exchange intervention, see Canales-Kriljenko, Guimarães, and Karacadag (2003, forthcoming).

[15] Exchange rate regime classification based on de facto policies is discussed in Ishii and others (2003).

[16] The Guidelines are electronically available at http://www.imf.org/external/pubs/ft/sd/index.asp?decision=5392-(77/63).

the central bank, absorbs the innovations in the foreign exchange order flow when the fixed exchange rate regime is credible.[17] When exchange rate expectations are anchored, foreign exchange intermediaries would buy foreign exchange in the presence of pressures for domestic currency depreciation and sell it in the presence of those for currency appreciation. In other words, foreign exchange intermediaries would conduct stabilizing speculation, whose profitability would depend on the size of the bid-offer spread.

III. Sterilized or Not Sterilized?

Foreign exchange intervention by central banks in developing and transition economies may be more effective in affecting exchange rates than foreign exchange intervention by the central banks issuing the major international currencies, among other things, because the foreign exchange intervention by the former is not always fully sterilized.

The economic literature on foreign exchange intervention recognizes that unsterilized foreign exchange intervention has an effect on the path of exchange rates (Almekinders, 1995). Changes in the money supply have a long-run effect on its price in terms of goods and other currencies, although the adjustment on the exchange rate is usually much faster than that on goods' prices and may involve overshooting. The change in the money supply used to achieve an exchange rate objective may be accomplished by either unsterilized foreign exchange intervention or changes in the central bank's net domestic assets.[18]

When central banks issuing the major international currencies intervene, they tend to sterilize their foreign exchange interventions to achieve their short-term operating targets of monetary policy, usually short-term interest rates (Craig and Humpage, 2001). The Fed sterilizes its foreign exchange intervention to keep the amount of bank reserves at levels that are consistent with the established monetary policy goals.[19] In particular, liquidity is adjusted for consistency with the federal funds target. The ECB has sterilized its foreign exchange

---

[17] The foreign exchange order flow is transaction volume that is given a positive sign for foreign exchange transactions initiated by buyers of foreign exchange and a negative sign for those initiated by sellers of foreign exchange. Thus, aggregate foreign exchange order flow is a measure of excess demand for foreign exchange.

[18] Several developing and transition economies use unsterilized foreign exchange operations instead of money market operations to achieve other domestic or external objectives. In particular, in thin domestic money markets it may be more efficient to manage liquidity through unsterilized foreign exchange operations.

[19] See U.S. Fed Point 44 available at http://www.ny.frb.org/pihome/fedpoint/fed44.html.

intervention on the few occasions that it has been in the market (Frenkel and others, 2001).[20] The Bank of Japan conducts foreign exchange intervention as the agent of the Minister of Finance with funds from a special account of the Japanese Government. Thus, foreign exchange intervention does not affect the money base. Foreign exchange purchases are funded by issuing short-term yen-denominated bills and yen purchases by selling foreign exchange funds from the special account in the market (Bank of Japan, 2000 and Ito, 2002).

Unlike the Fed, the ECB, or the Bank of Japan, not all central banks in developing and transition economies routinely fully sterilize their foreign exchange interventions. In particular, about 10 percent of the survey respondents reported that foreign exchange intervention is never sterilized; about half indicated that it is sometimes sterilized; and about 20 percent said it is always sterilized. About 25 percent of survey respondents did not answer the corresponding section of the survey.

The frequency of sterilization varied slightly by exchange rate regime and market access. Countries that sometimes sterilize their foreign exchange interventions can be found in almost all types of exchange rate regimes (Appendix Table 4). The countries that never sterilize are concentrated in the less flexible exchange rate regimes as could be expected, but account for only a small share of all countries following these exchange rate regimes (Appendix Table 5). The countries that always sterilize their foreign exchange interventions are more likely to be found in the more flexible exchange rate regimes with market access, but can also be found in countries following soft peg exchange rate regimes (Appendix Table 6).

The finding that central banks in developing and transition economies do not always fully sterilize their foreign exchange interventions should not be surprising. Unlike the major central banks that follow short-term interest rate targets, these countries follow a wide array of monetary policy frameworks that allow some room for unsterilized intervention. In addition, many authors have argued that under certain conditions, the optimal degree of sterilization is not necessarily fully sterilizing one's foreign exchange intervention and depends on the nature of the shocks that hit the economy and the objectives of the authorities.[21] This literature revolves around the issue of the optimal exchange rate regime. Of course, whether developing and transition economies were actually following optimal sterilization rules is an empirical issue that is beyond the scope of this paper.

---

[20] The intervention operations conducted during 2001 by the ECB, and not considered in Frenkel and others (2001), were also sterilized. In particular, the foreign exchange intervention conducted on behalf of the Bank of Japan did not affect the money base.

[21] See Boyer (1978), Buiter (1979), Jones (1984), and Roper and Turnovski (1980).

IV. Relative Size of Foreign Exchange Intervention

The size of foreign exchange intervention is in theory an important factor influencing the effectiveness of foreign exchange intervention. In particular, it must be large relative to the total turnover in the foreign exchange market, the stock of domestic money, or the stock of publicly traded domestic and foreign bonds held by the private sector to be effective under several possible channels of influence identified in the literature, namely the balance-of-payments-flows, monetary, and portfolio-balance channels (Rosenberg, 1996).[22] Moreover, the literature has suggested that in the presence of noise traders large amounts of foreign exchange intervention may need to be involved to change the trend of the exchange rate, especially if foreign exchange intervention needs to be kept secret to be effective (Hung, 1997).[23]

Foreign exchange intervention by the central banks issuing the major international currencies accounts for a very small fraction of annual foreign exchange market turnover. Even in the case of the Bank of Japan, foreign exchange intervention against U.S. dollars during the year 2000 accounted for less than 0.2 percent of estimated annual foreign exchange market turnover. However, the size of foreign exchange intervention on any given day may be substantial, reaching a peak of 16 percent of foreign exchange market turnover during the period.[24]

Foreign exchange intervention by some central banks in developing and transition economies accounts for a much larger fraction of foreign exchange market turnover than that conducted by central banks issuing the major international currencies, especially at the interbank level of trading (Appendix Table 7).[25] In six of those countries that responded to the survey, the

---

[22] This holds in the absence of signaling effects and changes in exchange rate expectations—see below. The balance of payments, monetary, and portfolio balance channels have been extensively discussed in the literature and will not be discussed here.

[23] Noise traders conduct foreign exchange transactions following trends and market sentiment rather than on the basis an analysis of the fundamental determinants of exchange rates.

[24] For the calculation, only total turnover in the spot market between yen and U.S. dollars is taken, as documented by the 2001 BIS Triennial Central Bank Survey of Foreign Exchange and Derivatives Market Activity. About 95 percent of foreign exchange intervention by the Bank of Japan is conducted against U.S. dollars.

[25] Only a few Survey respondents provided information of the amounts of foreign exchange intervention and foreign exchange market turnover that permits the comparison. To maintain confidentiality, Appendix Table 7 does not identify the names of the countries that provided the information.

size of foreign exchange intervention exceeds the volume of interbank foreign exchange market turnover (excluding trades with the central bank). In contrast, the size of intervention is below 10 percent of the volume of interbank trading in four countries. The size of foreign exchange intervention is usually significantly smaller as a fraction of bank-customer trading, reflecting the fact that interbank trading in developing and transition economies usually accounts for only a fraction of turnover in the bank-customer segment of the market.[26]

Several reasons could help explain the larger size of foreign exchange intervention by some central banks in developing and transition economies relative to the sizes of their foreign exchange markets. First, central banks in these economies are usually large customers in the foreign exchange market. Second, many central banks in developing and transition economies use a variety of foreign exchange, monetary, and banking regulations to, among other things, increase their relative size in the foreign exchange market. Third, central bank foreign exchange operating practices may prevent the development of an interbank foreign exchange market containing the growth of the turnover in the foreign exchange market.

A. Central Banks as Large Customers in the Foreign Exchange Market

In contrast to the Fed, the ECB, and the Bank of Japan, many central banks in developing and transition economies are important players in the foreign exchange markets, whether on their own behalf or on behalf of their governments. Central banks in developing and transition economies may buy or sell foreign exchange as customers on their own behalf for several reasons. For instance, foreign exchange can be used to meet their foreign expenditures, such as paying their own external debt, or to sell the foreign exchange received from loans to support the balance of payments, including those from multilateral lending institutions. Central banks can also enter the foreign exchange market to adjust the actual level of international reserves to the desired level, for example, to meet some reserve adequacy targets. In addition, central banks in developing and transition economies often buy and sell foreign exchange to defend the level of the exchange rate or to reduce exchange rate volatility.

Many central banks in developing and transition economies also conduct foreign exchange operations on behalf of their governments, state enterprises, and nonbudgetary government agencies. More than half of the survey respondents reported that the central bank is the exclusive foreign exchange agent of the government with the government trading foreign exchange only with the central bank (Appendix Table 8).[27] State-owned enterprises and

---

[26] In contrast, interbank trading accounts for most of the foreign exchange market turnover among the major international currencies.

[27] In some countries, the government is not allowed to hold foreign currency deposits and must surrender its foreign exchange to the central bank. In others, the government may keep

nonbudgetary government agencies in many developing and transition economies are also required to trade foreign exchange exclusively with the central bank. This occurs with state-owned enterprises in about 8 percent of the survey respondents and government agencies in 15 percent of them.

The governments and their agencies in developing and transition economies are often a very important source of foreign exchange, especially in nonemerging markets where the size of the government in the economy is relatively large. In particular, the government, state enterprises, and nonbudgetary government agencies account for a large portion of foreign exchange traded in many countries. The concentration arises naturally in many developing and transition economies where financial aid from foreign donors is the main source of foreign exchange. It also occurs in countries where state enterprises obtain the bulk of the export receipts of the country and in some open economies where foreign exchange traded domestically mainly arises from taxes and royalties paid in foreign exchange. Finally, the government often becomes a large supplier of foreign exchange in countries where the fiscal deficit is financed abroad.

Moreover, many central banks in developing and transition economies sometimes conduct foreign exchange operations with government entities to achieve exchange rate policy objectives. In particular, on several occasions governments and state-owned companies have borrowed abroad with the main purpose of affecting the evolution of the exchange rate, rather than to finance fiscal expenditures or the companies' operations. As documented by Taylor (1982), this form of secret foreign exchange intervention was also practiced in some developed countries in the late 1970s.

B. Regulations that Increase the Relative Size of Foreign Exchange Intervention

Many central banks in developing and transition economies often use foreign exchange controls and monetary regulations not only to directly reduce pressures on the foreign exchange market, but also to increase the effectiveness of their foreign exchange intervention by raising the size of intervention relative to the foreign exchange market.[28]

---

foreign exchange deposits in or out of the central bank, but when it decides to exchange them, it has to conduct the exchange through the central bank.

[28] None of the measures described in this section are currently used by the central banks issuing the major international currencies.

Foreign exchange controls

Foreign exchange controls increase the size of foreign exchange intervention relative to the market by either reducing the size of the foreign exchange market or by concentrating the foreign exchange supply in the hands of the central bank.

Capital controls

If comprehensive, capital controls can reduce cross-border movements of capital and the volume of foreign exchange market turnover, increasing the relative size of central bank foreign exchange intervention.[29] Banning cross-border investments is a way of discouraging nonresidents from using the domestic currency and residents from using foreign currencies and thus reducing the potential volume of transactions in the foreign exchange market. Comprehensive capital controls prevent the large movement of capital and large increases in foreign exchange market turnover that accompany deviations from interest rate parity not explained by differences in risk premiums. Thus, besides the effect of increasing the relative size of foreign exchange intervention, they provide some room for maneuver to conduct independent monetary and exchange rate policies.

Surrender requirements to the central bank

A surrender requirement is an obligation to sell foreign exchange proceeds within a specified timeframe, usually from exports. When directed to the central bank, surrender requirements increase the central bank's relative size of foreign exchange intervention, bargaining position, and information advantage. Comprehensive surrender requirements of this kind concentrate the foreign exchange supply in the hands of the monetary authority and turn the central bank into the main foreign exchange intermediary. In this position, the central bank can better influence the path of the exchange rate by partially controlling the supply of foreign exchange. In practice, surrender requirements exist in about 40 percent of the survey respondents, but they are seldom directed to the central bank (Appendix Table 9).[30]

Prohibitions on interbank foreign exchange trading

Prohibitions on interbank foreign exchange trading limit the size of the foreign exchange market, increasing the relative size of foreign exchange intervention. In a few developing and

---

[29] For review of country experiences with the use and liberalization of capital controls, see Ariyoshi and others (2000).

[30] Surrender requirements to the government may be motivated by a desire to allocate foreign exchange to particular uses, to make more foreign exchange available to the central bank for foreign exchange intervention in periods of pressure on the exchange rate, and to meet public foreign exchange expenditure commitments—among the most important reasons.

transition economies, banks are allowed to conduct foreign exchange trading only on behalf of their customers. Banks can still conduct foreign exchange intermediation, buying from sources of foreign exchange and selling to end-users of foreign exchange, but cannot engage in market making activities. The prohibitions are more likely in nonemerging markets and in the less flexible exchange rate regimes (Appendix Table 10).[31]

Regulations hindering the taking of net open foreign exchange positions

Limits on net open foreign exchange positions reduce the size that the foreign exchange market would have in the face of pressures on the value of the domestic currency. The rapid building of net open foreign exchange positions, such as those that take place during speculative attacks, rapidly increases the size of the foreign exchange market, decreasing the relative size of the foreign exchange intervention that is feasible with available international reserves.[32]

Many central banks in developing and transition economies put in place a combination of measures to hinder the taking of net open foreign exchange positions by financial institutions.[33] Most developing and transition economies impose limits on the level and daily variations of net open foreign exchange position of financial institutions (Appendix Tables 11 and 12). The net open foreign exchange positions subject to limits usually include open forward foreign exchange positions, since unhedged forward foreign exchange positions can trigger large pressures on the spot exchange rates when banks need to hedge their exposure and cannot find an adequate counterparty to take the opposite forward foreign exchange position.

About half the survey respondents have in place measures that restrict the operation of forward markets reducing the ability of nonfinancial institutions to fund speculative positions, but also to hedge exchange rate risk. In particular, about 15 percent of survey respondents explicitly prohibit banks from issuing forward contracts and about 40 percent impose certain requirements on banks for offering forward contracts, most notably the requirement that banks offer these contracts only for hedging the exchange rate risk of legally permitted underlying international transactions. Foreign exchange regulations in some countries also control the maturity of the forward contracts offered to customers. About

---

[31] The central bank thus reduces competition from the market in setting exchange rates, which increases the impact of foreign exchange intervention on the exchange rate.

[32] The limits also prevent banks from excessively building their net open foreign exchange positions with foreign exchange obtained from central bank foreign exchange intervention, thus allowing the foreign exchange provided to the central bank to reach the end-customer.

[33] Net open foreign exchange positions also play an important prudential role limiting banks' exposure to exchange rate risk (Abrams and Beato, 1998).

45 percent of survey respondents allow banks to issue forward contracts without any controls. However, the scope for speculative net open position taking is limited by the level of development, liquidity, and depth of the market. In particular, only 9 percent of survey respondents consider their forward foreign exchange markets to be developed, liquid, and deep, while 30 percent of survey respondents consider them to be undeveloped, illiquid, and shallow (Appendix Table 13).[34]

Monetary regulations

Monetary regulations can increase the relative size of central bank foreign exchange intervention by reducing the residents' use of foreign currencies and nonresidents' use of the domestic currency.

To reduce the scope for currency substitution, most countries that issue their own currencies have granted a series of legal privileges to their domestic currencies (Baliño and Canales-Kriljenko, 2001). Residents usually must use their domestic currency as means of payment. In particular, monetary regulations in many of the survey respondents give the domestic currency the exclusive role of means of payment (forced tender) or, at least, the advantage of legal tender so that it must be accepted in payment for financial obligations. Moreover, about half of the survey respondents explicitly prohibit their residents from making payments to other residents in foreign currencies (Appendix Table 14).

Most countries permit residents to use foreign currencies as a store of value. Practically all survey respondents allowed banks to accept foreign currency deposits, especially from exporters.[35] Some developing countries explicitly prohibit other private sector residents from holding foreign currency deposits in domestic banks. Banks may also accept foreign currency deposits from the public sector, especially from state enterprises. The number of countries allowing their financial systems to offer foreign currency deposits to nonresidents was smaller. The degree of dollarization of private sector deposits was above 10 percent in about half of the survey respondents, reaching the 75–100 range in a few countries (Appendix Table 15).[36]

---

[34] In contrast, about 40 percent of the Survey respondents perceived their spot foreign exchange markets to be developed, liquid, and deep, while only 6 percent perceived them to be undeveloped, illiquid, and shallow.

[35] When the country imposes the requirement to surrender export receipts to the foreign exchange market, the exporter can often keep foreign exchange earnings in a foreign currency account for a period before she must sell the foreign exchange.

[36] The Survey did not capture information on the number of countries prohibiting financial contracts from being indexed to the exchange rate, which would preserve the store of value role of foreign currencies and could give rise to exchange rate pressures.

In addition, many countries imposed controls on the use of their domestic currencies by nonresidents abroad. This was the case in about a third of developing and transition economies. In addition, many countries include outright prohibitions on short-term lending in domestic currency to nonresidents to avoid fueling speculation in foreign exchange markets. In particular, about 30 percent of survey respondents explicitly prohibit their banking systems to lend domestic currency to nonresidents (Appendix Table 16).

C. Central Bank Foreign Exchange Operating Practices That Increase the Relative Size of Foreign Exchange Intervention

Foreign exchange operating practices by central banks can increase the size of foreign exchange intervention relative to the foreign exchange market. For example, many central banks in developing and transition economies act like market makers and set extremely narrow bid-offer spreads.[37] This practice reduces foreign exchange transactions, particularly at the level of interbank trading because banks cannot compete with the central bank in conducting foreign exchange intermediation.[38] The low level of foreign exchange market turnover tends to increase the relative size of the central bank intervention in the foreign exchange market.

Central banks can act as market makers in most exchange rate regimes. The central bank becomes a market maker when it sets firm two-way (buying and selling) exchange rates at which other dealers can trade, usually up to a certain amount established by market practices. For example, under a fixed exchange rate regime, central banks fix a rate and stand ready to meet any supply or demand imbalance at that rate. They may also behave as market makers in several other exchange rate regimes with different degrees of flexibility. In a crawling band, for example, the central bank sets two-way quotations with a wide bid-offer spread. In addition, central banks often conduct heavy intramarginal foreign exchange intervention to try to keep the exchange rate away from the band margins. They also could do the same even in countries following independently floating exchange rate regimes as long as they limit their foreign exchange intervention to preventing undue fluctuations in the exchange rate, rather than establishing a level for it.

A fixed bid-offer spread offered by the central bank may be smaller than the one that would prevail in the market. Without central bank participation, the bid-offer spread may vary over time and depend on country specific variables and market conditions. The bid-offer spread

---

[37] In addition, some countries directly issue regulations directly limiting the size of the bid-offer spread. In practice, many central banks in developing and transition economies set a fixed bid-offer spread across a wide variety of exchange rate regimes (Appendix Table 17).

[38] Narrow bid-offer spreads set by the central bank appear to have prevented the development of interbank foreign exchange markets in several Fund members.

could increase with the exchange rate volatility (which in turn depends on the rate of currency depreciation) and decrease with expected trading volumes. The bid-offer spread increases to compensate foreign exchange intermediaries for the higher exchange rate risk associated with higher exchange rate volatility, which affects the unwanted net open foreign exchange positions that arise in the process of trading. They may decrease with expected trading volumes reflecting economies of scale and competition among market makers. In addition, bid-offer spreads and (unexpected) trading volumes may both rise in response to the arrival of information. [39] The bid-offer spread could also depend on the presence of the central bank in the foreign exchange market. In particular, when the central bank does not behave as a market maker, foreign exchange intervention can either increase or decrease the bid-offer spread.[40]

V. Information Advantage

Central banks in some developing and transition economies may be more effective in affecting exchange rates through foreign exchange intervention than those in economics issuing the major international currencies because the former have a greater information advantage over the latter.[41]

Foreign exchange intervention can be more effective when the central bank has an information advantage if market participants change their expectations about the future path

---

[39] These predictions are based on inventory cost models. See Galati (2000), who finds evidence of the positive correlation between bid-offer spreads and volatility but fails to find evidence of the relationship between bid-offer spreads and expected or unexpected trading volumes.

[40] Market makers may increase the size of the bid-offer spread when they fear they could deal with a better informed market participant, like the central bank (see Naranjo and Nimalendran, 2000). Foreign exchange intervention could decrease the bid-offer spread when it unexpectedly increases trading volumes in the foreign exchange market.

[41] Having more information provides an edge to the central bank only to the extent that both groups of players (the central bank and the private sector) have the same capacity to analyze and make inferences about the exchange rate based on the information obtained. This is clearly not the case in all developing and transition economies where the private sector may have developed an ability to make better inferences about the future path of monetary and exchange rate policies based on the publicly available information. The private sector may better analyze publicly available information than the central banks in some developing and transition economies.

of the exchange rate after intervention operations take place.[42] In such a situation, foreign exchange intervention will affect exchange rates well in excess of its contribution to aggregate foreign exchange order flow. A change in the expected exchange rate path could lead market participants to modifying their net open foreign exchange position. This could lead to a change in aggregate foreign exchange order flow, multiplying the effect of the foreign exchange intervention.

A. What Information Advantage Do Central Banks Have?

Central banks in developing and transition economies—especially in those economies that are not emerging markets—may not only have a better idea of the path for the supply of domestic currency or the targeted level of the exchange rate than other market participants, but also on the supply of foreign currency. More technically, they may have a better grasp of aggregate foreign exchange order flow than the rest of market participants. The advantage relative to the central banks issuing the major international currencies, however, consists of having a better grasp on foreign exchange order flow.

More information about monetary and exchange rate developments and policies

Like the central banks issuing the major international currencies, many central banks in developing and transition economies may, in principle, know better than other foreign exchange market participants their own intentions with respect to monetary and exchange rate policies (including foreign exchange intervention), while other market participants have to infer them from publicly available information and behavior. For example, central banks in developing and transition economies may know better their target value for the exchange rate, if any, than the rest of the participants in the foreign exchange market. In addition, some central banks in developing and transition economies may have access to information affecting exchange rates before other foreign exchange market participants, either because they compile the statistics or obtain them from the official statistical agency before the data are released.[43]

---

[42] Many of the theoretical studies of the effectiveness of sterilized foreign exchange intervention rely on the existence of an information advantage to the central bank. See Eijffinger and Verhagen (1997), Lyons (2001), Mussa (1981), Popper and Montgomery (2001), and Vitale (1999).

[43] Many central banks in developing countries monitor the day-to-day domestic currency liquidity position of the main participants in the foreign exchange market, whether through reporting requirements or through the monitoring of accounts at the central bank to meet reserve requirements. This gives information to the central bank of which market participants have the domestic currency liquidity to buy foreign exchange in large amounts. It also allows the central bank to monitor the effect of intervention on banks' domestic currency liquidity.

Some central banks in developing and transitional economies, however, may not have a real information advantage with regard to the future path of monetary policy. First, many central banks in developing and transition economies already abide by the IMF's Code of Good Practices on Transparency in Monetary and Financial Policies, which implies that they already disclose vast amounts on information about their intended policies. Second, many central banks in developing and transition economies do not have real central bank independence. Although they may formulate a comprehensive monetary program, monetary policy may need to be changed with shifting political circumstances. Moreover, the private sector may have a better sense about the potential political shifts by hiring political analysts than the authorities in charge of formulating policy. The private sector may also realize that central bank operations to contain large pressures on the currency may be futile. In particular, managing money supply in the face of large pressures may not be credible, raising interest rates may not be feasible, and foreign exchange intervention may be considered a desperate measure with no chance of success, signaling a position of vulnerability rather than of strength. Finally, the marginal advantage of getting information about fundamentals in advance of the market may not always be relevant, as sometimes high-frequency movements in the exchange rate do not reflect fundamental developments.

More information about foreign exchange order flow

To infer exchange rate pressures embedded in foreign exchange market activity, the literature on the microstructure of foreign exchange markets emphasizes the importance of foreign exchange order flow. Intuitively, a positive foreign exchange order flow reflects an excess demand for foreign exchange that would tend to depreciate the domestic currency. Lyons (2001) surveys the literature that has empirically documented the positive relationship between order flow and currency depreciation and Vitale (2001) puts forward a theoretical argument in the context of foreign exchange intervention.

Some central banks in developing and transition economies make use of their ability to issue regulations to obtain an information advantage over other market participants, among other things, about foreign exchange order flow.[44] They require market participants to submit information about their foreign exchange activities, sometimes in great detail.[45] The information advantage arises because only a subset of the information collected is made available to the other foreign exchange market participants. The data requested varies significantly across countries, ranging from all information on each of the foreign exchange transactions made by each authorized dealers to summary statistics, sometimes weighted by

[44] Authorities in most advanced economies usually do not have this prerogative established by law because the information generated in the process of trading foreign exchange within the private sector is considered to be proprietary.

[45] The provision of such information is often a condition for being able to conduct foreign exchange intermediation, to the extent that sometimes the obligation to provide information to the central bank is embedded in the foreign exchange license.

the size of the transactions. The collected information available to central banks in developing and transition economies often includes data for every licensed dealer on exchange rates (whose dispersion reflects the uncertainty in the foreign exchange market) and foreign exchange transaction volumes (Appendix Table 18).[46]

From the information on foreign exchange transactions, central banks could infer the size of foreign exchange order flow aggregated at some levels of trading.[47] For example, in transactions between banks and their customers, foreign exchange market turnover usually equals aggregate foreign exchange order flow because customers are usually those initiating the foreign exchange transaction at the exchange rate quoted by dealer banks, especially in competitive foreign exchange markets in which market makers operate. However, in transactions among banks, foreign exchange market turnover usually differs from foreign exchange order flow. It is not possible to know in a transaction among banks which bank initiated the transaction by just looking at the volume of the transaction. The lack of foreign exchange order flow data at the interbank level is less important in developing and transition economies with shallow interbank markets because interbank trading accounts for a smaller fraction of the total foreign exchange order flow in the market.

Information about the net open foreign exchange positions of authorized dealers could be used to anticipate changes in order flow, as dealers with currency exposure are likely to go to the market to cover their positions, affecting order flow, when changes in the expected path of the exchange rate take place. This information also helps identify foreign exchange dealers that may be taking large net open foreign exchange positions and contributing to pressures on the exchange rate. In most developing and transitions countries, banks must report to the central bank their net open foreign exchange positions usually more than once a month, but the information obtained is usually never published.[48] The most prevalent frequency of reporting is daily. Weekly reporting is more common than monthly in all regions, except in

---

[46] The central banks issuing the major international currencies do not have the luxury of frequent data on worldwide foreign exchange market turnover involving their currencies. The statistics compiled by the Bank for International Settlements provide a snapshot of the volume traded in the worldwide foreign exchange market during one month every three years. Moreover, the information is disclosed with a lag that takes about six months.

[47] Reporting requirements provide a good picture of foreign exchange market turnover in a country where institutions reporting to the central bank concentrate the bulk of foreign exchange market turnover. This is more likely to be the case in about half of the countries in the sample, which actually prohibit the offshore trading of their currencies (Appendix Table 19).

[48] The United States requests information on the net open foreign exchange positions of the internationally active international banks every quarter, information that is available at http://www.fms.treas.gov/bulletin/index.html.

Eastern Europe. About 70 percent of the countries with net open foreign exchange position limits, however, reported that they never published this information (Appendix Table 20).

Besides the information obtained from reporting requirements, some central banks in developing and transition economies obtain privileged information about foreign exchange order flow in some centralized trading environments, for instance, when conducting foreign exchange auctions. Central banks conducted most foreign exchange auctions in 15 countries developing and transition economies that responded to the survey (Appendix Table 21). The central bank actively participated in the auctions in three countries, but it indirectly participated in many other auctions by deciding the amounts auctioned. A few central banks in developing and transition economies also have privileged access to the information generated in electronic broking systems.[49] The central bank either is the main provider or has access to the information from electronic broking systems provided by the private sector, usually adapting infrastructure available for securities' trading at stock exchanges.[50, 51] The central bank may be able to compute foreign exchange order flow directly in countries where it observes foreign exchange transactions that take place among banks through an electronic broking system. However, this would only cover a fraction of the total foreign exchange order flow, since banks can usually trade among each other outside of those trading platforms.

The control of the payment and settlement systems in the country could also give a marginal information edge to the central bank, as many central banks in developing and transition economies are directly involved in the settlement of foreign exchange transactions. In particular, they allow the settlement of one or both legs of foreign exchange transactions at central bank accounts. In many of the countries represented by survey respondents, where financial institutions are often required to open accounts at the central bank to meet reserve

---

[49] In electronic broking systems, market participants place orders to buy or sell foreign exchange—orders which are electronically matched in a centralized scheme.

[50] Electronic broking systems are in place in about 40 percent of emerging market economies (Appendix Table 22).

[51] Granting access to information from electronic broking systems is not the norm in developed or developing and transition countries. The most widely used electronic broking systems in developing and transition economies are the Reuters 2000-2 and 3000-Spot matching systems, which do not grant access to the trading information to the central bank. The most widely used electronic broking system for trading the major international currencies is EBS. The trading protocol in this system does not allow the central bank to accurately measure the amount being traded and it is very unlikely that EBS would grant access to privileged information to the central banks issuing the major international currencies. Of the currencies of developing and transition economies, only those of Mexico and Singapore are currently traded in EBS.

requirements, the debiting and crediting take place at central bank accounts. The foreign currency leg settlement requires that foreign currency accounts be opened at the central bank, a situation that often arises in dollarized economies in which the reserve requirements on foreign currency deposits are denominated in foreign currency (Appendix Table 23).[52] However, the information advantage obtained from the control of the payment and settlement systems may be difficult to obtain in practice unless special arrangements for the settlement of foreign exchange transactions are in place to distinguish foreign exchange from other transactions.

Some other central banks in developing and transitional economies, however, may not have a real information advantage with regard to foreign exchange order flow. In economies where the banking system is highly concentrated, the few institutions controlling the bulk of foreign exchange transactions can get a very good grasp of the direction of aggregate foreign exchange order flow by observing a representative fraction of it. Being in close contact with the end customers, these institutions can arguably have a better understanding of prevailing market sentiment than the central bank, even if the central bank sees the aggregate foreign exchange order flow on a daily basis.[53] The same could take place even in economies without high concentration of foreign exchange trading activity when foreign exchange dealers exchange information over the course of trading. Moreover, foreign exchange intermediaries may have access to the information about foreign exchange order flow faster than the central bank in some developing and transition economies as they get the information in real time while the central bank gets the information at the end of the day.[54]

---

[52] The fact that most countries also reported that the foreign currency leg is settled at the accounts of correspondent banks abroad suggests that the central bank accounts serve as an intermediate netting scheme, but that the final payments must be done at the accounts of correspondent banks, transfering money to or from the central bank.

[53] Appendix Table 24 reports the number of banks, foreign exchange bureaus, voice brokers, and other market participants in many surveyed countries. It also identifies how many of those participants play the role of market makers.

[54] Although this is increasingly unlike as many central banks in developing and transition economies already have access to real-time information systems on exchange rates and maintain close contacts with the main market participants.

B. Information Advantage and the Transparency of Foreign Exchange Intervention

Based on their information advantage, the central banks can choose the degree of transparency of foreign exchange intervention that makes it more effective.[55, 56] To produce a change in exchange rate expectations, on some occasions the central bank would need to announce its foreign exchange intervention either directly or through visible operations. For example, when the central bank believes, based on its information advantage on market fundamentals and developments, that the level the exchange rate has reached is unwarranted, the central bank could signal its intentions (or threaten) to tighten monetary policy in the future if the misalignment is not corrected. This can be done by announcing this policy and simultaneously conducting foreign exchange intervention in support of the domestic currency. An announced foreign exchange intervention could be required, besides the monetary policy announcement, to achieve the change in exchange rate expectations in countries where the authorities and institutions suffer from credibility problems (Mussa, 1981).

On other occasions, however, the central bank would benefit from keeping its foreign exchange intervention secret.[57] The information advantage could allow the central bank to detect situations in which market sentiment is shifting (by observing foreign exchange order flow and bank-by-bank net open foreign exchange positions), which could allow for a change in the exchange rate trend to take place. In the presence of noise traders, secret foreign exchange intervention could produce an effect on the trading rules followed by noise traders that could lead them to change their net open foreign exchange positions and reinforce the effect of foreign exchange intervention. This effect on trading rules would be easier to achieve in when trading becomes thin in the market, but it may come at the cost of temporarily increasing exchange rate volatility (Hung, 1997). The central bank may also want to keep its foreign exchange intervention secret when it fears that the private sector would use the disclosed information against the central bank. The informational advantage to the central bank may protect it to some degree from speculative attacks and falling into speculative trading games from large traders in the market.[58]

---

[55] For an early discussion of the pros and cons of transparency of central bank foreign exchange operations, see Enoch, 1998.

[56] The Fund's Code of Good Practices on Transparency in Monetary and Financial Policies does not directly deal with issues related to the transparency of foreign exchange operations.

[57] It may not be so easy, however, to keep foreign exchange intervention secret, especially on a systematic basis.

[58] Some central banks keep secret their foreign exchange operations not intended to affect exchange rates to avoid misperceptions, while others disclose all the details of these operations for the same reason.

How transparent is foreign exchange intervention?

The central banks issuing the major international currencies report their foreign exchange interventions with a lag, but they do not always announce their foreign exchange interventions. The Fed does not normally announce or confirm its foreign exchange intervention. The financial press often reports foreign exchange intervention activity, but formal studies disagree about their accuracy (Klein, 1993 and Osterberg and Humes, 1993). Foreign exchange intervention activity is officially reported quarterly on the web. The Fed has released daily foreign exchange intervention data with a one-year lag, for about the last 10 years. The ECB has announced some of its foreign exchange intervention operations and acknowledged that it conducted foreign exchange intervention that was not reported in the press (Fatum and Hutchinson, 2002). Foreign exchange interventions by the Bank of Japan are reported soon after they occur by news agencies and they become public information, but the Bank of Japan seldom confirms these foreign exchange interventions (Ramaswamy and Samiei, 2000). In 2002, however, the authorities released their daily foreign exchange intervention data since the early 1990s, information that is updated quarterly.[59]

Central banks in developing and transition economies are divided on the issue of transparency of foreign exchange intervention. The survey results suggest that about half of the central banks in developing and transition economies that conduct foreign exchange intervention announce their presence in the foreign exchange market. The responses were very similar across emerging and nonemerging markets, but varied somewhat by exchange rate regime. In particular, countries with conventional fixed pegs and with exchange rates within crawling bands tend not to announce their foreign exchange interventions maybe because these exchange rate regimes imply that the central bank will intervene when the pegs or bands are under pressure (Appendix Table 25). In only a few countries is the announcement made before the actual foreign exchange intervention. In particular, about 16 percent of central banks in developing and transition economies conducting foreign exchange intervention announce ex ante their foreign exchange interventions in the more flexible exchange rate regimes and in some countries with conventional fixed pegs against a single currency. These announcements never take place in other exchange rate regimes (Appendix Table 26). About 25 percent of central banks that responded to the question about transparency of foreign exchange intervention indicated that they publish data on their foreign exchange interventions, sometimes with a lag (Appendix Table 27), although the figure is slightly higher for emerging markets.

[59] The data is available at http://www.mof.go.jp/english/e1c021.htm.

VI. Moral Suasion

Many central banks in developing and transition economies use moral suasion to support their foreign exchange intervention. Moral suasion is possible because the central bank usually requires a foreign exchange license for allowing institutions to conduct foreign exchange intermediation in their foreign exchange markets (Appendix Table 27). In addition, central banks in developing and transition economies are often the supervisory authority for the main authorized dealers, which are usually banks. Central banks in these countries monitor the behavior of individual market participants and threaten to withdraw the foreign exchange license, suspend an authorized dealer from conducting foreign exchange intermediation, or trigger close on-site inspections of the institutions that, for example, are perceived to increase exchange rate volatility. In addition, they use their large presence in the market to threaten not to trade with those agents that challenge the central bank's objectives in the foreign exchange market.[60] Central banks could also threaten to modify foreign exchange regulations to make foreign exchange intervention more effective and affect the profitability of banks speculating against the central bank.

Foreign exchange intervention may be, or at least appear to be, more effective when the central bank exerts moral suasion. Moral suasion would provide an extra signal to market participants that the authorities are serious about a given exchange rate objective, but of course, how serious the signal is taken would depend on the funds available to the central bank for foreign exchange intervention and rate of growth of the central bank net domestic assets. In addition, excessive use of moral suasion would contribute to a lack of development of the interbank foreign exchange market and increase the relative size of the central bank in the foreign exchange market. While both moral suasion and foreign exchange intervention could contribute to a particular effect on the exchange rate, formal tests are likely to attribute the entire effect to foreign exchange intervention because it would be very difficult to control for moral suasion.

VII. Conclusions

The evidence obtained from the IMF's 2001 Survey on Foreign Exchange Market Organization indicates that foreign exchange intervention is a widely used policy instrument in developing and transition economies. The survey provides a wealth of information about foreign exchange intervention practices, such as the degree of sterilization and transparency, as well as the environment in which these operations take place, including the main foreign exchange market structures and regulations.[61]

---

[60] Neely (2000) found that 23 percent of the respondents to his survey used moral suasion as an indirect method for foreign exchange intervention.

[61] See also Canales-Kriljenko (2003) for a deeper analysis of foreign exchange market organization in developing and transition economies.

Central banks in some developing and transition economies may be able to conduct foreign exchange intervention more effectively than those issuing the major international currencies because they not always fully sterilize their foreign exchange intervention. In addition, central banks in many developing and transition economies issue regulations and conduct their foreign exchange operations in a way that increases the relative size of foreign exchange intervention in foreign exchange market turnover and the central bank's information advantage. In some of these countries, the regulations and foreign exchange market practices turn the central bank into one of the main foreign exchange intermediaries. Based on their information advantage, the central banks can choose the degree of transparency of foreign exchange intervention that makes it more effective. In addition, some central banks in these countries often use moral suasion to support their foreign exchange intervention. Thus, foreign exchange regulations, including pervasive capital controls, as well as moral suasion could make foreign exchange intervention more effective and are not necessarily just a substitute for intervention.

Future research should assess empirically the effectiveness of central bank foreign exchange intervention in developing and transition economies and analyze its costs and benefits when the intervention is supported by foreign exchange controls and monetary regulations. While these regulations could make foreign exchange intervention more effective, they could also force the central bank to intervene more often than otherwise. The central bank would bear all the cost of smoothing discrepancies in the arrival of orders to the foreign exchange market, because other market participants would not have the incentive to conduct stabilizing speculation.[62] This could potentially increase the exchange rate volatility that would exist in the absence of foreign exchange intervention.

Moreover, even if foreign exchange intervention were effective in reducing, for example, exchange rate volatility, it would be useful to test whether the benefits of reducing exchange rate volatility compensate for the potential costs of these regulations, which may create distortions in resource allocation in the real sector and reduce the opportunities for investment, consumption smoothing, and risk sharing. Moreover, the administrative cost of enforcing the regulations could be substantial, as the authorities spend resources to enforce and update the regulations while the private sector spends resources trying to circumvent them. Efforts at circumvention may also give rise to corruption and other governance problems. Finally, exchange rate stability may be counterproductive in economies where the private sector can borrow abroad, as the private sector may underestimate the risk of loss associated with an eventual currency depreciation, which may encourage international overborrowing.

---

[62] Private sector speculation may be stabilizing or destabilizing depending on the private sector's exchange rate expectations.

REFERENCES

Abrams, R, and P. Beato, 1998, "The Prudential Regulation and Management of Foreign Exchange Risk," IMF Working Paper 98/37 (Washington: International Monetary Fund).

Almekinders, Geert J., 1995, *Foreign Exchange Intervention: Theory and Evidence*, (Aldershot, U.K.).

Ariyoshi, Akira, Karl Habermeier, Bernard Laurens, Inci Otker-Robe, Jorge Iván Canales-Kriljenko, and Andrei Kirilenko, 2000, *Capital Controls: Country Experiences with Their Use and Liberalization*, IMF Occasional Paper No. 190 (Washington: International Monetary Fund).

Baillie, Richard T., Owen F. Humpage, and William P. Osterberg, 1999, "Intervention as Information: A Survey," Federal Reserve Bank of Cleveland Working Paper No. 9918 (Cleveland, Ohio: Federal Reserve Bank).

Baliño, T., and J. Canales-Kriljenko, 2001, "Competing Monetary Roles of the U.S. Dollar, the Euro, and the Japanese Yen in Developing Countries" (unpublished; Kassel: paper prepared for the 13th Economic History Congress).

Bank of Japan, 2000, "Outline of the Bank of Japan's Foreign Exchange Intervention Operations," available via the Internet at http://www.boj.or.jp/en/about/faqkainy.htm.

Boyer, Russell S., 1978, "Optimal Foreign Exchange Intervention," *The Journal of Political Economy*, Vol. 86, No. 6, pp. 1045–55.

Buiter, W.,1979, "Optimal Foreign Exchange Intervention with Rational Expectations" in *Trade and Payments Adjustment Under Flexible Exchange Rates,* ed. by J. Martin and A. Smith (London: Macmillan).

Canales-Kriljenko, Jorge Iván, 2003, "Foreign Exchange Market Organization in Developing and Transition Economies: Results of a Survey," IMF Working Paper, forthcoming.

———, Roberto Guimarães, and Cem Karacadag, 2003, "Foreign Exchange Intervention in the Foreign Exchange Market: Elements of Best Practice," Monetary and Financial Systems Department (formarly Monetary and Exchange Affairs Department) operational paper (Washington: International Monetary Fund).

Catte, P., Galli, G., and Rebecchini, S., 1994. "Concerted Interventions and the Dollar: An Analysis of Daily Data," in *The International Monetary System*, ed. by P. Kenen, F. Papadia, and S. Saccomanni (Cambridge, U.K.: Cambridge University Press), pp. 201–39.

Cheung, Y.W., and M.D. Chinn, 2001, "Currency Traders and Exchange Rate Dynamics: a Survey of the U.S. Market," *Journal of International Money and Finance*, Vol. 20, pp. 439–71.

Craig, Ben, and Owen Humpage, 2001, "Sterilized Intervention, Nonsterilized Intervention, and Monetary Policy," Federal Reserve Bank of Cleveland Working Paper Nos. 1–10 (July).

Dominguez, Kathryn M., 1998, "Central Bank Intervention and Exchange Rate Volatility," *Journal of International Money and Finance*, 17 (1) pp. 161–90, 1998.

———, and Frankel, Jeffrey A., 1993, "Foreign Exchange Intervention: An Empirical Assessment," Chapter 16 in *On Exchange Rates*, by J. A. Frankel, (Cambridge: MIT Press) pp. 327–45.

Eijffinger, Sylvester C. W., 1998, *Foreign Exchangelintervention: Objectives and Effectiveness*, Elgar Reference Collection. International Library of Critical Writings in Economics, Vol. 98 (Cheltenham, U.K. and Northampton, Mass).

———, and W. H. Verhagen,W. H., 1997, "The Advantage of Hiding Both Hands: Foreign Exchange Intervention, Ambiguity and Private Information," Center for Economic Research Discussion Paper No. 9730 (Tilburg University in Netherlands).

Enoch, Charles, 1998, "Transparency in Central Bank Operations in the Foreign Exchange Market," IMF Paper on Policy Analysis and Assessment /98/2 (Washington: International Monetary Fund).

European Central Bank, 2001, *Annual Report*, (Frankfurt: European Central Bank).

Fatum, Rasmus, 2000, "On the Effectiveness of Sterilized Foreign Exchange Intervention," ECB Working Paper No. 10.

———, and Michael M. Hutchison, 1999, "Is Sterilized Foreign Exchange Intervention Effective After All? An Event Study Approach," (University of California at Santa Cruz) Working Paper No. 432.

———, and Michael M. Hutchison, 2002, "ECB Foreign Exchange Intervention and the EURO: Institutional Framework, News, and Intervention," *Open Economies Review*, Vol. 13, No. 4, pp. 413–25(13).

Frenkel, M., C. Pierdzioch, and G. Stadtmann, 2001, "The Foreign Exchange Interventions of the ECB." *Banca Nazionale Del Lavoro Quarterly Review* 54:218, 249–87.

Galati, Gabriele and William Melick, 1999, "Perceived Central Bank Intervention and Market Expectations: An Empirical Study of The Yen/Dollar Exchange Rate, 1993–96," BIS Working Paper Series No. 77.

_____, 2000, "Trading Volumes, Volatility and Spreads in Foreign Exchange Markets: Evidence From Emerging Market Countries," BIS Working Paper 93.

Humpage, Owen F., 1996, "Are Successful Interventions Random Events?" *Federal Reserve Bank of Cleveland Economic Commentary* (March).

_____, 1999. "U.S. Intervention: Assessing the Probability of Success," *Journal of Money Credit and Banking* 31 (4):731–47.

Hung, Juann H, 1997, "Intervention Strategies and Exchange Rate Volatility: A Noise Trading Perspective," *Journal of International Money and Finance*, Volume 16, Issue 5, 19 pp. 779–93.

Ishii, Shogo, 2003, Karl Habermeier, John Leimone, Inci Otker-Robe, and Jorge Ivan Canales-Kriljenko, 2003, *Exchange Arrangements and Foreign Exchange Markets-Developments and Issues*, IMF World Economic and Financial Survey Series (Washington: International Monetary Fund).

Ito, Takatoshi, 2002, "Is Foreign Exchange Intervention Effective?: The Japanese Experiences in the 1990s," NBER Working Paper 8914 (April). Available via the Internet at http://www.nber.org/papers/w8914.

Jones, Michael, 1984, "Optimal Foreign exchange intervention: Evidence from the Bretton Woods Era," *The Review of Economics and Statistics*, Vol. 66, No. 2., pp. 242–55.

Killeen, W., Lyons, R., Moore, M., 2001. Fixed Versus Flexible: Lessons from EMS Order Flow. *NBER Working Paper No. 8491.*

Klein, Michael W., 1993, "The Accuracy of Reports of Foreign Exchange Intervention," *Journal of International Money and Finance*, Vol. 12, 1993, pp. 644–53.

Lyons, R., 2001, *The Microstructure Approach to Exchange Rates* (Cambridge: MIT Press).

Mussa, Michael, 1981, "The Role of Official Intervention," Group of Thirty Occasional Papers Series No. 6.

Naranjo, A., and M. Nimalendran, 2000, "Government Intervention and Adverse Selection Costs in Foreign Exchange Markets," *Review of Financial Studies*, 13 (2), 453–77.

Neely, Christopher J., 2000, "The Practice of Central Bank Intervention: Looking Under the Hood" *Federal Reserve Bank of St. Louis Review*, (May/June) 83(3), pp. 1–10.

Osterberg, William P. and Rebecca Wetmore Humes., 1993, "The Inaccuracy of Newspaper Reports of U.S. Foreign Exchange Intervention," *Federal Reserve Bank of Cleveland Economic Review*, Vol.29, No.4.

Popper, H., and J. Montgomery, 2001, "Information Sharing and Central Bank Intervention in the Foreign Exchange Market," *Journal of International Economics*, 55 (2), pp. 295–316.

Ramaswamy, Ramana and Hossein Samiei, 2000, "The Yen-Dollar Rate: Have interventions Mattered?" IMF Working Paper Series No 00/95 (Washington: International Monetary Fund).

Roper, Don E. and Stephen J. Turnovski, 1980, "Optimal Exchange Market Intervention in a Simple Stochastic Macro Model," *Canadian Journal of Economics*, Vol. 13, pp. 296–309.

Rosenberg, Michael Roy, 1996, *Currency Forecasting: A Guide to Fundamental and Technical Models of Exchange Rate Determination* (McGraw-Hill, New York).

Taylor, Dean, 1982, "Official Intervention in the Foreign Exchange Market, or Bet Against the Central Bank," *Journal of Political Economy*, 90 (April), pp. 256–68.

Vitale, Paolo, 1999, "Sterilized Central Bank Intervention in the Foreign Exchange Market," *Journal of International Economics* 49 pp. 245–67.

_____, 2001, "Foreign Exchange Intervention, Policy Objectives, and Macroeconomic Stability," CEPR Discussion Paper No. 2886 (July).

Table 1. Survey Response Rate, by Exchange Rate Regime and Market Access, 2001 1/

(In percent of Fund member countries in each category)

Exchange rate regimes 2/	Developing and Transition Economies		Total
	Emerging Markets 3/	Other	
No country-specific currency	--	8	7
CAEMC 4/	--	17	17
Other	--	17	13
Country-specific currency	86	54	67
Currency board	67	50	57
Conventional fixed pegs against a single currency	88	63	70
Conventional fixed pegs against a composite	100	71	80
Pegs with horizontal bands within a cooperative arrangement	--	--	--
Pegs with horizontal bands within a Fund supported program	--	67	50
Crawling pegs	100	67	75
Exchange rates within crawling bands	100	100	100
Managed floating, no preannounced path for exchange rate	79	46	60
Independently floating	100	42	63
Total	83	43	56
Memo item:			
Total Fund Members in Developing and Transition Economies (In number of countries)	53	107	160

Note: -- stands for not applicable, zero, or negligible amount.
Source: IMF, 2001 Survey on Foreign Exchange Market Organization.

1/ The 2001 Survey on Foreign Exchange Market Organization was sent to country authorities in all Fund member developing and transition economics on October 2001. Ninety answers were received by March 2002. Emerging market economies are in italics and underlined below.
The Survey respondents are Albania, Angola, Armenia, Azerbaijan, *Bahamas*, *Bahrain*, Bangladesh, Barbados, Belarus, Bhutan, Bolivia, *Brazil*, Bulgaria, Cambodia, Cape Verde, *Chile*, *China (Mainland)*, *Colombia*, Republic of Congo, *Costa Rica*, *Croatia*, *Czech Republic*, Djibouti, *Dominican Republic*, Egypt, El Salvador, *Estonia*, Fiji, *Ghana*, *Guatemala*, Guyana, Honduras, *Hungary*, *India*, *Indonesia*, Iran, *Israel*, *Kazakhstan*, Kenya, *Korea*, Kuwait, Kyrgyz Republic, Lao, *Latvia*, *Lebanon*, Lesotho, Libya, *Lithuania*, Macedonia (FYR), Madagascar, *Malaysia*, *Malta*, *Mauritius*, *Mexico*, *Moldova*, *Morocco*, Mozambique, Namibia, Nepal, Nicaragua, *Oman*, *Pakistan*, Papua New Guinea, Paraguay, Peru, *Philippines*, *Poland*, *Qatar*, *Romania*, Samoa, Sierra Leone, *Singapore*, *Slovak Republic*, *Slovenia*, *South Africa*, *Sri Lanka*, Swaziland, Syria, Tanzania, *Thailand*, Tonga, *Trinidad and Tobago*, *Turkey*, *Ukraine*, United Arab Emirates, *Uruguay*, Vanuatu, *Venezuela*, Yemen, and Zambia.

2/ Follows the IMF's de facto exchange rate regime classification as published in the IMF's *International Financial Statistics*.

3/ Corresponds to the Fund member developing and transition countries considered as emerging markets in the Fund's internal quarterly publication named "Emerging Market Financing: A Quarterly Report on Developments and Prospects".

4/ The Central African Economic and Monetary Community (CAEMC) is itself a conventional fixed peg arrangement.

Table 2. Survey Respondents Conducting Foreign Exchange Intervention, by Exchange Rate Regime and Market Access, 2001 1/

(In percent of countries answering the corresponding Survey question in each category)

Exchange rate regimes 2/	Developing and Transition Economies		Total
	Emerging Markets 3/	Other	
No country-specific currency	--	100	100
CAEMC 4/	--	100	100
Other	--	--	--
Country-specific currency	88	94	91
Currency board	50	100	67
Conventional fixed pegs against a single currency	60	88	77
Conventional fixed pegs against a composite	100	100	100
Pegs with horizontal bands within a cooperative arrangement	--	--	--
Pegs with horizontal bands within a Fund supported program	--	100	100
Crawling pegs	100	100	100
Exchange rates within crawling bands	80	100	83
Managed floating, no preannounced path for exchange rate	100	91	96
Independently floating	91	100	94
Total	88	94	91
Memo item:			
Number of countries answering question	41	35	76
In percent of survey respondents	93	76	84

Note: -- stands for not applicable, zero, or negligible amount.
Source: IMF, 2001 Survey on Foreign Exchange Market Organization.

1/ The 2001 Survey on Foreign Exchange Market Organization was sent to country authorities in all Fund member developing and transition economies on October 2001. Ninety answers were received by March 2002. Table 1 shows the list of respondents.

2/ Follows the IMF's de facto exchange rate regime classification as published in the IMF's *International Financial Statistics*.

3/ Corresponds to the Fund member developing and transition countries considered as emerging markets in the Fund's quarterly publication "Emerging Market Financing: A Quarterly Report on Developments and Prospects".

4/ The Central African Economic and Monetary Community (CAEMC) is itself a conventional fixed peg arrangement.

Table 3. Selected Characteristics of Foreign Exchange Intervention in Developing and Transition Economies, 2001
(In percent of countries answering the corresponding Survey question in each category)

	Market Access		Exchange Rate Regime 1/			Total
	Emerging Markets 2/	Other	Pegged	Intermediate	Flexible	
Foreign exchange intervention conducted						
in the spot market	82	74	61	83	89	78
in the forward market	2	7	6	0	4	4
Main counterparts						
Banks	100	91	94	100	96	96
Government	84	85	82	100	82	84
Exporters and importers	5	4	3	0	7	4
Trading Platforms						
Telephone orders	66	52	64	33	62	59
Online trading systems						
Reuters 2000-1	36	28	33	25	33	32
Electronic broking system	18	9	12	8	16	13

Source: IMF, 2001 Survey on Foreign Exchange Market Organization.

1/ The exchange rate regimes group categories from the IMF's de facto exchange rate regime classification as published in the IMF's *International Financial Statistics*. Pegged regimes include countries without a country specific currency, currency boards, and conventional fixed peg arrangements. Intermediate regimes include pegged exchange rate within horizontal bands, crawling pegs, and exchange rates within crawling bands. Flexible regimes include managed and independently floating exchange rate regimes.

2/ Corresponds to the Fund member developing and transition countries considered as emerging markets in the Fund's quarterly publication "Emerging Market Financing: A Quarterly Report on Developments and Prospects."

Table 4. Survey Respondents that Sometimes Sterilize Foreign Exchange Intervention, by Exchange Rate Regime and Market Access, 2001 1/

(In percent of countries answering the corresponding Survey question in each category)

Exchange rate regimes 2/	Developing and Transition Economies		Total
	Emerging Markets 3/	Other	
No country-specific currency	--	100	100
CAEMC 4/	--	100	100
Other	--	--	--
Country-specific currency	61	67	63
Currency board	--	--	--
Conventional fixed pegs against a single currency	40	67	55
Conventional fixed pegs against a composite	67	--	33
Pegs with horizontal bands within a cooperative arrangement	--	--	--
Pegs with horizontal bands within a Fund supported program	--	100	100
Crawling pegs	100	100	100
Exchange rates within crawling bands	60	50	57
Managed floating, no preannounced path for exchange rate	69	82	75
Independently floating	60	67	63
Total	61	68	64
Memo item:			
Number of countries answering question	38	31	69
In percent of survey respondents	86	67	77

Note: -- stands for not applicable, zero, or negligible amount.
Source: IMF, 2001 Survey on Foreign Exchange Market Organization.

1/ The 2001 Survey on Foreign Exchange Market Organization was sent to country authorities in all Fund member developing and transition economies on October 2001. Ninety answers were received by March 2002. Table 1 shows the list of respondents.
2/ Follows the IMF's de facto exchange rate regime classification as published in the IMF's *International Financial Statistics*.
3/ Corresponds to the Fund member developing and transition countries considered as emerging markets in the Fund's quarterly publication "Emerging Market Financing: A Quarterly Report on Developments and Prospects".
4/ The Central African Economic and Monetary Community (CAEMC) is itself a conventional fixed peg arrangement.

Table 5. Survey Respondents that Never Sterilize Foreign Exchange Intervention, by Exchange Rate Regime and Market Access, 2001 1/

(In percent of countries answering the corresponding Survey question in each category)

Exchange rate regimes 2/	Developing and Transition Economies		Total
	Emerging Markets 3/	Other	
No country-specific currency	--	--	--
CAEMC 4/	--	--	--
Other	--	--	--
Country-specific currency	8	17	12
Currency board	100	--	100
Conventional fixed pegs against a single currency	20	17	18
Conventional fixed pegs against a composite	33	67	50
Pegs with horizontal bands within a cooperative arrangement	--	--	--
Pegs with horizontal bands within a Fund supported program	--	--	--
Crawling pegs	--	--	--
Exchange rates within crawling bands	--	--	--
Managed floating, no preannounced path for exchange rate	--	9	4
Independently floating	--	17	6
Total	8	16	12
Memo item:			
Number of countries answering question	38	31	69
In percent of survey respondents	86	67	77

Note: -- stands for not applicable, zero, or negligible amount.
Source: IMF, 2001 Survey on Foreign Exchange Market Organization.

1/ The 2001 Survey on Foreign Exchange Market Organization was sent to country authorities in all Fund member developing and transition economies on October 2001. Ninety answers were received by March 2002. Table 1 shows the list of respondents.

2/ Follows the IMF's de facto exchange rate regime classification as published in the IMF's *International Financial Statistics*.

3/ Corresponds to the Fund member developing and transition countries considered as emerging markets in the Fund's quarterly publication "Emerging Market Financing: A Quarterly Report on Developments and Prospects".

4/ The Central African Economic and Monetary Community (CAEMC) is itself a conventional fixed peg arrangement.

Table 6. Survey Respondents that Always Sterilize Foreign Exchange Intervention, by Exchange Rate Regime and Market Access, 2001 1/

(In percent of countries answering the corresponding Survey question in each category)

Exchange rate regimes 2/	Developing and Transition Economies		Total
	Emerging Markets 3/	Other	
No country-specific currency	--	--	--
CAEMC 4/	--	--	--
Other	--	--	--
Country-specific currency	32	17	25
Currency board	--	--	--
Conventional fixed pegs against a single currency	40	17	27
Conventional fixed pegs against a composite	--	33	17
Pegs with horizontal bands within a cooperative arrangement	--	--	--
Pegs with horizontal bands within a Fund supported program	--	--	--
Crawling pegs	--	--	--
Exchange rates within crawling bands	40	50	43
Managed floating, no preannounced path for exchange rate	31	9	21
Independently floating	40	17	31
Total	32	16	25
Memo item:			
Number of countries answering question	38	31	69
In percent of survey respondents	86	67	77

Note: -- stands for not applicable, zero, or negligible amount.
Source: IMF, 2001 Survey on Foreign Exchange Market Organization.

1/ The 2001 Survey on Foreign Exchange Market Organization was sent to country authorities in all Fund member developing and transition economies on October 2001. Ninety answers were received by March 2002. Table 1 shows the list of respondents.

2/ Follows the IMF's de facto exchange rate regime classification as published in the IMF's *International Financial Statistics*.

3/ Corresponds to the Fund member developing and transition countries considered as emerging markets in the Fund's quarterly publication "Emerging Market Financing: A Quarterly Report on Developments and Prospects".

4/ The Central African Economic and Monetary Community (CAEMC) is itself a conventional fixed peg arrangement.

Table 7. Magnitude of Foreign Exchange Intervention in Selected Developing and Transition Economies, 2000

(In percent of foreign exchange market turnover at different levels of trading)

Countries 1/	Foreign exchange intervention in percent of		
	Interbank foreign exchange market turnover 2/	Foreign exchange market turnover between bank and end-customers 3/	Foreign exchange market turnover among banks and between bank and end-customers 2/
Country 1	5,153.4	0.1	0.1
Country 2	1,351.7	239.0	203.1
Country 3	161.8	--	--
Country 4	160.2	3.1	3.0
Country 5	138.4	25.7	21.7
Country 6	118.1	--	--
Country 7	90.2	9.6	8.7
Country 8	59.3	--	--
Country 9	36.5	7.3	6.1
Country 10	32.4	15.9	10.7
Country 11	4.6	3.9	2.1
Country 12	3.0	19.0	2.6
Country 13	1.0	--	--
Country 14	0.0	0.0	0.0
Country 15	--	7.4	--
Country 16	--	68.1	--
Country 17	--	5.5	--
Bank of Japan 3/	0.2	0.9	0.1

Note: -- stands for not applicable, zero, or negligible amount.
Source: IMF, 2001 Survey on Foreign Exchange Market Organization; Bank of International Settlements, 2001 Triennial Central Bank Survey of Foreign Exchange and Derivatives Market Activity; and Bank of Japan.

1/ The names of the countries are omitted for confidentiality reasons.

2/ The different levels of foreign exchange market turnover exclude transactions with the central bank.

3/ Foreign exchange intervention conducted in U.S. dollars in 2000 vs. spot market turnover of the yen against the US dollar on a yearly basis, as published in table E-2 of the 2001 BIS triennial Survey statistical annex. To compute the figure on a yearly basis 22 trading days are assumed each month.

Table 8. Survey Respondents whose Central Bank is the Exclusive Foreign Exchange Agent of the Government, by Exchange Rate Regime and Market Access, 2001 1/

(In percent of member countries responding the Survey question in each category)

Exchange rate regimes 2/	Developing and Transition Economies		Total
	Emerging Markets 3/	Other	
No country-specific currency	--	50	50
CAEMC 4/	--	100	100
Other	--	--	--
Country-specific currency	52	63	58
Currency board	--	--	--
Conventional fixed pegs against a single currency	43	75	63
Conventional fixed pegs against a composite	67	40	50
Pegs with horizontal bands within a cooperative arrangement	--	--	--
Pegs with horizontal bands within a Fund supported program	--	--	--
Crawling pegs	--	100	67
Exchange rates within crawling bands	60	100	71
Managed floating, no preannounced path for exchange rate	60	55	58
Independently floating	55	83	65
Total	52	63	57
Memo item:			
Number of countries answering question	44	43	87
In percent of survey respondents	100	93	97

Note: -- stands for not applicable, zero, or negligible amount.
Source: IMF, 2001 Survey on Foreign Exchange Market Organization.

1/ The 2001 Survey on Foreign Exchange Market Organization was sent to country authorities in all developing and transition economies on October 2001. Ninety answers were received by March 2002. Table 1 shows the list of respondents.

2/ Follows the IMF's de facto exchange rate regime classification as published in the IMF's *International Financial Statistics*.

3/ Corresponds to the Fund member developing and transition countries considered as emerging markets in the Fund's quarterly publication "Emerging Market Financing: A Quarterly Report on Developments and Prospects".

4/ The Central African Economic and Monetary Community (CAEMC) is itself a conventional fixed peg arrangement.

Table 9. Survey Respondents Imposing Surrender Requirements, by Exchange Rate Regime and Market Access, 2001 1/

(In percent of countries answering the corresponding Survey question in each category)

Exchange rate regimes 2/	Developing and Transition Economies		Total
	Emerging Markets 3/	Other	
No country-specific currency	--	50	50
CAEMC 4/	--	100	100
Other	--	--	--
Country-specific currency	36	48	42
Currency board	--	--	--
Conventional fixed pegs against a single currency	43	92	74
Conventional fixed pegs against a composite	67	60	63
Pegs with horizontal bands within a cooperative arrangement	--	--	--
Pegs with horizontal bands within a Fund supported program	--	--	--
Crawling pegs	--	--	--
Exchange rates within crawling bands	--	100	29
Managed floating, no preannounced path for exchange rate	40	18	31
Independently floating	45	38	42
Total	36	48	42
Memo item:			
Number of countries answering question	44	46	90
In percent of survey respondents	100	100	100

Note: -- stands for not applicable, zero, or negligible amount.
Source: IMF, 2001 Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER).

1/ The 2001 Survey on Foreign Exchange Market Organization did not include a question about surrender requirements, but the information was obtained from the AREAER.

2/ Follows the IMF's de facto exchange rate regime classification as published in the IMF's *International Financial Statistics*.

3/ Corresponds to the Fund member developing and transition countries considered as emerging markets in the Fund's quarterly publication "Emerging Market Financing: A Quarterly Report on Developments and Prospects".

4/ The Central African Economic and Monetary Community (CAEMC) is itself a conventional fixed peg arrangement.

Table 10. Survey Respondents Prohibiting Dealers to Trade on their Own Behalf, by Exchange Rate Regime and Market Access, 2001 1/

(In percent of countries answering the corresponding Survey question in each category)

Exchange rate regimes 2/	Developing and Transition Economies		Total
	Emerging Markets 3/	Other	
No country-specific currency	--	--	--
CAEMC 4/	--	--	--
Other	--	--	--
Country-specific currency	2	16	9
Currency board	--	--	--
Conventional fixed pegs against a single currency	14	33	26
Conventional fixed pegs against a composite	--	20	13
Pegs with horizontal bands within a cooperative arrangement	--	--	--
Pegs with horizontal bands within a Fund supported program	--	--	--
Crawling pegs	--	--	--
Exchange rates within crawling bands	--	50	14
Managed floating, no preannounced path for exchange rate	--	--	--
Independently floating	--	13	5
Total	2	15	9
Memo item:			
Number of countries answering question	44	46	90
In percent of survey respondents	100	100	100

Note: -- stands for not applicable, zero, or negligible amount.
Source: IMF, 2001 Survey on Foreign Exchange Market Organization.

1/ The 2001 Survey on Foreign Exchange Market Organization was sent to country authorities in all Fund member developing and transition economies on October 2001. Ninety answers were received by March 2002. Table 1 shows the list of respondents.

2/ Follows the IMF's de facto exchange rate regime classification as published in the IMF's *International Financial Statistics*.

3/ Corresponds to the Fund member developing and transition countries considered as emerging markets in the Fund's quarterly publication "Emerging Market Financing: A Quarterly Report on Developments and Prospects".

4/ The Central African Economic and Monetary Community (CAEMC) is itself a conventional fixed peg arrangement.

Table 11. Survey Respondents Imposing Net Open Foreign Exchange Position Limits, by Exchange Rate Regime and Market Access, 2001 1/

(In percent of countries answering the corresponding Survey question in each category)

Exchange rate regimes 2/	Developing and Transition Economies		Total
	Emerging Markets 3/	Other	
No country-specific currency	--	100	100
CAEMC 4/	--	100	100
Other	--	100	100
Country-specific currency	93	74	84
Currency board	100	50	75
Conventional fixed pegs against a single currency	86	64	72
Conventional fixed pegs against a composite	100	40	63
Pegs with horizontal bands within a cooperative arrangement	--	--	--
Pegs with horizontal bands within a Fund supported program	--	100	100
Crawling pegs	100	50	67
Exchange rates within crawling bands	100	100	100
Managed floating, no preannounced path for exchange rate	87	91	88
Independently floating	100	88	95
Total	93	76	84
Memo item:			
Number of countries answering question	44	45	89
In percent of survey respondents	100	98	99

Note: -- stands for not applicable, zero, or negligible amount.
Source: IMF, 2001 Survey on Foreign Exchange Market Organization.

1/ The 2001 Survey on Foreign Exchange Market Organization was sent to country authorities in all Fund member developing and transition economies on October 2001. Ninety answers were received by March 2002. Table 1 shows the list of respondents.

2/ Follows the IMF's de facto exchange rate regime classification as published in the IMF's *International Financial Statistics*.

3/ Corresponds to the Fund member developing and transition countries considered as emerging markets in the Fund's quarterly publication "Emerging Market Financing: A Quarterly Report on Developments and Prospects".

4/ The Central African Economic and Monetary Community (CAEMC) is itself a conventional fixed peg arrangement.

Table 12. Daily Fluctuation Limits on Net Open Foreign Exchange Position Limits, by Exchange Rate Regime and Market Access, 2001 1/

(In percent of countries answering the corresponding Survey question in each category)

Exchange rate regimes 2/	Developing and Transition Economies		Total
	Emerging Markets 3/	Other	
No country-specific currency	--	--	--
CAEMC 4/	--	--	--
Other	--	--	--
Country-specific currency	9	7	8
Currency board	--	--	--
Conventional fixed pegs against a single currency	29	9	17
Conventional fixed pegs against a composite	--	--	--
Pegs with horizontal bands within a cooperative arrangement	--	--	--
Pegs with horizontal bands within a Fund supported program	--	--	--
Crawling pegs	100	--	33
Exchange rates within crawling bands	20	--	14
Managed floating, no preannounced path for exchange rate	--	--	--
Independently floating	--	25	11
Total	9	7	8
Memo item:			
Number of countries answering question	43	45	88
In percent of survey respondents	98	98	98

Note: -- stands for not applicable, zero, or negligible amount.
Source: IMF, 2001 Survey on Foreign Exchange Market Organization.

1/ The 2001 Survey on Foreign Exchange Market Organization was sent to country authorities in all Fund member developing and transition economies on October 2001. Ninety answers were received by March 2002. Table 1 shows the list of respondents.

2/ Follows the IMF's de facto exchange rate regime classification as published in the IMF's *International Financial Statistics*.

3/ Corresponds to the Fund member developing and transition countries considered as emerging markets in the Fund's quarterly publication "Emerging Market Financing: A Quarterly Report on Developments and Prospects".

4/ The Central African Economic and Monetary Community (CAEMC) is itself a conventional fixed peg arrangement.

Table 13. Selected Regulations on Forward Foreign Exchange Transactions in Developing and Transition Economies, 2001
(In percent of countries answering the Survey in each category)

	Market Access		Exchange Rate Regime 1/			Total
	Emerging Markets 2/	Other	Pegged	Intermediate	Flexible	
Forward markets allowed	89	63	70	58	84	76
Forward markets not allowed	5	24	18	8	13	14
Not able to determine	7	13	12	33	2	10
Types of derivative contracts allowed						
Outright forward contracts	89	63	70	58	84	76
Nondeliverable forward contracts	59	28	33	42	51	43
Futures	61	30	39	42	51	46
Options	77	30	45	42	62	53
Requirements for offering forward contracts						
Quantitative limits	11	20	18	17	13	16
Verification of existence of legally permitted underlying current or capital transactions	27	33	39	17	27	30
Transaction made only on behalf of their customers	5	11	15	0	4	8
Freely	66	24	30	33	58	44
Not able to determine	2	0	0	0	2	1
Subjective Assesssment of forward markets						
Developed	34	7	21	8	22	20
Undeveloped	48	52	42	67	51	50
Other	11	2	6	0	9	7
Not able to determine	7	39	30	25	18	23
Liquid	27	11	21	8	20	19
Illiquid	43	35	39	42	38	39
Other	18	0	6	8	11	9
Not able to determine	11	54	33	42	31	33
Deep	18	7	9	8	16	12
Shallow	55	37	45	50	44	46
Other	14	2	9	0	9	8
Not able to determine	14	54	36	42	31	34
Developed, liquid, and deep	14	4	6	0	13	9
Undeveloped, illiquid, and shallow	32	30	27	42	31	31

Source: IMF, 2001 Survey on Foreign Exchange Market Organization.

1/ The exchange rate regimes group categories from the IMF's de facto exchange rate regime classification as published in the IMF's *International Financial Statistics*. Pegged regimes include countries without a country specific currency, currency boards, and conventional fixed peg arrangements. Intermediate regimes include pegged exchange rate within horizontal bands, crawling pegs, and exchange rates within crawling bands. Flexible regimes include managed and independently floating exchange rate regimes.

2/ Corresponds to the Fund member developing and transition countries considered as emerging markets in the Fund's quarterly publication "Emerging Market Financing: A Quarterly Report on Developments and Prospects".

Table 14. Selected Monetary Regulations that Affect Residents
in Developing and Transition Economies, 2001
(In percent of countries responding the Survey in each category)

	Market Access		Exchange Rate Regime 1/			Total
	Emerging Markets 2/	Other	Pegged	Intermediate	Flexible	
Residents prohibited from						
Making payments to each other in foreign currencies	48	57	58	33	53	52
Holding foreign notes and coins	18	26	39	8	13	22
Denominating domestic financial contracts in foreign exchange	34	26	36	17	29	30
Holding foreign currency deposits in the domestic banking system	18	17	30	0	13	18
Receiving foreign currency loans from domestic financial institutions	25	26	36	8	22	26
Denominating nonfinancial contracts in foreign currencies	18	33	33	25	20	26
Holding foreign currency denominated financial assets abroad	43	39	45	33	40	41

Source: IMF, 2001 Survey on Foreign Exchange Market Organization.

1/ The exchange rate regimes group categories from the IMF's de facto exchange rate regime classification as published in the IMF's *International Financial Statistics*. Pegged regimes include countries without a country specific currency, currency boards, and conventional fixed peg arrangements. Intermediate regimes include pegged exchange rate within horizontal bands, crawling pegs, and exchange rates within crawling bands. Flexible regimes include managed and independently floating exchange rate regimes.

2/ Corresponds to the Fund member developing and transition countries considered as emerging markets in the Fund's quarterly publication "Emerging Market Financing: A Quarterly Report on Developments and Prospects".

Table 15. Selected Indicators of Financial Dollarization in Developing and Transition Economies, 2001
(In percent of countries responding the Survey in each category)

	Market Access		Exchange Rate Regime 1/			Total
	Emerging Markets 2/	Other	Pegged	Intermediate	Flexible	
Banks allowed to accept foreign currency deposits	100	98	97	100	100	99
from residents						
private sector						
exporters	100	98	97	100	100	99
nonexporters 3/	82	80	70	92	87	81
public sector						
government	34	30	33	58	24	32
state enterprises	61	63	55	75	64	62
government agencies	43	48	45	50	44	46
central bank	23	9	18	17	13	16
from nonresidents 4/	100	98	97	100	100	99
Degree of dollarization of deposits 5/						
Between 0 and 10 percent	9	15	24	0	7	12
Between 10 and 20 percent	16	7	3	17	16	11
Between 20 and 50 percent	20	17	12	8	27	19
Between 50 and 75 percent	5	13	3	25	9	9
Between 75 and 100 percent	2	9	0	17	7	6
Not able to determine 6/	48	37	55	33	36	42
Banks allowed to make foreign currency loans	86	72	61	92	89	79

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

1/ The exchange rate regimes group categories from the IMF's de facto exchange rate regime classification as published in the IMF's *International Financial Statistics*. Pegged regimes include countries without a country specific currency, currency boards, and conventional fixed peg arrangements. Intermediate regimes include pegged exchange rate within horizontal bands, crawling pegs, and exchange rates within crawling bands. Flexible regimes include managed and independently floating exchange rate regimes.

2/ Corresponds to the Fund member developing and transition countries considered as emerging markets in the Fund's quarterly publication "Emerging Market Financing: A Quarterly Report on Developments and Prospects".

3/ Considers the countries in which banks can offer foreign currency deposits and residents are allowed to hold foreign currency deposits in the banking system.

4/ Obtained from AREAER.

5/ Includes only deposits from private sector residents.

6/ The degree of dollarization is most likely below 10 percent.

Table 16. Main Regulations on the Use on Domestic Currencies by Nonresidents in Developing and Transition Economies, 2001
(In percent of countries responding the Survey in each category)

	Market Access		Exchange Rate Regime 1/			Total
	Emerging Markets 2/	Other	Pegged	Intermediate	Flexible	
Nonresidents prohibited from						
Making payments to each other in domestic currencies.	14	11	18	25	4	12
Holding domestic notes and coins	11	9	15	8	7	10
Denominating domestic financial contracts in domestic currency	25	11	21	17	16	18
Holding domestic currency deposits in the domestic banking system	14	11	15	8	11	12
Receiving domestic currency loans from domestic financial institutions	36	20	30	8	31	28
Denominating nonfinancial contracts in domestic currency	11	11	15	33	2	11
Making payments in national currency abroad	23	43	42	25	29	33
Holding domestic currency notes and coins abroad	23	43	39	25	31	33
Denominating international financial contracts in national currency	20	24	27	25	18	22
holding national currency deposits abroad	25	37	42	17	27	31
receiving national currency loans abroad	27	35	39	25	27	31
Denominating nonfinancial contracts in national currency	18	24	33	25	11	21

Source: IMF, 2001 Survey on Foreign Exchange Market Organization.

1/ The exchange rate regimes group categories from the IMF's de facto exchange rate regime classification as published in the IMF's *International Financial Statistics*. Pegged regimes include countries without a country specific currency, currency boards, and conventional fixed peg arrangements. Intermediate regimes include pegged exchange rate within horizontal bands, crawling pegs, and exchange rates within crawling bands. Flexible regimes include managed and independently floating exchange rate regimes.

2/ Corresponds to the Fund member developing and transition countries considered as emerging markets in the Fund's quarterly publication "Emerging Market Financing: A Quarterly Report on Developments and Prospects".

Table 17. Survey Respondents Setting or Mandating Fixed Bid-Offer Spreads, by Exchange Rate Regime and Market Access, 2001 1/

(In percent of countries answering the corresponding Survey question in each category)

Exchange rate regimes 2/	Developing and Transition Economies		Total
	Emerging Markets 3/	Other	
No country-specific currency	--	--	--
CAEMC 4/	--	--	--
Other	--	--	--
Country-specific currency	30	48	39
Currency board	100	--	50
Conventional fixed pegs against a single currency	80	58	65
Conventional fixed pegs against a composite	67	100	86
Pegs with horizontal bands within a cooperative arrangement	--	--	--
Pegs with horizontal bands within a Fund supported program	--	100	100
Crawling pegs	--	100	67
Exchange rates within crawling bands	40	--	29
Managed floating, no preannounced path for exchange rate	8	27	17
Independently floating	--	33	14
Total	30	45	38
Memo item:			
Number of countries answering question	37	42	79
In percent of survey respondents	84	91	88

Note: -- stands for not applicable, zero, or negligible amount.
Source: IMF, 2001 Survey on Foreign Exchange Market Organization.

1/ The 2001 Survey on Foreign Exchange Market Organization was sent to country authorities in all Fund member developing and transition economies on October 2001. Ninety answers were received by March 2002. Table 1 shows the list of respondents.

2/ Follows the IMF's de facto exchange rate regime classification as published in the IMF's *International Financial Statistics*.

3/ Corresponds to the Fund member developing and transition countries considered as emerging markets in the Fund's quarterly publication "Emerging Market Financing: A Quarterly Report on Developments and Prospects".

4/ The Central African Economic and Monetary Community (CAEMC) is itself a conventional fixed peg arrangement.

Table 18. Reporting Requirements on Foreign Exchange Transactions in Developing and Transition Economies, 2001
(In percent of countries responding the Survey in each category)

	Market Access		Exchange Rate Regime 1/			Total
	Emerging Markets 2/	Other	Pegged	Intermediate	Flexible	
Exchange rate data	41	52	36	50	53	47
Weighted average on						
all bank foreign exchange sales and purchases	27	50	27	50	44	39
all bank foreign exchange sales	18	28	12	17	33	23
all bank foreign exchange purchases	16	26	12	17	29	21
all foreign exchange sales and purchases among banks	25	33	15	33	38	29
all foreign exchange sales to nonbank customers	23	28	6	33	38	26
all foreign exchange purchases from nonbank customers	20	28	6	42	33	24
all forward foreign exchange sales and purchases among banks	18	13	3	17	24	16
Volume data	89	80	73	92	91	84
all bank foreign exchange sales and purchases	80	80	67	92	87	80
all bank foreign exchange sales	48	48	36	42	58	48
all bank foreign exchange purchases	48	48	36	42	58	48
all foreign exchange sales and purchases among banks	73	48	42	75	69	60
all foreign exchange sales to nonbank customers	9	11	9	8	11	10
all foreign exchange purchases from nonblank customers	66	57	45	92	64	61

Source: IMF, 2001 Survey on Foreign Exchange Market Organization.

1/ The exchange rate regimes group categories from the IMF's de facto exchange rate regime classification as published in the IMF's *International Financial Statistics*. Pegged regimes include countries without a country specific currency, currency boards, and conventional fixed peg arrangements. Intermediate regimes include pegged exchange rate within horizontal bands, crawling pegs, and exchange rates within crawling bands. Flexible regimes include managed and independently floating exchange rate regimes.

2/ Corresponds to the Fund member developing and transition countries considered as emerging markets in the Fund's quarterly publication "Emerging Market Financing: A Quarterly Report on Developments and Prospects."

Table 19. Survey Respondents Allowing Offshore Trading of Domestic Currency, by Exchange Rate Regime and Market Access, 2001 1/

(In percent of countries answering the corresponding Survey question in each category)

Exchange rate regimes 2/	Developing and Transition Economies		Total
	Emerging Markets 3/	Other	
No country-specific currency	--	--	--
CAEMC 4/	--	--	--
Other	--	--	--
Country-specific currency	70	32	51
Currency board	100	50	75
Conventional fixed pegs against a single currency	71	8	32
Conventional fixed pegs against a composite	67	60	63
Pegs with horizontal bands within a cooperative arrangement	--	--	--
Pegs with horizontal bands within a Fund supported program	--	50	50
Crawling pegs	--	50	33
Exchange rates within crawling bands	80	--	57
Managed floating, no preannounced path for exchange rate	53	55	54
Independently floating	91	13	58
Total	70	30	50
Memo item:			
Number of countries answering question	44	46	90
In percent of survey respondents	100	100	100

Note: -- stands for not applicable, zero, or negligible amount.
Source: IMF, 2001 Survey on Foreign Exchange Market Organization.

1/ The 2001 Survey on Foreign Exchange Market Organization was sent to country authorities in all Fund member developing and transition economics on October 2001. Ninety answers were received by March 2002. Table 1 shows the list of respondents.

2/ Follows the IMF's de facto exchange rate regime classification as published in the IMF's *International Financial Statistics*.

3/ Corresponds to the Fund member developing and transition countries considered as emerging markets in the Fund's quarterly publication "Emerging Market Financing: A Quarterly Report on Developments and Prospects".

4/ The Central African Economic and Monetary Community (CAEMC) is itself a conventional fixed peg arrangement.

Table 20. Management of Net Open Foreign Exchange Positions in Developing and Transition Economies, 2001

(In percent of countries responding the Survey in each category)

	Market Access		Exchange Rate Regime 1/			Total
	Emerging Markets 2/	Other	Pegged	Intermediate	Flexible	
Management of positions						
Limits apply						
Continuously	32	22	24	33	27	27
Overnight	50	35	33	58	44	42
Month-end	7	11	6	8	11	9
Others	7	4	0	8	9	6
Not able to determine	7	7	7	7	7	7
Frequency of verification						
Randomly verified	25	24	18	17	31	24
Daily verified	20	11	6	33	18	16
Weekly verified	11	15	9	17	16	13
Fortnightly verified	0	2	0	0	2	1
Monthly verified	34	17	15	33	31	26
Others (verified)	25	22	33	8	20	23
Not able to determine	7	7	7	7	7	7
Frequency of reporting						
Daily Reporting	45	35	21	67	47	40
Weekly Reporting	9	35	18	17	27	22
Fortnightly Reporting	0	2	0	0	2	1
Monthly Reporting	30	20	24	17	27	24
Others (Reporting)	14	2	6	8	9	8
Not able to determine	7	7	7	7	7	7
Frequency of publication						
Never	68	48	52	75	58	58
Weekly	2	2	3	0	2	2
Monthly	11	4	6	0	11	8
Other	5	9	3	8	9	7
Not able to determine	7	7	7	7	7	7
Memo item						
Percent of Survey respondents with net open position limits	93	74	70	92	91	83

Source: IMF, 2001 Survey on Foreign Exchange Market Organization.

1/ The exchange rate regimes group categories from the IMF's de facto exchange rate regime classification as published in the IMF's *International Financial Statistics*. Pegged regimes include countries without a country specific currency, currency boards, and conventional fixed peg arrangements. Intermediate regimes include pegged exchange rate within horizontal bands, crawling pegs, and exchange rates within crawling bands. Flexible regimes include managed and independently floating exchange rate regimes.

2/ Corresponds to the Fund member developing and transition countries considered as emerging markets in the Fund's quarterly publication "Emerging Market Financing: A Quarterly Report on Developments and Prospects."

Table 21. Selected Characteristics of Foreign Exchange Auctions in Developing and Transition Economies
(In number of countries)

	Angola	Azerbaijan	Belarus	Bolivia	Brazil	Chile	Colombia	Croatia	Honduras	Kazakhstan	Mauritius	Sierra Leone	Turkey	Yemen	Zambia	Total
Type of foreign exchange auctions																
One-sided: foreign exchange is sold					•	•	•	•	•		•		•	•	•	9
Two-sided: foreign exchange is bought and sold	•	•	•	•						•		•				6
What is the price determination mechanism?																
Uniform-price auction		•	•	•			•				n.a.				•	5
Multiple-price auction (Dutch auction)	•				•	•		•	•	•	n.a.	•	•	•		9
What kind of bids are allowed?																
On competitive terms only		•		•	•	•	•	•	•	•	•		•	•	•	12
On competitive and noncompetitive terms	•		•									•				3
What is auctioned?																
Spot contracts	•	•		•	•	•		•	•	•	•	•	•	•	•	13
Forward contracts																0
Futures contracts		•								•						2
Foreign exchange option contracts			•				•									2
What are the sources of foreign exchange being auctioned?																
Surrender requirements to the central bank	•						•							•	•	4
Foreign currency receipts accruing to the government			•	•				•	•			•	•	•		7
Financial aid (international grants)			•	•								•	•			4
Export receipts from state enterprises	•								•					•		3
Government borrowing abroad				•				•	•			•	•			5
Other		•		•	•	•		•		•	•				•	8
Who can participate in the auctions on its own behalf?																
Resident Financial institutions	•	•	•	•		•	•	•	•	•	•	•	•	•		13
Foreign Exchange Bureaus									•			•		•		3
Central bank	•	•								•						3
Importers			•						•			•				3
Exporters			•						•			•				3
Nonresident financial institutions			•				•					•				3
Other				•	•	•	•	•	•		•				•	8
Is there a restricted list of participants (primary dealers)?																
Yes	•	•		•	•	•	•				•			•	•	9
No			•					•	•	•		•	•			6
How often are the auctions conducted?																
Daily		•	•	•					•	•	n.a.		•			6
Weekly	•							•			n.a.	•				3
Other							•				n.a.					1
No regular schedule					•	•		•			n.a.			•	•	5
Competitive Bids																
Amounts established before the auction	•		•	•	•	•	•		•	•	•	•	•	n.a.	•	12
Minimum bid amounts	•	•			•	•	•	•	•	•	•	•	•	•	•	13
Number of bids per bidder restricted					•	•	•	•	•			•		•	•	8
Reasons for disqualification established in advance					•	•	•	•	•			•		•	•	8
Bidders must document the domestic currency cover for bid to be valid		•	•	•		•			•			•		•		7

Source: IMF, 2001 Survey on Foreign Exchange Market Organization.
n.a. means not available.

Table 22. Survey Respondents with Electronic Broking Systems, by Exchange Rate Regime and Market Access, 2001 1/

(In percent of countries answering the corresponding Survey question in each category)

Exchange rate regimes 2/	Developing and Transition Economies		Total
	Emerging Markets 3/	Other	
No country-specific currency	--	--	--
CAEMC 4/	--	--	--
Other	--	--	--
Country-specific currency	39	2	20
Currency board	--	--	--
Conventional fixed pegs against a single currency	14	--	5
Conventional fixed pegs against a composite	--	--	--
Pegs with horizontal bands within a cooperative arrangement	--	--	--
Pegs with horizontal bands within a Fund supported program	--	--	--
Crawling pegs	100	--	33
Exchange rates within crawling bands	60	--	43
Managed floating, no preannounced path for exchange rate	27	9	19
Independently floating	73	--	42
Total	39	2	20
Memo item:			
Number of countries answering question	44	46	90
In percent of survey respondents	100	100	100

Note: -- stands for not applicable, zero, or negligible amount.
Source: IMF, 2001 Survey on Foreign Exchange Market Organization.

1/ The 2001 Survey on Foreign Exchange Market Organization was sent to country authorities in all Fund member developing and transition economies on October 2001. Ninety answers were received by March 2002. Table 1 shows the list of respondents.

2/ Follows the IMF's de facto exchange rate regime classification as published in the IMF's *International Financial Statistics*.

3/ Corresponds to the Fund member developing and transition countries considered as emerging markets in the Fund's quarterly publication "Emerging Market Financing: A Quarterly Report on Developments and Prospects".

4/ The Central African Economic and Monetary Community (CAEMC) is itself a conventional fixed peg arrangement.

Table 23. Selected Characteristics of Foreign Exchange Settlement Systems in Developing and Transition Economies, 2001
(In percent of countries responding the Survey in each category)

	Market Access		Exchange Rate Regime 1/			Total
	Emerging Markets 2/	Other	Pegged	Intermediate	Flexible	
Both legs are settled at accounts at						
the central bank.	45	59	55	42	53	52
another domestic institution	20	11	15	8	18	16
The foreign exchange leg is settled at foreign correspondent bank accounts.	77	72	70	75	78	74
Settlement basis						
payment versus payment	25	54	48	33	36	40
netting	5	15	12	8	9	10
SWIFT 3/	100	96	97	100	98	98

Sources: IMF, 2001 Survey on Forcign Exchange Market Organization.

1/ The exchange rate regimes group categories from the IMF's de facto exchange rate regime classification as published in the IMF's *International Financial Statistics*. Pegged regimes include countries without a country specific currency, currency boards, and conventional fixed peg arrangements. Intermediate regimes include pegged exchange rate within horizontal bands, crawling pegs, and exchange rates within crawling bands. Flexible regimes include managed and independently floating exchange rate regimes.

2/ Corresponds to thc Fund member developing and transition countries considered as emerging markets in the Fund's quarterly publication "Emerging Market Financing: A Quarterly Report on Developments and Prospects".

3/ SWIFT is the acronym for the Society for Worldwide Interbank Financial Telecommunications, which is a nonprofit cooperative of member banks based in Brussels, Belgium. By end 2001, the network was composed of over 2000 member banks in 196 countries, of which 175 were Fund members.

Table 24. Number of Foreign Exchange Intermediaries in Developing and Transition Economies, 2001

	Foreign Exchange Dealers					Voice brokers
	Banks	Bureaus	Others	Total	Of which: Market makers	
Albania	13	24	3	40 1/	10	n.a.
Angola	8	13	--	21	1	--
Armenia	29	216	15	260 2/	n.a.	n.a.
Azerbaijan	52	--	--	52	--	--
Bahamas	7	--	2	9 1/	--	--
Bahrain	n.a.	--	--	0	n.a.	4
Bangladesh	605	518	--	1123	n.a.	--
Barbados	8	1	--	9	8	--
Belarus	26	--	--	26	--	--
Bhutan	2	--	--	2	--	--
Bolivia	12	44	39	95 1/	--	--
Brazil	119	--	285	404	30	51
Bulgaria	35	760	--	795	6	64
Cambodia	28	17	--	45	--	--
Cape Verde	4	3	--	7	--	--
Chile	25	5	--	30	n.a.	--
Colombia	26	12	26	64 1/ 3/	90	26
Congo, Republic of	13	24	--	37	24	--
Costa Rica	21	2	11	34 1/	--	2
Croatia	42	--	13	55 1/	5	--
Czech Republic	n.a.	13	--	13	12	13
Djibouti	3	4	--	7	--	--
Dominican Republic	14	100	--	114	n.a.	n.a.
Egypt	51	126	--	177	--	--
El Salvador	15	10	--	25	n.a.	--
Estonia	7	190	--	197	197	n.a.
Fiji	6	15	--	21	n.a.	n.a.
Ghana	17	350	--	367	n.a.	--
Guatemala	31	8	16	55 1/	3	--
Guyana	7	28	--	35	--	n.a.
Honduras	21	--	4	25 1/	--	7
Hungary	28	700	--	728	12.5	--
India	100	470	--	570	10	--
Iran	10	--	--	10	n.a.	n.a.
Kazakhstan	--	626	--	626	29	--
Kenya	52	48	--	100	n.a.	--
Korea	70	--	--	70	9	--
Kuwait	9	29	--	38	9	2
Kyrgyz Republic	19	259	--	278	n.a.	n.a.
Lao	13	12	--	25	--	--
Lebanon	68	367	28	463 1/	1	5

Continued on next page

Table 24. Number of Market Participants in Developing and Transition Economies, 2001 (continued)

	Foreign Exchange Dealers						Voice brokers
	Banks	Bureaus	Others	Total	Of which:	Market makers	
Lesotho	2	--	--	2		2	--
Libya	27	--	--	27		--	--
Lithuania	14	--	3	17 1/		3.5	--
Macedonia, FYR	10	--	--	10		18	--
Madagascar	1	1	--	2		--	--
Malaysia	32	627	--	659		n.a.	--
Malta	4	11	--	15		2	--
Mauritius	21	--	--	21		10	n.a.
Mexico	40	26	--	66		7	--
Moldova	440	182	--	622		5	--
Morocco	15	--	--	15		--	--
Mozambique	13	31	8	52 1/		--	--
Namibia	5	1	--	6		4	--
Nepal	15	63	--	78		--	--
Nicaragua	5	4	2	11 1/		11	--
Oman	15	--	--	15		--	--
Pakistan	43	--	--	43		10	--
Papua New Guinea	6	--	--	6		6	--
Paraguay	20	23	--	43		n.a.	--
Qatar	15	16	--	31		15	--
Romania	41	370	--	411		n.a.	--
Samoa	3	4	--	7		--	--
Sierra Leone	6	31	--	37		6	--
Slovak Republic	n.a.	600	--	600		n.a.	n.a.
Slovenia	20	--	--	20		3	--
South Africa	36	7	--	43		8	--
Sri Lanka	24	32	--	56		13	--
Swaziland	4	--	--	4		--	--
Tanzania	17	--	6	23 1/		n.a.	--
Thailand	32	--	3	35 4/		n.a.	--
Tonga	3	2	--	5		3	n.a.
Trinidad and Tobago	10	7	--	17		--	--
Turkey	75	778	--	853		n.a.	--
Ukraine	149	3931	--	4080		n.a.	n.a.
Uruguay	22	57	25	104 1/ 5/		n.a.	--
Venezuela	38	19	7	64 1/		3	--
Yemen	14	264	--	278		20	--
Zambia	16	44	--	60		4	--

Note: -- stands for not applicable, zero, or negligible amount.
Source: IMF's 2001 Survey on Foreign Exchange Market Organization.

1/ Nonbank financial institutions

2/ Independent dealers

3/ Includes two state enterprises

4/ Export-Import Bank of Thailand, Industrial Finance Corporation of Thailand, and a finance company.

5/ Includes 6 offshore institutions

Table 25. Survey Respondents Not Announcing or Reporting Foreign Exchange Intervention, by Exchange Rate Regime and Market Access, 2001 1/

(In percent of countries answering the corresponding Survey question in each category)

Exchange rate regimes 2/	Developing and Transition Economies		Total
	Emerging Markets 3/	Other	
No country-specific currency	--	--	--
CAEMC 4/	--	--	--
Other	--	--	--
Country-specific currency	47	36	41
Currency board	--	--	--
Conventional fixed pegs against a single currency	50	27	35
Conventional fixed pegs against a composite	67	50	57
Pegs with horizontal bands within a cooperative arrangement	--	--	--
Pegs with horizontal bands within a Fund supported program	--	--	--
Crawling pegs	100	--	33
Exchange rates within crawling bands	60	100	71
Managed floating, no preannounced path for exchange rate	40	55	46
Independently floating	45	25	37
Total	47	34	40
Memo item:			
Number of countries answering question	43	44	87
In percent of survey respondents	98	96	97

Note: -- stands for not applicable, zero, or negligible amount.
Source: IMF, 2001 Survey on Foreign Exchange Market Organization.

1/ The 2001 Survey on Foreign Exchange Market Organization was sent to country authorities in all Fund member developing and transition economies on October 2001. Ninety answers were received by March 2002. Table 1 shows the list of respondents.

2/ Follows the IMF's de facto exchange rate regime classification as published in the IMF's *International Financial Statistics*.

3/ Corresponds to the Fund member developing and transition countries considered as emerging markets in the Fund's quarterly publication "Emerging Market Financing: A Quarterly Report on Developments and Prospects".

4/ The Central African Economic and Monetary Community (CAEMC) is itself a conventional fixed peg arrangement.

Table 26. Survey Respondents Announcing Ex Ante Foreign Exchange Intervention, by Exchange Rate Regime and Market Access, 2001 1/

(In percent of countries answering the corresponding Survey question in each category)

Exchange rate regimes 2/	Developing and Transition Economies		Total
	Emerging Markets 3/	Other	
No country-specific currency	--	50	50
CAEMC 4/	--	100	100
Other	--	--	--
Country-specific currency	14	10	12
Currency board	--	--	--
Conventional fixed pegs against a single currency	14	8	11
Conventional fixed pegs against a composite	--	--	--
Pegs with horizontal bands within a cooperative arrangement	--	--	--
Pegs with horizontal bands within a Fund supported program	--	--	--
Crawling pegs	--	--	--
Exchange rates within crawling bands	20	--	14
Managed floating, no preannounced path for exchange rate	20	10	16
Independently floating	9	29	17
Total	14	12	13
Memo item:			
Number of countries answering question	44	42	86
In percent of survey respondents	100	91	96

Note: -- stands for not applicable, zero, or negligible amount.
Source: IMF, 2001 Survey on Foreign Exchange Market Organization.

1/ The 2001 Survey on Foreign Exchange Market Organization was sent to country authorities in all Fund member developing and transition economies on October 2001. Ninety answers were received by March 2002. Table 1 shows the list of respondents.

2/ Follows the IMF's de facto exchange rate regime classification as published in the IMF's *International Financial Statistics*.

3/ Corresponds to the Fund member developing and transition countries considered as emerging markets in the Fund's quarterly publication "Emerging Market Financing: A Quarterly Report on Developments and Prospects".

4/ The Central African Economic and Monetary Community (CAEMC) is itself a conventional fixed peg arrangement.

Table 27. Survey Respondents Publishing Foreign Exchange Intervention Figures, by Exchange Rate Regime and Market Access, 2001 1/

(In percent of countries answering the corresponding Survey question in each category)

Exchange rate regimes 2/	Developing and Transition Economies		Total
	Emerging Markets 3/	Other	
No country-specific currency	--	--	--
CAEMC 4/	--	--	--
Other	--	--	--
Country-specific currency	27	12	20
Currency board	50	--	25
Conventional fixed pegs against a single currency	--	--	--
Conventional fixed pegs against a composite	33	--	14
Pegs with horizontal bands within a cooperative arrangement	--	--	--
Pegs with horizontal bands within a Fund supported program	--	--	--
Crawling pegs	--	50	33
Exchange rates within crawling bands	20	--	14
Managed floating, no preannounced path for exchange rate	47	27	38
Independently floating	18	13	16
Total	27	11	19
Memo item:			
Number of countries answering question	44	45	89
In percent of survey respondents	100	98	99

Note: -- stands for not applicable, zero, or negligible amount.
Source: IMF, 2001 Survey on Foreign Exchange Market Organization.

1/ The 2001 Survey on Foreign Exchange Market Organization was sent to country authorities in all Fund member developing and transition economies on October 2001. Ninety answers were received by March 2002. Table 1 shows the list of respondents.

2/ Follows the IMF's de facto exchange rate regime classification as published in the IMF's *International Financial Statistics*.

3/ Corresponds to the Fund member developing and transition countries considered as emerging markets in the Fund's quarterly publication "Emerging Market Financing: A Quarterly Report on Developments and Prospects".

4/ The Central African Economic and Monetary Community (CAEMC) is itself a conventional fixed peg arrangement.

Table 28. Survey Respondents Requiring Foreign Exchange Licenses, by Exchange Rate Regime and Market Access, 2001 1/

(In percent of countries answering the corresponding Survey question in each category)

Exchange rate regimes 2/	Developing and Transition Economies		Total
	Emerging Markets 3/	Other	
No country-specific currency	--	100	100
CAEMC 4/	--	100	100
Other	--	100	100
Country-specific currency	82	91	86
Currency board	100	100	100
Conventional fixed pegs against a single currency	100	82	89
Conventional fixed pegs against a composite	67	80	75
Pegs with horizontal bands within a cooperative arrangement	--	--	--
Pegs with horizontal bands within a Fund supported program	--	100	100
Crawling pegs	100	100	100
Exchange rates within crawling bands	80	100	86
Managed floating, no preannounced path for exchange rate	87	91	88
Independently floating	64	100	79
Total	82	91	87
Memo item:			
Number of countries answering question	44	45	89
In percent of survey respondents	100	98	99

Note: -- stands for not applicable, zero, or negligible amount.
Source: IMF, 2001 Survey on Foreign Exchange Market Organization.

1/ The 2001 Survey on Foreign Exchange Market Organization was sent to country authorities in all Fund member developing and transition economies on October 2001. Ninety answers were received by March 2002. Table 1 shows the list of respondents.

2/ Follows the IMF's de facto exchange rate regime classification as published in the IMF's *International Financial Statistics*.

3/ Corresponds to the Fund member developing and transition countries considered as emerging markets in the Fund's quarterly publication "Emerging Market Financing: A Quarterly Report on Developments and Prospects".

4/ The Central African Economic and Monetary Community (CAEMC) is itself a conventional fixed peg arrangement.