
Capital Flow Sustainability and Speculative Currency Attacks

IMF RESEARCH DEPARTMENT STAFF

Private capital flows to the developing world reached a record \$235 billion in 1996. Increased access to global financial markets has brought substantial benefits to many countries but it has also made them vulnerable to sudden shifts in investor sentiment and attacks on their currencies.

OVER THE PAST few years, access to the international financial markets has become easier for many developing countries, which have enjoyed a surge in capital inflows. These favorable market conditions are due, in part, to structural changes in both developed and developing countries and are therefore likely to be lasting. The growing institutionalization of saving in the mature economies (assets of pension funds, insurance companies, and mutual funds in the Organization for Economic Cooperation and Development (OECD) countries reached \$20 trillion in 1994) and the quest for international diversification of investment portfolios ensure that capital flows will not dry up in the foreseeable future. And developing countries that have successfully implemented macroeconomic stabilization programs and structural reforms will continue to attract these flows.

This optimistic viewpoint needs to be tempered, however. The terms and conditions governing market access could deteriorate suddenly, should global monetary conditions tighten in response to business cycles in mature markets or if a

financial disturbance, such as a sudden drop in equity prices, were to provoke a large-scale redemption of mutual fund shares. Even if capital flows are not reversed, inflexible exchange rate arrangements put certain developing countries—in particular, those perceived as having unsustainable macroeconomic policies and structural weaknesses—at risk of being tested through speculative attacks on their currencies, as recent events have shown, and of abruptly losing market access.

Speculative currency attacks

The rapid and continuing integration of emerging market countries into global financial markets during the 1990s has been accompanied by several currency crises, most recently involving the Thai baht and other Asian currencies, and the Czech koruna. These events, like the Mexican peso crisis in late 1994, have raised a host of questions about the nature of speculative currency attacks, the appropriate defensive policies, the degree of exchange rate flexibility (including exit strategies) that is appropriate in the evolving international financial environment, and the role of international financial support.

The same structural changes that have improved the access of emerging market countries to international financial markets and opened national financial markets to foreign investors have also increased the potential intensity and duration of speculative attacks. For example, the growing institutionalization of saving and participation of institutional investors in international markets that have boosted demand for emerging market securities have also led to the growth of highly leveraged hedge funds and proprietary traders prepared to tolerate significant risk in their search for weaknesses in foreign exchange arrangements. Institutional investors now have the capacity to take



The mechanics of speculative attacks

While fixed exchange rate regimes have always been subject to speculative attacks, the greater mobility of capital over the past five years—and the spectacular currency crises associated with it—have led to a profound rethinking of possible central bank defenses. All immediate defenses against attacks combine intervening in the foreign exchange market and controlling the supply of domestic currency credit to short sellers.

- **Bank covering operations for forward contract positions.** Speculators attack a currency through short sales, generally by selling it to a bank through long-dated (at least one month) forward contracts. As standard practice, to balance the long domestic-currency position that this transaction initiates, the counterparty bank will immediately sell the domestic currency spot for, say, dollars for the conventional two-day settlement. While the bank will have balanced its currency mismatch, it still faces a maturity mismatch, which it typically closes through a foreign exchange swap entailing a delivery of dollars for domestic currency spot and a delivery of the currency for dollars 30 days forward.

- **Forward intervention by the central bank.** The central bank may be a customer in the forward market. If its forward purchase of domestic currency matches a forward sale of some other customer, its forward intervention will absorb the spot sales of its currency, making a direct intervention in the spot market unnecessary. By entering into a forward contract, the central bank implicitly supplies domestic currency credit directly to the short seller of its currency.

- **Credit provision.** In a currency crisis with the potential for a one-sided bet, few private parties would be willing net suppliers of domestic credit. Nevertheless, to fuel a speculative attack, the banking system must provide credit to the short sellers. If the central bank does not supply the credit directly through forward intervention, the credit must come through either its money market operations or its standing facilities. In either case, the currency provided by the banking system is a pass-through of credit from the central bank, which must be the ultimate counterparty in both legs of the position-balancing transactions of the banking system.

- **Interest rate defense.** A standard defense in a currency crisis is for the central bank to raise interest rates to squeeze short sellers. Nevertheless, to the extent that it continues to lend, the central bank partly finances the attack by providing funds at a ceiling interest rate, as the demand for domestic credit increases. This defense is designed to make speculators' financing costs higher than their anticipated capital gains in the event of a devaluation, which might force an eventual closing of short positions.

- **Controls on foreign exchange swaps.** Unfortunately, the interest costs of a squeeze are also imposed on agents that are short in the currency for commercial reasons and may thus affect economic activity. To mitigate these costs, a central bank may charge differential interest rates to identified speculators and concessionary rates to nonspeculators through credit controls. One way to do this is to identify as speculators foreign addresses that engage in foreign exchange swaps with domestic banks and either ban such swaps or insist that heavy forward discounts be imposed on the forward legs. Similarly, domestic banks may be forbidden from providing on-balance-sheet overnight or longer-maturity credit to foreign addresses. Such controls generate a spread between onshore and offshore interest rates on domestic currency loans, along with a strong incentive to circumvent the controls.

substantial short positions in a weak currency through spot, forward, and currency options markets, and through the rapidly growing markets in structured products (leveraged debt or equity instruments with payoffs tied to an exchange rate). Estimates put the total assets of hedge funds, proprietary traders, and speculative mutual funds at more than \$100 billion; in undertaking certain investments, these funds have leveraged their capital between five and ten times. In this environment, countries need to increase their intervention resources, adopt more complex intervention strategies, and be more vigilant for shifts in investor sentiment (Box 1).

Speculative currency attacks are not a uniquely modern phenomenon. Historically, they have occurred during periods characterized by high capital mobility and fixed exchange rates—for example, the gold-standard era and the 1920s. Then, as now, investors and lenders responded swiftly and abruptly to bad news about political or economic crises in a given country, launching speculative attacks on the country's gold reserves.

The most vulnerable countries today, as in the past, are those with little exchange rate flexibility. While many countries have found managed exchange rate arrangements useful as a means of providing a

nominal anchor for domestic price levels or maintaining competitive external positions, such arrangements require a macroeconomic policy stance consistent with the exchange rate regime and a financial market structure sufficiently strong and flexible to allow for an effective defense of the exchange rate (Box 2). Market perceptions of inconsistencies or weakness in policies or financial structure can precipitate speculative attacks. Recent empirical studies have determined that attacks (both direct attacks and those that represent the “contagion” effect of an attack on another currency) are most likely to target the currencies of countries with certain characteristics: a highly overvalued real exchange rate, a weak financial system and fiscal position, and an external debt position with a high proportion of short-term maturities.

Defenses

Typically, the first line of defense has involved some form of sterilized intervention in the spot and/or forward foreign exchange markets. When the intervention takes place in the spot market, the reduction in the monetary base resulting from central bank sales of foreign exchange is offset through actions designed to increase the supply of base money (e.g., central bank purchases of government securities). While intervention in the forward market does not involve an immediate reduction in the monetary base, it involves an offsetting action at the time the forward contract matures. The ability to sustain a program of sterilized intervention is ultimately constrained by the size of a country's foreign exchange reserves and the resources the country can obtain from other official institutions or by borrowing in the international markets.

Because a speculative attack requires the establishment of a net short position in the domestic currency, countries have employed a number of tactics to raise the costs of short positions. When sterilized intervention fails to stem capital outflows, short-term interest rates are allowed to rise, tightening conditions in financial markets and making it more costly for speculators to obtain a net short position by borrowing domestic currency. Frequently, however, an increase in short-term money market rates is transmitted quickly to the rest of the economy; it may therefore be difficult to sustain for an extended period, especially if there are weaknesses in either the financial system or the nonfinancial sector.

When high short-term interest rates impose an unacceptable burden on domestic residents, countries may “split” the

Resilient financial system is key to stability in Hong Kong, China

Under the Sino-British Joint Declaration of 1984, Hong Kong reverted to Chinese sovereignty on July 1, 1997, becoming the Hong Kong Special Administrative Region governed by the Basic Law of 1990. In monetary and financial affairs, the relationship between mainland China and Hong Kong will follow the principle of “one country, two currencies, two monetary systems, and two monetary authorities.” Article 109 of the Basic Law protects the status of Hong Kong as an international financial center. Article 110 ensures the independent formulation of monetary and financial policies and of regulation and supervision by the government of the Hong Kong Special Administrative Region. Article 111 stipulates that the legal tender will be the Hong Kong dollar, backed by a 100 percent reserve fund. Article 112 states that no foreign exchange controls will be applied. Article 113 specifies that the government of the Hong Kong Special Administrative Region will manage the Exchange Fund, primarily to maintain the value of the Hong Kong dollar.

Current market sentiment suggests that the transfer of sovereignty will not have any adverse effects on the Hong Kong dollar over the medium term. This sentiment reflects the generally positive assessment of the Hong Kong financial system and of the professional financial management practiced by the Hong Kong Monetary Authority.

The cornerstone of the financial system is the currency board linking the Hong Kong dollar to the US dollar. The Hong Kong Monetary Authority has successfully defended this arrangement, most recently in the summer and autumn of 1997. The first line of defense of the linked exchange rate is a large stock of reserves—\$64 billion, or 40 percent of 1996 GDP—at the end of April 1997. The second line of defense is the ability of the Hong Kong Monetary Authority to raise short-term interest rates to make it expensive for speculators to obtain Hong Kong dollar credit. The banking system is highly capitalized and liquid, with very low levels of nonperforming loans, and it can tolerate increases in short-term interest rates. In 1996, to ensure the robustness of the financial system, the Hong Kong Monetary Authority established a real-time, gross settlement system and the Mortgage Corporation, which will help to isolate property finance from fluctuations in short-term interest rates.

The People's Bank of China, which has reiterated its support for the present exchange rate arrangements in Hong Kong, has stated that it is prepared to use its own foreign exchange reserves to defend the Hong Kong dollar. The Hong Kong Monetary Authority has also established a swap facility with the People's Bank of China to provide liquidity to its reserves in the event of an attack on the exchange rate, as it has with 10 other monetary authorities in the region.

markets for domestic currency by requesting that domestic financial institutions not lend to speculators. Foreign exchange transactions associated with trade flows, foreign direct investment, and equity investments are usually excluded from such restrictions. In essence, a two-tier system is created that prevents speculators from getting domestic credit while allowing non-speculative domestic credit demand to be satisfied at normal market rates.

The Thai baht

Most of these tactics were in evidence in the recent attacks on the Thai baht. Adverse economic news from Thailand, combined with concerns that Japan would raise interest rates, precipitated severe pressure on the baht starting on May 7, 1997. For the first time since the Mexican crisis, exchange rate pressures in one country spilled over to a number of other emerging market currencies, including the

Indonesian rupiah, the Malaysian ringgit, the Philippine peso, and the Czech koruna. There were no notable immediate spillover effects on Latin American currencies. The countries whose currencies were adversely affected by the run on the baht had a number of features in common with Thailand. Indonesia, Malaysia, and the Philippines had all been affected to varying degrees by an economic slowdown in Asia. All had current account deficits (smaller than Thailand's, however) and most had accumulated debt rapidly during the 1990s. Furthermore, all had experienced a rapid appreciation of property prices, and their financial sectors had large exposures to the real estate sector. Conditions in the Czech Republic were similar.

Fearing wider contagion, Asian central banks coordinated their interventions in the foreign exchange markets. Countries also increased the cost of short-term credit. Interbank overnight interest rates rose by

varying degrees and over differing time spans across countries.

Thailand found it necessary to employ selective capital controls aimed specifically at reducing foreign speculators' access to domestic currency credit while excluding bona fide trade and investment transactions. Consequently, the sharpest increase in interest rates was in offshore markets—rates shot up to 1,300 percent, or more than 0.7 percent per day. In response to official pressure, banks—the primary providers of baht—refused to provide short-term credit to speculators, segmenting the onshore and offshore markets.

The Bank of Thailand made extensive use of the forward foreign exchange market as part of its intervention strategy. When forward contracts came due, foreign sellers of baht needed to supply baht in exchange for dollars. Limitations on the availability of baht credit forced speculators to square positions through the spot market by selling dollars for baht, putting upward pressure on the exchange rate. Sales of baht for dollars by speculators to nonresidents were limited to the spot foreign exchange markets, adding to speculators' costs. Thailand also controlled the supply of baht to speculators by restricting sales of foreign holdings of Thai stocks for baht on the Stock Exchange of Thailand (SET) and requiring that proceeds of sales be converted into dollars at the onshore rate. In essence, the strategy was to corner the baht available to nonresident speculators. Market sources report that forward sellers of baht had incurred losses of between \$1 billion and \$1.5 billion as of the end of June 1997 because of increased financing costs.

In the absence of extensive liquidation of baht positions by domestic residents, Thailand was able to withstand the pressures on the baht by relying on extensive application of selective capital controls until early July. However, in spite of the segmentation of baht credit markets, onshore interest rates remained high. In addition, attempts to arbitrage the differential between onshore and offshore rates continued. Finally, over the course of its intervention in May, the Bank of Thailand had accumulated large short foreign exchange positions on its forward book, constraining its ability to further intervene in the markets to counteract leakages in capital and exchange controls. On July 2, the Bank of Thailand abandoned the baht's peg to its traditional currency basket, and the baht immediately depreciated sharply against the US dollar. Pressures against the Philippine peso and the Malaysian ringgit

intensified. Bank Indonesia widened the trading band for the rupiah on July 11, which appeared to forestall a substantial buildup in pressures, although the rupiah depreciated nearly to the bottom of the new band by July 21. In Eastern Europe, the Czech koruna, which had been allowed to float on May 26, depreciated further, and the Polish zloty also fell. However, for these two currencies, conditions in Eastern Europe, including floods, may have played a greater role than a contagion effect. Similarly, the pressure on the South African rand may have been due primarily to developments specific to South Africa, including a negative credit risk report and declines in gold prices. In Latin America, concerns about the deterioration of Brazil's current account balance coincided with downward movements in equity prices; the Bovespa index dropped 15 percent between July 11 and July 18. (Given that stocks had soared more 90 percent in the first six months of the year, some market participants saw the decline as a necessary correction.) Concerns spread to other Latin American equity markets, particularly those in Argentina, Chile, and Mexico—countries with strong trade links to Brazil—but these markets recovered quickly.

What can be done?

Although the record private capital flows to emerging markets witnessed in 1996 were based on sound economic fundamentals, such flows are likely to be cyclical, even if the integration of emerging markets into the global financial system continues, because they are driven by divergent macroeconomic conditions in capital-importing and capital-exporting countries. Moreover, the pace of capital inflows and outflows in individual countries will be determined by political and economic developments and will thus be highly uneven. Strong and consistent macroeconomic, financial, and structural policies are the necessary conditions for ensuring sustained market access.

While markets will offer improved terms and conditions to those countries whose economic performance is viewed as strong, they may “discipline”—in the form of a sudden attack on a currency—countries with perceived policy inconsistencies and structural weaknesses. A notable feature of the currencies attacked in 1997 was their rigidity. These currencies were officially fixed or had fluctuated within very narrow bands.

Taking a short position in a currency is like short selling in any asset market where investors expect prices to decline. Short selling of equities, however, entails not only the costs of borrowing the equities but also the risk that equity prices may actually rise. In a general bear market for currencies created by a slowing of capital inflows, the rigidity of the exchange rate limits the downside risks from shorting the currencies and may thus intensify speculative pressures. In fact, the more rigid the exchange rate, the smaller the perceived downside risk involved in shorting the currency.

The defenses adopted by central banks may also have adversely influenced market

“Strong and consistent macroeconomic, financial, and structural policies are the necessary conditions for ensuring sustained market access.”

perceptions. For example, the sharp increase in interest rates dictated by the arithmetic of discrete devaluations over short periods of time illustrated graphically the high level to which interest rates need to be raised to deter speculators from shorting the currency. Moreover, as markets became more persuaded of the likelihood of devaluation, interest rates continued to climb. Market perceptions of the costs of the cumulative increase in interest rates on the domestic corporate sector, real economic activity, and particularly the soundness of the domestic financial system seemed to reinforce expectations of an eventual devaluation. It is notable that although reserves declined in each country as its currency came under pressure, they remained at relatively substantial levels. This suggests that raising interest rates may have a greater impact than reserve levels on market expectations of devaluation and on countries' decisions as to whether or not to continue to defend their currencies.

The adoption of selective capital controls can be an effective means of limiting short-term speculative pressure and may be justified when the attack is not warranted by underlying fundamentals, but they soon interfere with normal trade and finance. Moreover, because of the growing sophisti-

cation of financial markets, “leakages” will force authorities to cast an ever-widening net of administrative controls. In addition, the expectation that a country is likely to use capital controls during a crisis, thereby restricting the ability of investors to adjust their portfolio positions, could influence the cost and availability of external funds during normal periods. Another possible line of defense—the introduction of exchange controls (restricting the ability of market participants to exchange foreign for domestic currency)—could also have costly and disruptive effects on trade and finance, as well as on market confidence.

At times, because of the small size of capital markets in developing countries relative to the size of capital flows, the latter have caused substantial movements in domestic asset prices. Consequently, some countries have adopted or strengthened measures to reduce volatility in asset markets and limit downside risks—for example, restrictions on margin purchases of securities and short selling, prohibition of certain derivative products, limitations on foreign ownership, transactions taxes, and direct government intervention in equity and real estate markets. Such temporary prudential restrictions, if applied selectively and sparingly, can be helpful in maintaining market stability. However, movements of asset prices in the face of changes in capital flows are an important element of adjustment. Restricting price movements can lead to greater outflows as international investors attempt to reduce their exposures. Furthermore, direct government intervention to prevent price declines can increase moral hazard, because investors come to expect the government to provide some protection against large losses. A key policy objective should therefore be to increase the resilience of the economy to reversals in capital flows. **[F&D]**

This article was adapted from Chapter 4 of International Capital Markets: Developments, Prospects, and Key Policy Issues, World Economic and Financial Surveys (Washington, 1997), which was prepared by an IMF Research Department staff team led by David Folkerts-Landau, Donald Mathieson, and Garry Schinasi. The report reflects developments up to and including July 1997.