



Reducing vulnerability to speculative attacks

A speculative attack on domestic assets can occur irrespective of a country's fiscal situation—and political economy considerations may be the reason. What are the sources and risk factors of speculative attacks? And how can countries reduce their vulnerability?

In recent years Mexico and Thailand abandoned fixed exchange rate regimes, reopening the debate on how to reduce vulnerability to capital outflows in developing countries. In both countries—and in contrast with the experiences of the 1980s—speculative attacks did not occur in the context of budget deficits. But recent empirical work has identified other risk factors that, if minimized, can reduce vulnerability to such attacks.

Sources of speculative attacks

A speculative attack on domestic liquid assets occurs when speculators believe that a devaluation is imminent. This belief leads speculators to demand central bank foreign exchange reserves in exchange for their domestic currency asset holdings. The speculators' aim is to profit from buying reserves at the prevailing exchange rate and selling them after the attack at a higher exchange rate. If the central bank has no access to international credit or chooses not to borrow abroad, it will devalue the currency the moment it runs out of reserves.

What leads to expectations of devaluation in developing countries? Empirical studies have identified two broad sources: inconsistent macroeconomic policies and a sudden shift in perceptions about the sustainability of macroeconomic policies.

Inconsistent macroeconomic policies

The perils of inconsistent macroeconomic policies are evident in the case of Argentina, where the Central Bank was financing the government's budget deficit by creating money while trying to keep the exchange rate fixed—not a viable strategy in an economy integrated with the rest of the world, as Argentina was in the early 1980s (box 1).

Under a fixed exchange rate the central bank commits to exchange foreign currency for domestic money on demand at

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Box 1 ARGENTINA, 1979–81

In 1977 Argentina liberalized its financial sector, and in 1979 it opened its capital account. Fixed exchange rates and high interest rates attracted capital inflows that increased the supply of domestic high-powered money, helping to finance a growing government budget deficit. But policy inconsistencies soon became apparent. With expectations of devaluation on the rise, losing reserves became the order of the day. To stem the hemorrhage in reserves, the government offered incentives to borrow abroad and thus replenish the Central Bank's foreign exchange reserves. But this strategy led to a massive official debt that added an extra burden to government finances. Moreover, it did not restore credibility. In June 1981, after several devaluations, the fixed exchange rate regime was abandoned.

Source: Calvo and Calvo 1992.

A speculative attack on bonds—instead of currency—can also lead to a devaluation

a policy-determined rate. Domestic money is then determined solely by money demand. Money created by the central bank, if not demanded by the public, typically results in expectations of devaluation, leading to a loss in reserves.

The dynamics of crises due to inconsistent macroeconomic policies are captured in the popular Krugman model (Flood and Marion 1997). In this model, and as observed in developing countries, speculators attack the currency before the central bank runs out of reserves. At a certain point competition leads speculators to suddenly purchase all remaining reserves, which causes the government to abandon the fixed exchange rate. Note that this discussion focuses on explicit fixed exchange rate regimes. Still, floating exchange rate regimes in which the government intervenes—as happens in most developing countries with flexible exchange rates—are de facto fixed exchange rate regimes, and the same argument applies.

Sudden shift in perceptions

Mexico's 1994 crisis shows what happens when there is a sudden shift in perceptions about the sustainability of macroeconomic policies. The expectation that during a presidential campaign the government would not tolerate high interest rates associated with a currency defense led to a loss in reserves (box 2) and to a sudden shift in investor perceptions about the country's solvency. At that point Mexico's short-term public debt was about three times larger than its reserves. This vulnerability led investors to refuse to roll over the debt and to a devaluation. Thus Mexico also shows how a speculative attack on bonds—instead of currency as in Argentina—can lead to a devaluation.

Similarly, in Sweden a sudden shift in expectations about the government's willingness to borrow abroad to defend the currency led to a run on the Swedish krona and ensuing devaluation (box 3).

Other sources of a sudden shift in perceptions include the expectation of realized contingent liabilities, a drop in tax revenues associated with business cycles driven by capital inflows, and investor refusal to roll over

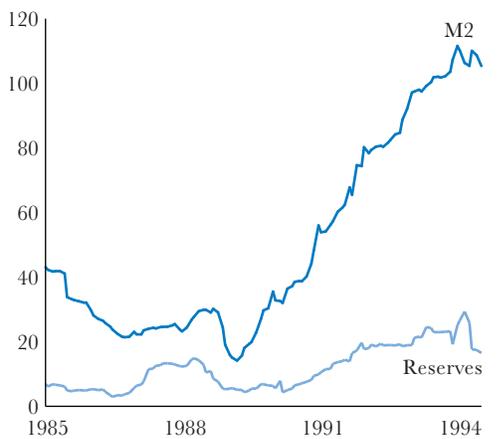
Box 2 MEXICO, 1994

In the early 1990s Mexico, a credible reformer, eliminated fiscal imbalances and liberalized its financial sector. But large capital inflows intermediated through the banking sector widened the gap between liquid financial sector debt (that is, M2) and international reserves (see figure), making Mexico vulnerable to speculative attacks.

In 1994 both shocks, an increase in U.S. interest rates, and domestic political turmoil led to capital outflows. To prevent a credit crunch and a banking crisis, the Central Bank injected liquidity—fulfilling investor expectations that the government would not tolerate high interest rates.

M2 GREW MUCH FASTER THAN INTERNATIONAL RESERVES

Billions of U.S. dollars



Source: Calvo and Mendoza 1996.

debt in countries other than the crisis country, an effect known as contagion. Contagion was evident in many developing countries after Russia devalued the ruble in August 1998.

In all these situations a devaluation was the result of self-fulfilling prophecies about the sustainability of the exchange rate. Models of speculative attacks resulting from sudden changes in perceptions are characterized by multiple equilibria in which an economy can suddenly jump from a no-attack to an attack equilibrium. In these models—so-called second generation models of balance of payment crises, in contrast to the first generation models pioneered by Krugman—an event, no mat-

Box 3 SWEDEN, 1992

In mid-1992 international events led to attacks on the Finnish markka, Norwegian krone, and Swedish krona. At the height of the attack Sweden's Riksbank defended the krona by borrowing reserves from abroad. But this defense was extremely unpopular: it increased (already high) unemployment and raised (high) interest rates, putting considerable strain on government accounts, borrowers, and a weak financial sector. Three months later, however, another attack occurred. This time market expectations were fulfilled that the government would not risk political support by again defending the currency.

Source: Obstfeld 1994.

ter how minor, can trigger a speculative attack on liquid debt.

Monitoring risk factors

Given the discussion above, identifying specific triggers of speculative attacks could prove impossible. Risk factors, however, have been identified and monitored. Increasing budget deficits and credit to government, real exchange rate appreciation, and large conventional solvency measures—such as the ratio of debt to exports—are risk factors of crises attributable to inconsistent macroeconomic policies.

Crises such as Mexico's in 1994 have led to the monitoring of variables on which changing perceptions about the sustainability of the exchange rate system could be predicated. These variables include private and public credit growth and the liquid debt financing gap—that is, the gap between a country's stock of liquid debt (M2, a central bank liability) and international reserves (see box 2). The liquid debt financing gap complements the conventional ratio of international reserves to monthly imports, which provides information about an economy's ability to finance its imports in the absence of external financing. Why are these vulnerability indicators important?

Rapid growth of credit (say, because of surges in capital inflows) typically leads to poorly supervised lending and bank over-

exposure to profitable but risky sectors. In addition, under explicit or implicit exchange rate risk insurance, such as a fixed exchange rate, financial institutions may not worry about loan risk and the maturity mismatch of (short-term) deposits and (long-term) loans. This situation makes the banking system vulnerable to a crisis due to a sudden drop in deposits (for example, due to a sudden stop in or reversal of capital inflows). This vulnerability leads investors to expect devaluation in economies where they perceive the government will bail out the banking system if banking problems arise.

Similarly, an increasing ratio of short-term debt to international reserves indicates that international reserves are insufficient to help cushion the effects of short-term debt refinancing difficulties. As noted, in Mexico investor refusal to roll over debt led to devaluation because of a large gap between short-term debt and international reserves. In calculating the short-term debt financing gap, both domestic and external public debt must be taken into account. It is particularly important to include domestic debt in countries where the debt is indexed to the exchange rate or there is an explicit or implicit exchange rate guarantee. Each country, however, must decide on the relevant measure of its liquid debt.

Not all the vulnerability indicators described above have proven reliable. Several studies on different types of speculative attacks suggest that only the real exchange rate level, domestic credit growth, and the ratio of M2 to international reserves can consistently signal an increased probability of a speculative attack (IMF 1998; Berg and Pattillo 1998).

What should countries do?

The best way for countries to reduce their vulnerability to speculative attacks is to eliminate sources of fiscal imbalances and prevent large variations in capital flows. More specifically, countries should:

- *Adopt consistent macroeconomic policies.* The consistency of policies should be assessed using a cyclically adjusted budget deficit to avoid inconsistencies during the down-

Each country must decide on the relevant measure of its liquid debt

Reducing incentives for short-term capital inflows can also reduce vulnerability to capital outflows

turn of the business cycle. Making provisions for contingent fiscal risks is also important (see PREMnote 9 on contingent liabilities).

- *Keep large international reserves relative to financial sector liquid liabilities.*
- *Reduce debt rollover risks.* Debt rollover risks due to a sudden shift in perceptions can be eased by reducing short-term debt, lengthening the maturity of debt, and preventing the bunching of maturing debt obligations (see PREMnote 17 on debt management). Note that short-term debt resulting from open market operations to contain banking credit increases vulnerability, as in Mexico in 1994.
- *Strengthen financial sector regulation and supervision and establish contingent sources of liquidity.* The goal here is to eliminate sources of expectations of bank bailouts. Contingent sources of bank liquidity include remunerated liquidity requirements and international credit lines that are activated only if deposits drop (see box 1 in PREMnote 17). Financial sector regulation should also cover nonbank financial institutions—so-called *financieras*, such as credit unions and mortgage companies, whose lending activities can be significant during periods of negative interest rates. These institutions have proven to be a source of vulnerability in many developing countries and have not contributed to effective monetary policy.
- *Regulate capital flows.* Reducing incentives for short-term capital inflows—as with Chile’s reserve requirements on external borrowing or taxes—can also reduce vulnerability to capital outflows. The challenge then becomes identifying the right environment for applying these measures, given their costs and risks. Grad-

ually opening the financial sector and the capital account has also reduced vulnerability in highly distorted developing countries.

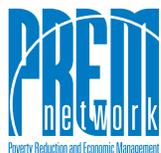
Not all economies are alike, however. Thus the measures needed to achieve these goals will vary by country.

Further reading

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This note was written by Sara Calvo (Senior Economist, Economic Policy, PREM Network, and facilitator of the Managing Volatility Thematic Groups).

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