
Macroeconomic Stability in Developing Countries: How Much Is Enough?

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Over the 1990s macroeconomic policies improved in most developing countries, but the growth dividend from this improvement fell short of expectations, and a policy agenda focused on stability turned out to be associated with a multiplicity of financial crises. This article examines the contents and implementation of the macroeconomic reform agenda of the 1990s. It reviews the progress achieved through fiscal, monetary, and exchange rate policies across the developing world and the effectiveness of the changing policy framework in promoting stability and growth. The main lesson is that more often than not slow growth and frequent crises resulted from shortcomings in the reform agenda of the 1990s. These concern limitations in the depth and scope of the reform agenda, its lack of attention to macroeconomic vulnerabilities, and its inadequate attention to complementary reforms outside the macroeconomic sphere.

For developing countries the 1990s were characterized by two major macroeconomic developments: improvements in macroeconomic policies and a proliferation of financial crises. Although macroeconomic policies as traditionally measured improved in most countries, the growth benefits expected from these better policies failed to materialize—at least to the extent anticipated by many observers—and a series of financial crises had adverse effects on economic growth and poverty in the countries involved. This article examines the relationship between these two developments. It argues that slow growth and multiple crises were symptoms of deficiencies in the design and execution of the pro-growth reform strategy adopted in the 1990s, of which macroeconomic stability was viewed as the centerpiece.¹

A useful way to characterize the interpretation of recent growth experience proposed here is from the perspective of Rodrik (2004) “growth strategies.” He argued that well-established property rights, market-oriented incentives, fiscal solvency, and price stability are first-order economic principles that are necessary conditions for rapid economic growth. He stressed that these conditions can be implemented

through a variety of institutional arrangements and identified two views on whether establishing these conditions is also sufficient to accelerate economic growth. One view suggests that rapid growth is simply waiting to happen once the conditions are met; the other contends that more proactive government policies are also required. This evaluation of macroeconomic reform's role in growth takes the second perspective. It has four parts.

First, improvements in fiscal solvency and price stability did not occur in all developing countries. As a consequence, macroeconomic instability continued to impede growth in some countries, and in several cases traditional macroeconomic imbalances resulted in crises during the 1990s that resembled those of the 1980s.

Second, what matters for growth is the private sector's perception that fiscal solvency and price stability will be sustainable, which requires underlying fiscal and monetary rules and institutions to be reformed. Improved macroeconomic policy realizations were much more widespread than reforms in the rules and institutions governing macroeconomic policy formation. The limited progress in reforming macroeconomic institutions likely undermined the contribution of macroeconomic policy improvements—even when they could have been sustained *ex post*—to the stimulation of economic growth.

Third, the macroeconomic stability sought through fiscal solvency and price stability was undermined by fragility caused by misguided reform policies in the domestic financial system and the capital account of the balance of payments. These policies left many stabilizing economies highly vulnerable to adverse shocks and proved to be the Achilles' heel of macroeconomic stability in some of the most important crises of the 1990s.

Fourth, and perhaps most important, the growth payoff of macroeconomic stability *per se* may have been oversold. Fiscal solvency and price stability are conducive for growth because macroeconomic instability hampers investors' ability and willingness to undertake investment opportunities—understood in the broadest sense of the term. But for macroeconomic stability to deliver growth, those opportunities must exist in the first place. In other words, macroeconomic stability may not be the binding constraint that prevents accelerated economic growth. Not only are well-defined property rights and market-oriented incentives also important for satisfactory growth, but if the proactive government view mentioned above is correct, a variety of other measures may also be required. In short, macroeconomic stability can help, but by itself it cannot deliver growth. Unfortunately, gains in macroeconomic stability were often not complemented by the necessary growth-enhancing reforms in other parts of the economy.

The rest of this article develops these arguments by examining the macroeconomic reform agenda of the 1990s. It first reviews progress in implementing the reform agenda during the past decade. It then evaluates the effectiveness of the reforms from an economic growth perspective and discusses how a policy agenda

focused on macroeconomic stability was associated with a multiplicity of financial crises. It concludes by summarizing the lessons from the experience of the 1990s.

The Facts of the 1990s

Macroeconomic instability refers to phenomena that make the domestic macroeconomic environment less predictable. Unpredictability hampers resource allocation decisions, investment, and growth.² It can take the form of volatile key macroeconomic variables or perceived unsustainability in their behavior. This section evaluates developing countries' gains in macroeconomic stability during the 1990s, looking separately at the behavior of macroeconomic outcome variables, policy variables, and exogenous shocks.

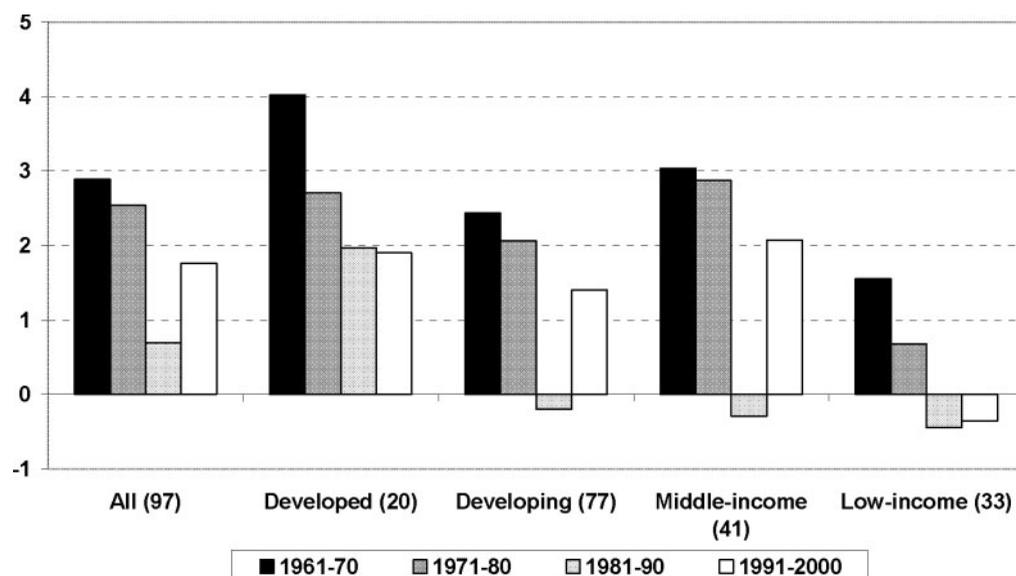
Macroeconomic Outcomes

For developing countries, growth rebounded in the 1990s from the depths of the 1980s, but it still fell far short of the levels achieved in the late 1960s and 1970s and lagged behind the growth of industrial countries (figure 1). Low-income countries did much worse than middle-income countries in the 1990s, showing little improvement relative to the 1980s, whereas middle-income countries' growth rates in the 1990s were roughly on par with those of developed economies: much higher than in the 1980s but well below those in the 1960s and 1970s.

What about the stability of growth outcomes? Developing countries have traditionally been characterized by more macroeconomic instability than developed economies, and there is a widespread perception that globalization has made the situation worse (IADB 1995; De Ferranti and others 2000; Easterly, Islam, and Stiglitz 2001; Rodrik 2001). However, the volatility of key macroeconomic aggregates actually declined in the 1990s across the developing world. The standard deviation of per capita GDP growth fell from 4 percent in the 1970s and 1980s to about 3 percent in the 1990s, although it still remained significantly above the 1.5 percent seen in developed economies (figure 2).³ Although the reduction in volatility of GDP growth was widespread, it was far from universal; of the 77 developing countries for which complete data are available over 1960–2000, more than a third (27 countries) experienced an increase in growth volatility in the 1990s relative to the 1980s.⁴

Moreover, the reduction in aggregate output volatility concealed increasing extreme instability. Large growth disturbances accounted for a larger share of overall instability in the 1990s than in previous decades because of the increased contribution of large negative shocks (crises), which accounted for close to 25 percent of total growth volatility compared with 14 percent in the 1960s and 1970s and 18 percent

Figure 1. Median Real GDP Growth, by Decade and Country Income Group (Percent)



Note: The sample comprises 97 countries with a population above 500,000 that have complete data on real GDP growth over 1960–2000. The population minimum is set to exclude highly volatile island economies. Of the 77 developing economies, three (Hong Kong, China, Israel, and Singapore) are high-income, non-Organisation for Economic Co-operation and Development economies.

Source: World Bank (various years); Hnatkovska and Loayza (2004).

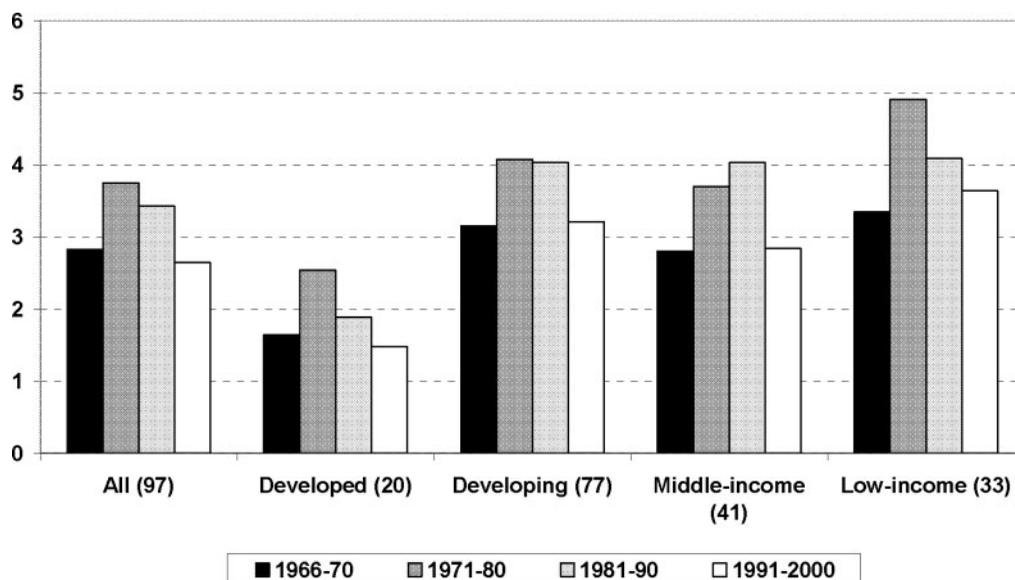
in the 1980s (figure 3). Negative extreme shocks also accounted for a larger share of the total volatility of gross national income and consumption in the 1990s than in previous decades.

Other key outcome variables commonly used as indicators of macroeconomic stability improved in the 1990s. For example, the median inflation rate across middle-income countries declined from a peak of 16 percent in 1990 to 6 percent in 2000. In low-income countries inflation peaked in 1994–95, after the devaluation of the CFA franc, and then declined (figure 4). Yet over most of the 1990s the gap between developed and developing country median inflation rates was substantial by the standards of the 1960s and 1970s.

Likewise, the prevalence of high inflation in developing countries peaked in 1991 and then declined sharply. However, the decline took hold only in the mid-1990s, and thus the share of developing countries (among those with complete data) experiencing average inflation above 50 percent over the decade as a whole was unchanged between the 1980s and the early 1990s.

Finally, current account deficits followed disparate trends in low- and middle-income countries. In middle-income countries the median current account deficit to GDP

Figure 2. Standard Deviation of per Capita GDP Growth, by Decade and Country Income Group (Percent)



Note: The sample comprises 97 countries with a population above 500,000 that have complete data on real GDP growth over 1960–2000. The population minimum is set to exclude highly volatile island economies. Of the 77 developing economies, three (Hong Kong, China, Israel, and Singapore) are high-income, non-Organisation for Economic Co-operation and Development economies.

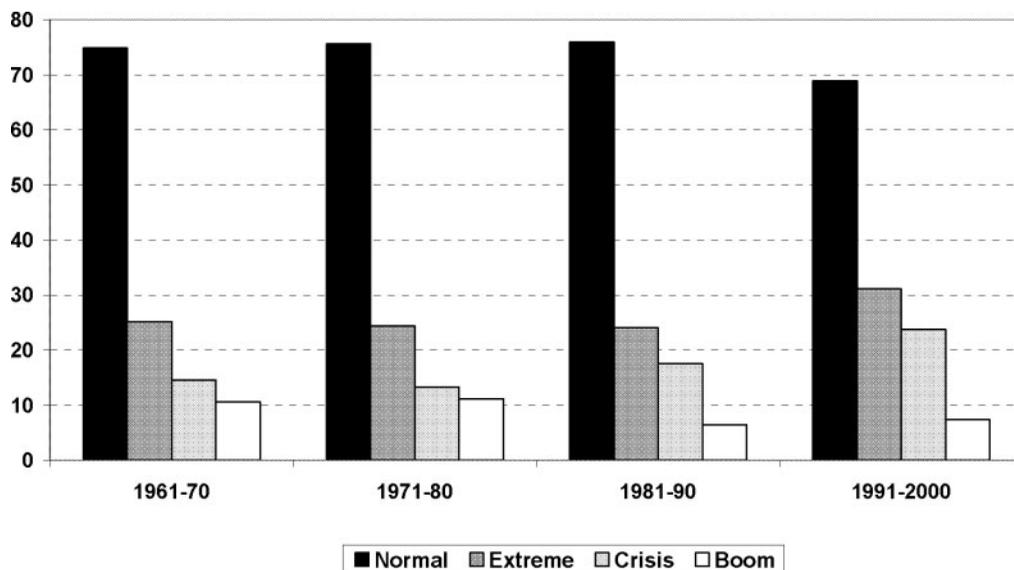
Source: World Bank (various years); Hnatkovska and Loayza (2004).

ratio fell by about 1 percentage point from the 1970s and 1980s. In part, however, this apparent improvement reflects the sudden stop of capital inflows to crisis-afflicted emerging market economies. In low-income countries, the deficit rose by about half a point to almost 5 percent in the 1990s (figure 5).

Policy Stability

Conventional indicators of policy stability also show a broad improvement over the 1990s. Most notably, the overall fiscal deficit fell across the developing world from a median value of 6–7 percent of GDP in the early 1980s to 2 percent in the early 1990s before rebounding to about 3 percent by the end of the decade. The fiscal correction was particularly pronounced among middle-income countries. However, the overall fiscal balance is affected by the impact of interest rate changes on public debt, which is beyond the direct control of the authorities. Thus the primary balance likely offers a more accurate measure of fiscal stance. Over the 1990s it shows a clear trend of increasing surpluses, particularly after 1995 (figure 6). By the end of the

Figure 3. Decomposition of Growth Volatility in Developing Countries, by Decade (Mean Percentage of Total Volatility)



Note: Total volatility = normal + extreme; extreme = crisis + boom. Extreme shocks are defined as those exceeding two standard deviations of output growth over the respective decade.

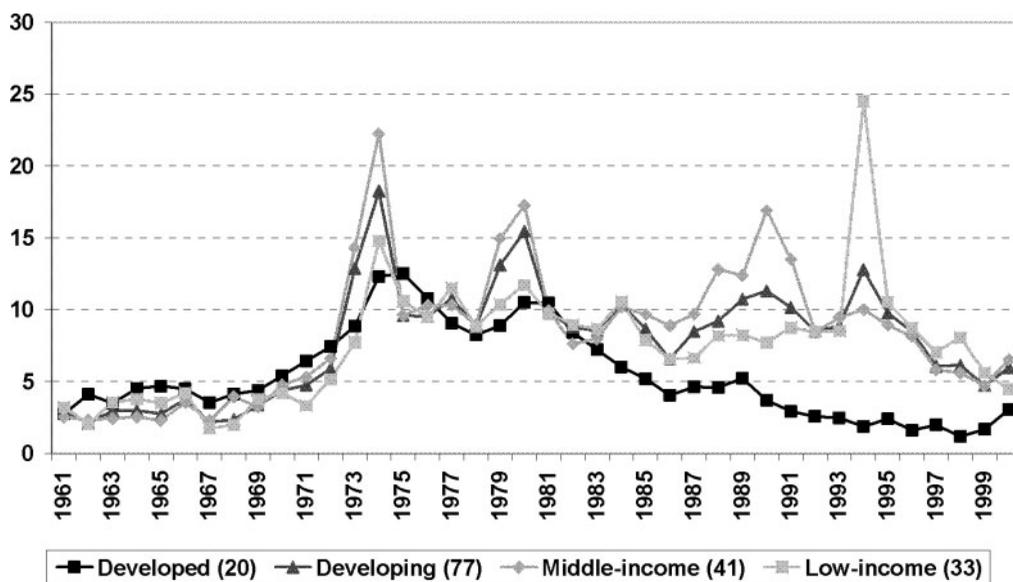
Source: Authors' calculations based on data from Hnatkovska and Loayza (2004).

decade the median developing country showed a primary surplus—although a much more modest one than that of industrial countries.

Because of the diversity of monetary arrangements across developing countries and over time, it is more difficult to gauge monetary stability. One rough measure is the resort to seigniorage—that is, using money to finance deficits. Measured by the change in the monetary base relative to GDP, seigniorage collection rose during the late 1980s and early 1990s and then declined in both middle-income and (more modestly) low-income economies (figure 7), a pattern roughly similar to that of the inflation rate.

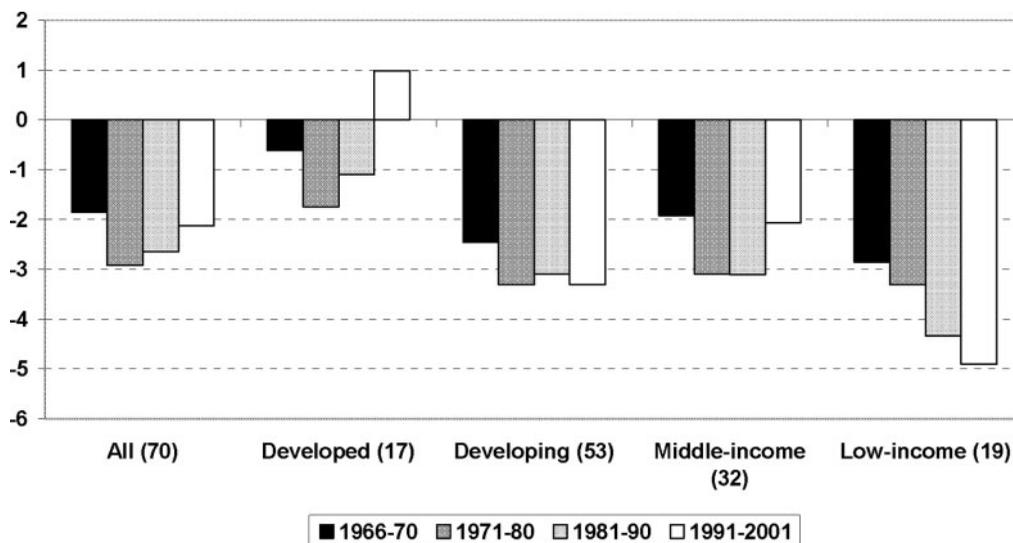
The diversity of exchange rate arrangements across countries also makes it hard to gauge exchange rate policy. One indirect approach looks at the trends in real exchange rates, which are of course endogenous and subject to the influence of a variety of factors, including the nominal exchange rate. Shvets (2004) showed that real exchange rates depreciated over the 1990s in most developing economies. At the same time real exchange rate volatility (as measured by the standard deviation of its rate of change) showed a decline from the record high levels of the 1980s. But the decline was limited to middle-income countries, and over the 1990s developing countries as a group exhibited much higher real exchange rate volatility than

Figure 4. Median Inflation Rate, by Country Income Group, 1961–2000 (GDP Deflator)



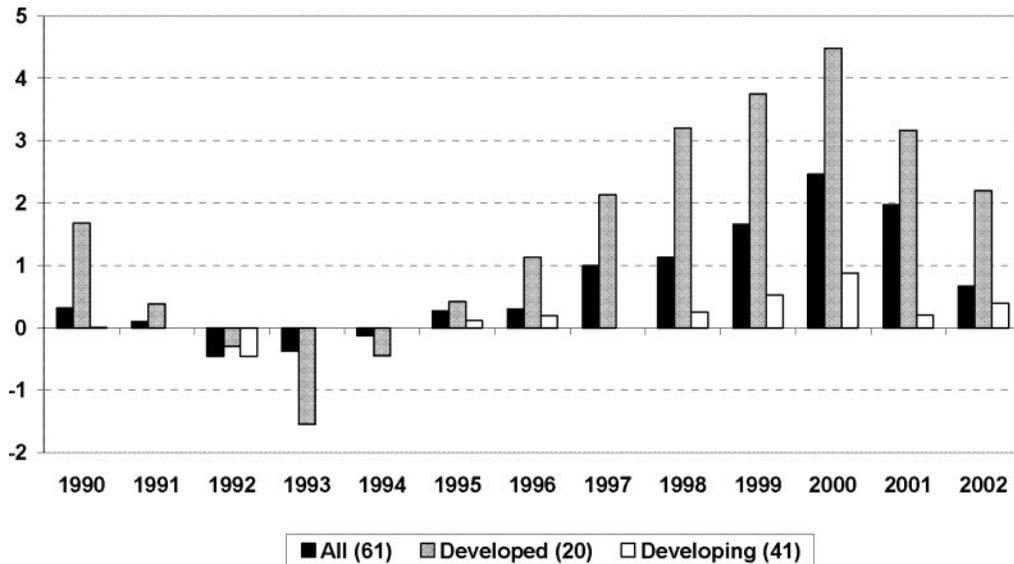
Source: World Bank (various years).

Figure 5. Median Current Account Balance, by Decade and Country Income Group (Percent of GDP)



Source: World Bank (various years).

Figure 6. Median Primary Fiscal Balance, by Country Income Group, 1990–2002 (Percent of GDP)



Note: Data differ in source and coverage from those in figure 7; the figures are not strictly comparable.
Source: Fitch Ratings (various years).

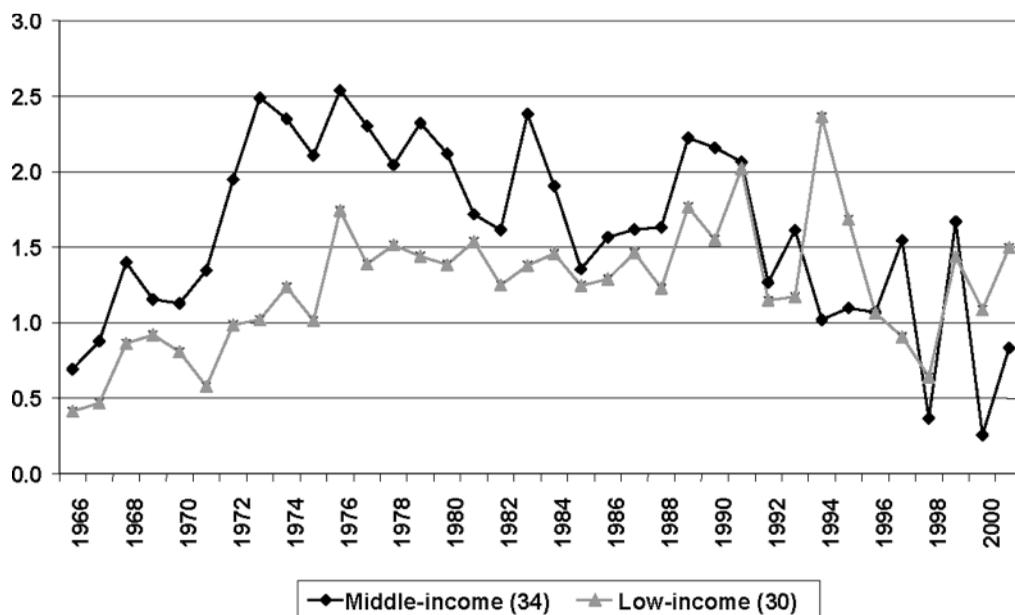
industrial countries (Montiel and Servén 2004). This high real exchange rate volatility partly reflected the high incidence of exchange rate crashes in the decade, when large devaluations were a frequent phenomenon (figure 8). Their incidence peaked in 1994, with the devaluation of the CFA franc, and in 1998, with the East Asian and Russian financial crises. Over the 1990s as a whole exchange rate crashes were slightly less frequent than in the 1980s but much more so than in the 1960s and 1970s.⁵ High real exchange rate volatility and frequent exchange rate collapses suggest that over the 1990s progress in achieving robust nominal exchange rate arrangements was limited.

Summary

Over the 1990s developing countries made notable progress on fiscal consolidation and limiting inflation. Improved fiscal and nominal stability helped attain a modest reduction in output volatility. These achievements were also facilitated by a somewhat more stable external environment:⁶ the volatility of the terms of trade declined in all developing regions, in most cases to levels comparable to those of the 1960s, and capital flow volatility also fell, although to a more limited extent.

But the situation is far from rosy. In terms of outcome variables, developing countries remain much more unstable than developed ones. Moreover, extreme volatility

Figure 7. Developing Countries' Median Seigniorage Revenues, by Country Income Group, 1966–2001 (Percent of GDP)



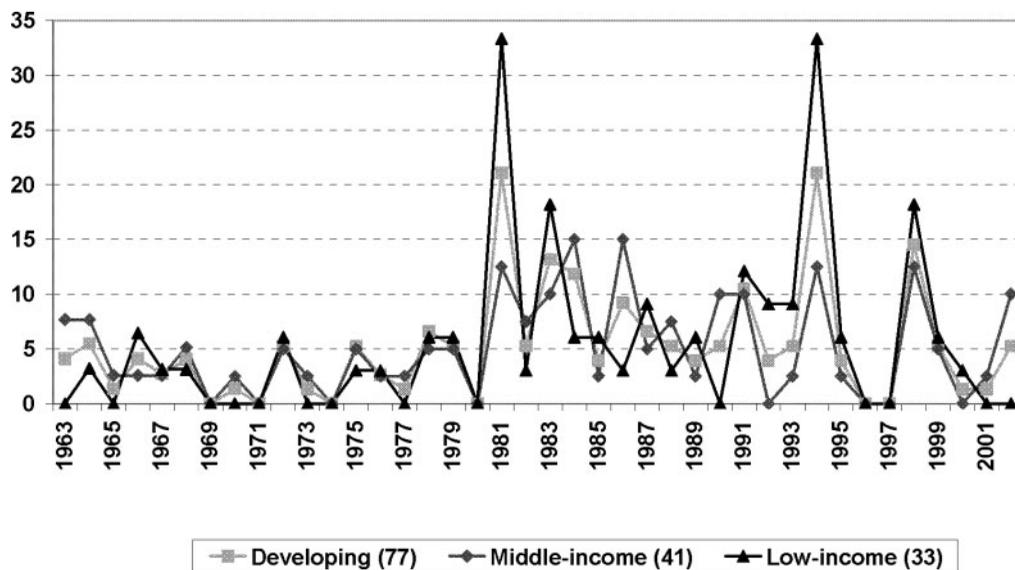
Source: IMF (various years); World Bank (various years).

accounted for a larger share of total volatility in the 1990s than before, which is consistent with evidence suggesting that currency crashes and sudden stops in capital inflows did not tend to decline during the 1990s (Montiel and Servén 2004). The situation is therefore one of dramatic policy improvements in some areas, more moderate improvements in the stability of macroeconomic outcomes, and persistent vulnerability to extreme macroeconomic events. The next section uses these findings to interpret the growth performance of developing countries during the 1990s.

Assessing the Experience of the 1990s

The previous section has shown that macroeconomic policies and macroeconomic stability in developing countries improved along several important dimensions during the 1990s. These improvements were driven largely by the quest for higher growth. Yet as Pritchett (2004a) has argued, the growth payoff fell short of expectations. To examine why, this section briefly reviews the analytical links between macroeconomic stability and economic growth and then interprets the experience of the 1990s in the context of that analytical framework.

Figure 8. Share of Developing Countries Undergoing Exchange Rate Crises, 1963–2002 (Percent of Developing Countries)



Note: An exchange rate crisis is defined as in Frankel and Rose (1996): a depreciation of the (average) nominal exchange rate that exceeds 25 percent, exceeds the previous year's rate of nominal depreciation by at least 10 percent, and is at least three years away from any previous crisis.

Source: IMF (various years).

From Stability to Growth

Theory suggests that the link between macroeconomic policy stability and growth has three components. First, the direct contribution that policy stability can make to growth (by ensuring that policy itself does not become an additional source of instability) likely depends on the institutional setting, because what matters for investment decisions is not only whether policy realizations are favorable today but also the perceived likelihood that appropriate policies will be repeatedly implemented in the future. To have a significant impact on growth, therefore, actual gains in macroeconomic stability need to be viewed by the private sector as indicative of a permanent change in the macroeconomic policy regime.

Second, the potential indirect contribution of policy stability to growth—by promoting the stability of macroeconomic outcomes—likely depends on the economy's degree of macroeconomic fragility, that is, the extent to which even relatively minor shocks can have large effects on the economy. On the one hand, fragility may make it too costly to deploy stabilization policies for the fear of potentially adverse effects, resulting in policy paralysis; on the other hand, fragility can mean that the instability

that policy has to counter may become so severe that feasible policy adjustments are unable to counter it.

Third, as already stressed, growth does not depend only on macroeconomic stability. The effectiveness of stability in outcomes in promoting economic growth likely depends on a variety of growth determinants, including microeconomic factors such as the definition and enforcement of property rights and the prevalence of market-oriented incentives that are jointly required for markets to perform their allocative role. The rest of this section evaluates the reform agenda of the 1990s from this three-part analytical perspective.

How Much Progress Was Really Achieved in the 1990s?

As documented above, on the whole there were significant achievements in terms of stability in the traditional macroeconomic policy sense during the late 1980s and early 1990s. But these achievements were not universal, they were not always grounded on solid institutional foundations to guarantee their permanence, and they rarely translated into a more effective use of macroeconomic policies as stabilization instruments.

A useful framework within which to discuss these issues is the fiscal solvency condition, $PV(T - G + dM) \geq B(0)$, which requires the present value (*PV*) of primary surpluses ($T - G$) and seigniorage revenue (dM) to be at least as large as the government's outstanding stock of net debt.

From a macroeconomic policy viewpoint, stability requires the authorities to take a monetary and fiscal policy stance consistent with maintaining fiscal solvency at low inflation, while leaving some scope to mitigate the impact of real and financial shocks on macroeconomic performance. Obviously, the first requirement imposes constraints on the magnitudes of both the primary deficit and its money financing, while the second refers to the profiles of monetary and fiscal policy over the business cycle.

Most important, these requirements apply not only to current policies but also to future ones, as implied by the *PV* term in the expression. Indeed, one of the key dilemmas for macroeconomic policymaking is precisely how to ensure and convey to the private sector that future policies will abide by the requirements of solvency and low inflation without having to surrender the short-run stabilization capability of monetary and fiscal policy, that is, the tradeoff between credibility and flexibility. As discussed later, many of the achievements and disappointments of the 1990s relate to the search for lasting solutions to this dilemma.

Reassessing developments during the 1990s in light of the above expression leads to six key observations:

- A comfortable perception of fiscal solvency has yet to be established in most countries.
- Improved fiscal balances have often been achieved with stopgap measures or in ways inimical to growth and welfare.

- In many countries fiscal policy remains destabilizing.
- Lasting nominal stability remains to be credibly established.
- The transition to robust exchange rate arrangements has been anything but smooth.
- The reform agenda proved to be incomplete.

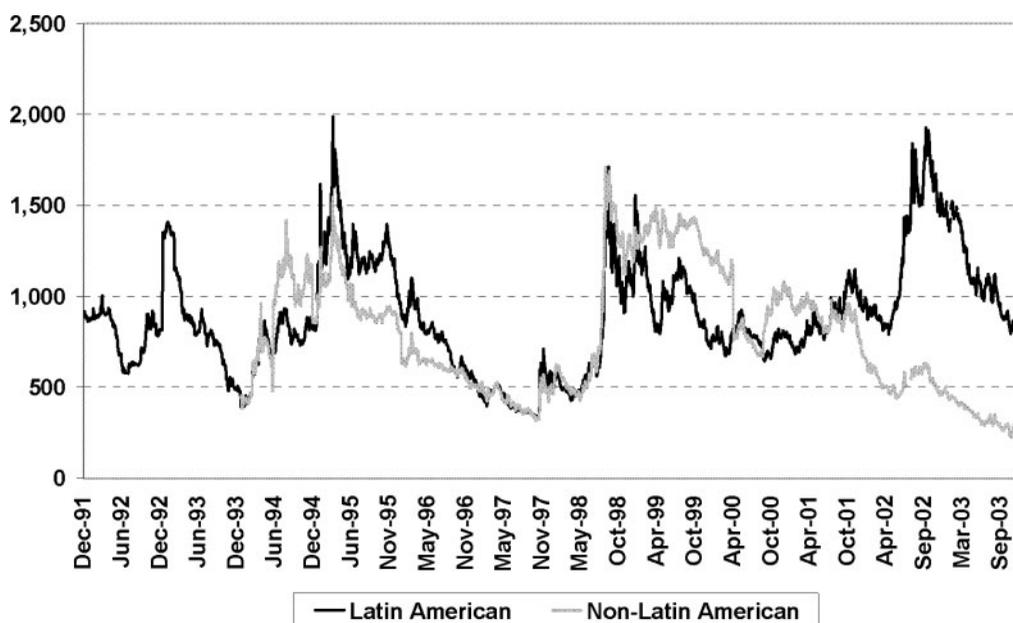
A comfortable perception of fiscal solvency remains to be established in most countries. Despite the trend toward lower fiscal deficits documented earlier, public debt ratios remained high in most developing countries, showing little decline during the 1990s. For developing countries with available data, the median public debt to GDP ratio remained in the 50–60 percent range over the decade. A decline through 1997 was followed by a rising pattern, so that by 2001–02 the median developing country debt ratio exceeded the 1990–2001 level—as did the median industrial country debt ratio. On the whole, for the 46 low- and middle-income countries in the sample debt ratios rose in 24 countries and fell in 22 countries.

This persistence of high debt over the 1990s and its upward drift at the end of the decade have five main causes. First, improvements in fiscal performance, as measured by reductions in primary deficits, were not universal.⁷ Second, in many cases the pressure of weak public finances on debt accumulation was aggravated by attempts at rapid disinflation, which implied a drop in deficit monetization. Without an equally rapid correction of the primary deficit, debt issuance was left as the only available source of financing. Empirically, this is confirmed by the fact that over the 1990s disinflation shows a statistically significant association with subsequent rises in debt ratios. Third, in several countries that did achieve a fiscal adjustment over the 1990s, most public debt accumulation reflected the cost of banking system bailouts. (The realization of other contingent liabilities and the recognition of hidden ones were also significant sources of debt accumulation in some countries, such as Argentina; see Mussa 2002.) Indeed, some of the banking crises of the 1990s—especially those in East Asia in 1997—ranked at the top of the historical record in terms of fiscal impact. Fourth, where the bulk of public debt was denominated in (or indexed to) foreign currency, large real exchange rate depreciations were another major factor behind the upward trend in debt stocks in the late 1990s.⁸ A fifth factor behind persistently high debt was the high level of real interest rates in many countries, particularly in the late 1990s, which largely reflected a lack of credibility in their stabilization efforts, documented below. Excessive reliance on short-maturity debt made some countries' overall fiscal outcomes—and thus their rates of public debt accumulation—highly sensitive to changes in domestic interest rates. Thus, in some countries (notably Brazil) high real interest rates contributed to a rapid pileup of public debt that further weakened perceptions of solvency and macroeconomic stability.

In terms of the solvency constraint introduced earlier, the bottom line is that through all these channels, increases in the observed value of the primary surplus $T - G$ were not enough to lower the public debt and establish a comfortable perception of fiscal solvency in many countries. A strong indication that solvency perceptions remained shaky in the 1990s is the fact that default risk premiums, as measured by sovereign borrowing spreads in international markets, remained highly volatile for most emerging market economies (figure 9). The evidence suggests that default risk depends not only on debt burdens but also on investors' perceptions about the quality of borrowers' policy and institutional framework (Kraay and Nehru 2003). Thus, the volatility of risk premiums likely reflected—among other factors—the market's lack of confidence in borrowers' commitment to stability.

But perceptions of high default risk are not just a symptom of perceived vulnerability; they also indirectly undermine durable outcome-based macroeconomic stability by creating macroeconomic fragility. In particular they hamper countries' ability to conduct stabilizing policy: when default risk is perceived to be high and very sensitive to changes in circumstances, attempts to run deficits at times of cyclical contraction may be viewed with suspicion and result in large jumps in risk premiums (and thus borrowing costs), discouraging the use of countercyclical fiscal policy (see Calderón, Duncan, and Schmidt-Hebbel 2003 for empirical confirmation).

Figure 9. Emerging Markets Bond Index for Latin American and Other Borrowers (Basis Points)



Source: JP Morgan (various years).

Moreover, the scope for independent monetary policy can also be severely constrained by the impact of changes in monetary stance on the cost of public debt through the associated changes in the nominal exchange rate and interest rate.

Improved fiscal balances have often been achieved with stopgap measures unlikely to be sustainable or in ways inimical to growth and welfare. Weaknesses in fiscal adjustment were not limited to the fact that increases in debt often offset improvements in primary surpluses. Often the improvements were likely to be perceived as purely temporary—because the measures behind them were transitory, because they reflected accounting transactions that had no effect on solvency, or because they directly compromised future growth and welfare. In terms of the solvency constraint above, such adjustments often had a significant impact on the current deficit but had little effect (or even an adverse one) on the path of future deficits.

In some instances, especially during the early part of the 1990s, fiscal adjustments reflected a rise in revenues from a temporary boom in tax bases—for example, a consumption boom fueled by a transitory surge in capital inflows in an economy whose tax system was dominated by the value added tax. When the boom ended abruptly, a major fiscal gap opened in the recession. There is evidence that this mechanism had a significant role in some emerging markets in the 1990s (Talvi 1997). Elsewhere a variety of accounting measures improved conventional debt indicators without making substantive progress toward fiscal solvency. Common devices included one-time asset sales to finance the retirement of public debt (which in principle implies no change in government net worth) and replacement of explicit debt with contingent liabilities (for example, granting debt guarantees rather than subsidies to public firms). Measures such as these result in improvements in a benchmark closely watched by investors and international financial institutions—gross public debt—but have no effect on solvency. In other words, they represent illusory fiscal adjustment (for example, see Easterly 1999 and Easterly and Servén 2003).

More generally, in many fiscal adjustment episodes, the focus on the quantity of adjustment was not matched by a comparable emphasis on its quality. The attention given to public spending composition and to its implications for growth and welfare has often been limited. This disinterest sometimes resulted in adjustment at the cost of basic social needs—for example, by giving inadequate protection to critical social expenditures (IMF 2003).

More often than not, productive public expenditures (on such items as human capital formation and infrastructure) are compressed in the process of fiscal adjustment, mostly because the emphasis on cash deficits and debt discourages projects whose costs are borne upfront but whose returns accrue only over time. Such projects have the same impact on the government's short-term financing needs as pure consumption or any other spending item, even though their impact on solvency is quite different because, unlike consumption, they involve creating assets

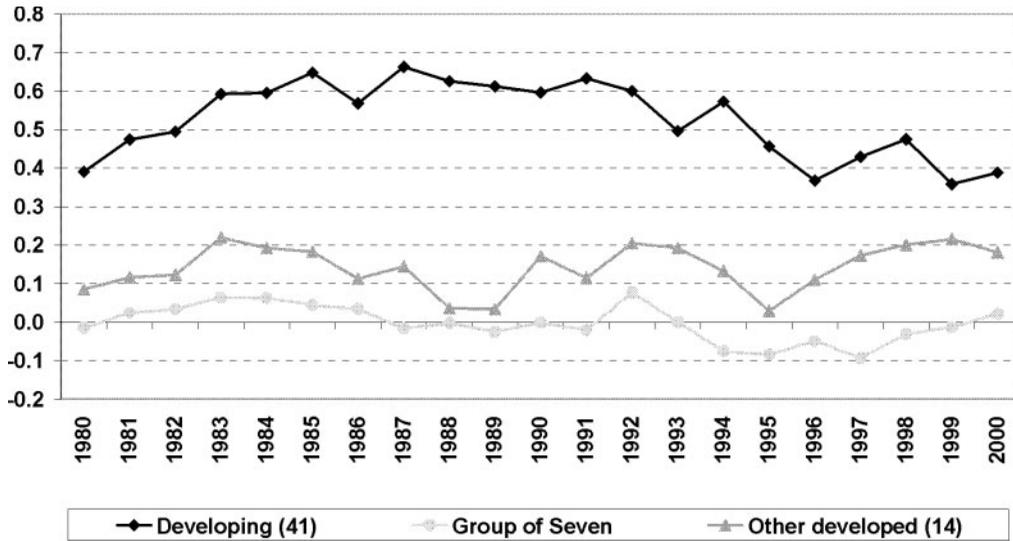
that yield future revenues—be it directly or in the form of augmented tax collection resulting from higher output levels. Conventional fiscal aggregates (such as the primary or the overall surplus) closely monitored by the international financial institutions and investors ignore this distinction, and thus fiscal adjustment tends to have an anti-investment bias amply documented in both developed and developing countries (Blanchard and Giavazzi 2003; Easterly and Servén 2003). To the extent that reduced investment lowers growth and hence future tax bases, such bias can have adverse consequences for growth—or even for fiscal solvency itself. The experience of Latin America, where declining public infrastructure spending accounted for the bulk of the fiscal correction achieved by some of the region’s major countries in the 1990s, provides a good example of this perverse dynamic.

In many countries fiscal policy remains destabilizing. As is well known, fiscal policy in developing countries tends to be procyclical, expanding in booms and contracting in recessions. Empirical estimates show that a 1 percent increase in GDP growth tends to raise the growth rate of public consumption spending, for example, by about 0.5 percentage points in developing countries. The corresponding figure for industrial countries is much smaller (around 0.15), and for the largest of them (the Group of Seven countries), the response of public consumption is actually negative (Talvi and Vegh 2000; Lane 2003). By this measure, fiscal procyclicality in developing countries peaked in the 1980s and declined somewhat over the 1990s—but still remains much higher than in industrial countries (figure 10). Indeed, procyclical fiscal policy played a key role in some of the major crises of recent years, Argentina being a prime example (Mussa 2002; Perry and Servén 2003).

Lasting nominal stability remains to be credibly established. As shown earlier, developing countries substantially reduced deficit monetization during the 1990s. But whether price stability can be sustained in many of them remains to be established. As the government’s intertemporal budget constraint indicates, the roots of inflation are ultimately fiscal. Thus, while a transitory reduction in deficit monetization can be achieved in a variety of ways, unless durable increases in the primary surplus are somehow institutionalized, continuing pressures on the government budget will result in debt accumulation that will in turn create pressures for monetization.

Indeed, during the 1990s, many countries’ reductions in deficit monetization were not accompanied by lasting solutions to fiscal problems. In some cases (for example, Argentina, Brazil, Ecuador, Mexico, the Russian Federation, and Turkey) reduced inflation rates were achieved by stabilizing exchange rates. While improvements in price performance made reductions in money growth rates possible in these cases, sustainability remained questionable in all of them. In most cases continued fiscal pressures were accompanied by real exchange rate appreciations and increases in real interest rates, leading to a pileup of public debt and calling into

Figure 10. Cyclical Behavior of Public Consumption, by Country Income Group, 1980–2000



Note: The figure shows the median of country-specific coefficient estimates obtained by regressing the rate of growth of public consumption on the rate of GDP growth (plus a constant) over 15-year rolling windows.

Source: World Bank (various years).

question the sustainability of the stabilizations. In Argentina and Ecuador the lack of fiscal discipline led to the adoption of hard exchange rate pegs (a currency board in Argentina and dollarization in Ecuador) in the hope that they would somehow harden government budget constraints. Their failure to do so shows that such quick fixes are not enough to achieve lasting nominal stability without an independent commitment to responsible fiscal policies. In this way, Brazil, Mexico, and Turkey's exchange rate-based stabilizations that relied on soft pegs eventually resulted in currency crises that gave way to short bursts of accelerated inflation.

In view of this experience some countries adopted an alternative institutional arrangement during the 1990s, relying on an independent domestic central bank with a commitment to price stability. Like a fixed nominal exchange rate, such an arrangement works in principle by committing the central bank to a low value of deficit monetization (dM), thereby imposing a hard budget constraint on the fiscal authorities and forcing them to adjust the primary deficit ($T - G$) to the requirements of price stability. For such an arrangement to be effective in promoting lasting price stability, the central bank has to be committed to price stability and able to resist pressure for monetization from the fiscal side (that is, it has to avoid fiscal dominance and achieve true independence from the finance ministry). But establishing a truly independent and effective central bank has not been a straightforward matter either. The creation of independent central banks in Venezuela in 1989 and in Mexico in

1993, for example, did not prevent the substantial political pressure for credit creation that contributed to currency crises in the first half of the 1990s.

How successful have developing countries been in creating a credible commitment to nominal stability? One way to infer the private sector's expectations for nominal stability is by observing its behavior, for example, the prevalence of dollarization. Since agents can partly protect themselves from nominal instability by denominating their assets in foreign currency, improved confidence in nominal stability should reduce dollarization, even though perceptions of nominal instability are not the only factor behind financial dollarization.⁹ However, many developing countries remained heavily dollarized by the end of the 1990s, and the median degree of dollarization of bank deposits among low- and middle-income countries actually increased over the 1990s (IMF various years, 2002; Reinhart, Rogoff, and Savastano 2003). The contrast with high-income countries is stark: their much lower degree of deposit dollarization showed little change over the same period.

Ex post real interest rates may be another indicator: they tend to be high when actual inflation falls short of expectations and when inflation uncertainty is high. Although real interest rates declined in industrial countries during the 1990s, this was not the case in developing countries, where high real interest rates persisted and were higher at the end of the decade than at the beginning (Montiel and Servén 2004).

As already noted, both dollarization ratios and ex post real interest rates reflect a variety of factors in addition to the perceptions of nominal instability, so this evidence is only suggestive. But other indicators point in the same direction. As an extreme example, the currency premium on the Argentine peso was positive throughout the 1990s and became very large at times of turbulence despite the supposedly irrevocable peg to the dollar enshrined in Argentina's Convertibility Law (Schmukler and Servén 2002).

The transition to robust exchange rate arrangements has been anything but smooth. Price stability refers not only to stability in the purchasing power of domestic currency over goods and services but also to an appropriate level of purchasing power over foreign exchange. However, recent progress toward robust exchange rate regimes has been uneven in developing countries. Indeed, it probably was an early casualty of the search for macroeconomic stability. As already discussed, many countries adopted exchange rate-based stabilization strategies as a supposedly quick recipe for disinflation. These not only meant the adoption of single currency pegs but also made such pegs very difficult to adjust, since the credibility of the entire stabilization program was tied up with the stability of the peg. In effect, the defense of the peg sometimes became an end in itself, even when it was evident that it had outlived its usefulness. More flexible exchange rate arrangements—that is, arrangements lacking a pre-announced peg, with or without extensive central bank intervention—have too often been adopted only in the aftermath of currency crises.

The late 1990s showed that hard exchange rate pegs—that is, dollarization and currency boards—are not a speedy shortcut to fiscal orthodoxy and nominal stability in lieu of the slow and painful buildup of credibility required when countries rely on an independent monetary policy. In particular, the Argentine episode showed the threat to stability posed by inflexible exchange rates, which made adjustment to real disturbances exceedingly difficult. These shackles eventually undermine the sustainability of such rigid arrangements. Though less well known, the experience of the CFA franc during the first half of the 1990s is another example of this situation.

The reform agenda proved to be incomplete. The preceding observations suggest that, as far as fiscal solvency and price stability are concerned, the reform agenda of the 1990s left much to be desired. But the agenda was also deficient in its very design, because the macroeconomic stability that fiscal solvency and price stability are supposed to deliver was undermined by leaving in place—or worse yet, creating—important sources of macroeconomic fragility.

A particular area of fragility in which the policy-based stability agenda was incomplete is financial sector soundness. While research shows that an efficient domestic financial system is important for growth, the experience of the 1990s strongly suggests that a sound one is indispensable for macroeconomic stability. The macroeconomic reform agenda of the early 1990s was incomplete in that the central role of the financial system for macroeconomic stability was often ignored—even though it should have been clear in light of the Southern Cone crises of the early 1980s. Thus to the standard policy-oriented prescriptions for stability—a solvent fiscal stance, low and stable money growth, and robust exchange rate policies that nevertheless allow adjustment to shocks—it is necessary to add policies that foster a sound financial system. Indeed, in the wake of the crises of the 1990s the IMF redefined its core competencies to include fiscal, monetary, exchange rate, and financial sector policies.

Stability in this particular sense—that is, ensuring a sound domestic financial system—was clearly not widely achieved by developing countries during the 1990s. As a result, an important source of macroeconomic fragility was not only left in place but may have even been magnified, for reasons to be explained. Inadequate attention to financial sector soundness often resulted in a domestic economic environment in which institutional problems involving moral hazard were rife, rendering both public and private balance sheets highly vulnerable to changes in the environment (interest rate and exchange rate changes) and posing a major obstacle to outcome-based stability in several major countries.¹⁰ The proliferation of financial crises in the 1990s reflects in part this missing piece of the reform agenda. Indeed, the incidence of systemic banking crises was even higher in the 1990s than in the 1980s, particularly in the second half of the decade (Bordo and others 2001).

But the frequency and the severity of crises were also affected by an important change in the economic environment—namely, increased capital mobility. This was

another key source of fragility, making economies vulnerable to sudden shifts in capital flows. In fact, the combination of unsound policies in the financial sector and open capital accounts helps explain many characteristics of the crises of the 1990s.

First, many of these crises were twin crises, simultaneously involving currency and banking collapses, often characterized by banking problems preceding a currency crash, which then fed back into a full-blown financial crisis (Kaminsky and Reinhart 1999). There is evidence that twin crises are usually much more costly in terms of output than standard banking-only or currency-only crises (Bordo and others 2001). Second, many of these crises proved hard to foresee on the basis of standard macroeconomic imbalances. The hardest—especially the Mexican and East Asian crises—occurred where the main vulnerabilities concerned financial, rather than macroeconomic, variables and took the form of balance of payments runs similar to traditional bank runs.¹¹ Third, many of these crises were surprisingly severe. The deepest ones involved serious problems in the financial sector (East Asia, Ecuador, Mexico, and Turkey), in private sector balance sheets (Argentina and East Asia), and with fiscal insolvency (Argentina and Ecuador). Where none of these problems was present and events took the form of a simple currency crash (Brazil), crisis-induced economic contraction was not as severe.

The Growth Payoff

While the improvements in macroeconomic policies were limited—as the preceding discussion has shown—growth rates have indeed risen relative to the 1980s in many developing countries. The achievement is only a modest one, however, since growth in the 1980s was generally low, and for most countries growth rates over the 1990s remained well below those over the 1960s and 1970s. Indeed, of the 77 developing countries with complete data, only 28 achieved growth rates over the 1990s that exceeded those over the 1970s and only 24 achieved growth rates that exceeded those over the 1960s. But is this growth payoff commensurate with the progress on macroeconomic stability, or is it disappointing? There are several reasons to believe that the growth payoff was indeed commensurate with what was actually achieved by reform.

First, as argued above, the growth payoff from macroeconomic stability depends on its perceived permanence. But, as discussed in the previous section, often progress on macroeconomic stability was based on policy changes that were not perceived to be durable or that failed to reform the institutions making macroeconomic policy. In this sense, the growth payoff expected from the stability that was actually achieved may have been overstated. Moreover, a vicious circle may have taken hold in some countries, with the social consensus that made the policies possible—and that is needed to make them sustainable—faltering in the absence of a fairly prompt growth payoff.

Second, the search for macroeconomic stability—narrowly defined—may in some cases have actually been inimical to growth. As already noted, a preoccupation with

reducing inflation induced some countries to adopt exchange rate regimes that ultimately conflicted with outcome-based stability. In other cases, as shown previously, a single-minded pursuit of macroeconomic stability may have come at the expense of growth-enhancing policies (for example, an adequate provision of public goods) and social investments that might have both increased the growth payoff and made stability more durable. From this perspective, some economies may well have been over-stabilized in both microeconomic and macroeconomic senses. From a microeconomic perspective the presumed stability gains from further fiscal adjustments may not have justified the costs of forgoing key social and productive expenditures. From a macroeconomic perspective the narrow focus on stability may have precluded more progress toward countercyclical policies. The contrast between the significant fiscal adjustment achieved by most developing countries and the persistence of outcome-based instability suggests that this factor may have been important.

Third, aside from whether the search for macroeconomic stability worked at cross-purposes with the search for higher growth, the incomplete macroeconomic reform agenda failed to bring about the reduction in macroeconomic fragility required to fully translate policy-based stability into outcome-based stability. Although overall macroeconomic volatility decreased among developing countries, extreme volatility actually rose during the 1990s, reflecting largely a spate of crises during the decade. Moreover, the adverse impacts of extreme volatility on growth appear to exceed those of normal volatility.¹² Thus, the growth payoff of the macroeconomic policy improvements achieved in the 1990s was limited not only by their weak institutional underpinnings but also by the extreme outcome-based instability that emerged during the decade mainly as a result of the fragilities overlooked by an incomplete reform agenda.

Fourth, as argued earlier, while macroeconomic stability may facilitate growth when other forces are driving the growth momentum—that is, when macroeconomic instability is the binding constraint on growth—macroeconomic stability is not enough to drive the growth process when other essential ingredients are lacking—that is, when other constraints are binding. These constraints involve the various policies and institutions that shape the opportunities and incentives to engage in growth-enhancing activities (Pritchett 2004b). They include secure property rights and market-oriented microeconomic incentives as well as proactive government interventions to overcome informational externalities and coordination failures (Rodrik 2004). The importance of these complementary factors may not have been sufficiently appreciated early in the decade.

In sum, there is little reason to expect a simple direct association between macroeconomic stability and growth, even if stability as measured by commonly used macroeconomic policy indicators is achieved. From this perspective, the limited growth payoff that emerged from the gains in macroeconomic stability achieved during the 1990s may not be all that surprising.

Summary: Lessons from the 1990s

This article does not take a position on why the implementation of reform in developing countries during the 1990s proved to be flawed in the ways emphasized. Perhaps, as others have suggested, the problem was the absence of a clear order for reform priorities in a context where developing countries have limited political and administrative capacity for reform (Hausmann, Rodrik, and Velasco 2005). This may account for many countries' inability to put in place the institutional underpinnings of macroeconomic stability in cases where macroeconomic instability was indeed the binding constraint on growth, and for other countries' failure to implement microeconomic reforms with a larger potential growth payoff when macroeconomic instability was not the binding constraint. This section instead draws some lessons from the reform experience as implemented.

This experience offers several lessons for the future. A central one is that the old verities concerning the importance of macroeconomic stability still hold true. While macroeconomic policy realizations are not all that matter for promoting economic growth, they clearly do matter. Perceived fiscal insolvency, high and unstable inflation, and severely overvalued real exchange rates remain reliable ingredients for extreme instability and slow growth. But the 1990s also showed that in addition to macroeconomic policy realizations, three other ingredients are critical for growth: (a) the institutional framework within which fiscal, monetary, and exchange rate policies are formulated; (b) the degree to which macroeconomic fragilities are avoided; and (c) the extent to which complementary pro-growth reforms are implemented. These elements are reviewed briefly below.

Institutions for Macroeconomic Policy Formulation

The institutional context in which traditional macroeconomic policies are formulated is critical when resolving the tradeoff between policy credibility and flexibility. Both are required for the durable outcome-based stability that ultimately matters for economic growth.

Pro-cyclical fiscal policies arise in developing countries because without strong budgetary institutions a "tragedy of the commons" phenomenon sets in during prosperous times, when government revenues are high: because no claimant on the government's budgetary resources has an incentive to internalize the need for fiscal solvency, political imperatives cause the government to spend all its resources (and even to borrow) during booms, leaving little margin of solvency to draw on to finance fiscal deficits when times are bad. A mechanism that makes it politically possible to ensure prudent fiscal responses to favorable shocks is required in this context.

The specific mechanism best suited to the job depends on country circumstances. It may require, for example, reforming budgetary institutions to centralize budgetary

authority in the finance ministry rather than in line ministries or the parliament or implementing fiscal rules that force claimants to government resources to respect the government's intertemporal budget constraint. These transparent fiscal rules may be embodied in the country's constitution or subject to change only by legislative supermajorities, with penalties stipulated for noncompliance (Perry 2003). Alternative proposals have focused on independent fiscal policy councils to set annual deficit limits, modeled along the lines of independent central banks. However, such institutional arrangements need to balance credibility and flexibility. Simpler rules may be more transparent and thus more easily verifiable, but they need to be designed to allow sufficient flexibility for fiscal policy to react to a changing economic environment. Overly rigid rules are unlikely to be sustainable or credible—as shown by the increasing pressures to revise the European Stability Pact because of its neglect of the macroeconomic cycle.

With respect to monetary policy and exchange rate regimes, the evidence indicates that low and stable inflation is conducive to economic growth, and theory suggests that it is most important in this regard for the private sector to be convinced that low and stable inflation is a permanent feature of the economic environment. As in the case of fiscal credibility, an appropriate institutional underpinning for price stability is required to generate such a perception. However, as shown earlier, a key lesson of the 1990s was that purely monetary arrangements cannot achieve such a perception, because they are not sufficient to discipline fiscal policy. Fiscal credibility is a necessary condition for monetary credibility, and not even the most rigid monetary arrangements (a currency board or *de jure* dollarization) guarantee hard government budget constraints. In short, no institutional shortcuts of a purely monetary nature can achieve credible price stability. Instead, the task is to choose monetary arrangements that can best complement reformed fiscal institutions in achieving a desirable tradeoff between credibility and flexibility.

Again, the optimal institutional responses to this challenge are likely to be country specific. The experience of the 1990s, however, suggests that a monetary arrangement often suitable for this task features an independent central bank that operates a floating exchange rate and commits to a publicly announced inflation target. This arrangement has the important advantages of flexibility (since the central bank is not constrained in how it attains its inflation target) and commitment (since the central bank's prestige is publicly put on the line by announcing such a target). Most important, floating exchange rates and inflation targets allow the domestic authorities to establish anti-inflationary credibility the hard way—that is, by establishing a track record—rather than by attempting to import it through some form of exchange rate peg.¹³

Robustness: The Scope of the Macroeconomic Reform Agenda

The proliferation of crises during the 1990s has made it clear that beyond an appropriate institutional setting for formulating fiscal, monetary, and exchange rate

policies the reform process in developing countries also needs to attend to robustness issues to achieve the stable macroeconomic environment sought through fiscal and monetary reforms. This includes, in particular, policies directed toward the domestic financial system and capital account, which have been shown to have important implications for macroeconomic fragility and thus for outcome-based macroeconomic stability.

As has been widely recognized, an appropriate institutional framework in the domestic financial sector involves (a) clear and secure property rights; (b) an accessible, efficient, and impartial legal system to enforce contracts; (c) appropriate legal protection for creditors; (d) well-specified accounting and disclosure standards; (e) a regulatory system that screens entrants while encouraging competition, imposing adequate capital requirements, and preventing excessively risky lending; and (f) a supervisory system that can effectively monitor the lending practices of domestic financial institutions. The key lesson is that the pace of liberalization for domestic financial systems that have not already been liberalized should be modulated to reflect the quality of the institutional framework governing the domestic financial sector and that improving the quality of this framework deserves high priority in the macroeconomic reform agenda.

In contrast to the consensus that has emerged on domestic financial reform, managing a country's integration into international financial markets remains a controversial part of the institutional agenda. Despite strong theoretical arguments concerning the gains from capital account openness, the empirical evidence on whether it has in fact been conducive to enhanced growth and reduced consumption volatility is inconclusive (on growth, see Edison and others 2002; on consumption volatility, see Kose, Prasad, and Terrones 2003). The desire to avoid macroeconomic fragility makes a strong case for institutional arrangements for the capital account that at least prevents maturity mismatches in a country's external balance sheet, since such mismatches can leave the country vulnerable to creditor runs analogous to bank runs. These runs played a key role in the East Asian crisis (Rodrik and Velasco 1999). The question is how to preclude them. One difficulty is that short maturities are attractive to creditors as a means of monitoring borrowers and controlling their behavior precisely when asymmetric information and moral hazard problems are serious. Under these circumstances, therefore, short-maturity borrowing will arise endogenously because it will be substantially less costly to borrowers than long-term loans. Mismatches may reflect not only an inadequate borrowing strategy but also the reluctance of investors to lend long-term in the face of a macroeconomic financial framework deemed suspect. The problem is, of course, that voluntary short-maturity loans between private parties fail to take into account the social costs associated with the risk of creditor runs.

Again, there are alternative ways of meeting this challenge. One way to deal with maturity mismatches is for the public sector to accumulate large stocks of foreign

currency (foreign exchange reserves) to offset liquid liabilities incurred by the private sector. This approach is being pursued by many countries, but it is expensive. Holding large volumes of low-yielding, short-term assets instead of (illiquid) long-term investment entails serious opportunity costs and leaves in place incentives that give rise to short-term borrowing. Under this strategy the costs of insuring against creditor runs are ultimately borne by taxpayers. An alternative is to discourage the private sector from incurring short-term external liabilities in the first place through restrictions on short-term capital inflows or to make those liabilities effectively less liquid at times of crisis through restrictions on short-term capital outflows. Because both of these policies tend to increase the cost of short-term loans, they effectively operate by internalizing the systemic costs associated with the risk of creditor runs. The available evidence suggests that inflow restrictions such as unremunerated reserve requirements (for example, the Chilean *encaje*) tend to have no significant effect on the overall volume of inflows but do affect their composition, reducing the share of short-term flows in the total. This is because a uniform reserve requirement is more onerous for short-term transactions than for others (see Montiel and Reinhart 1999 for review of the cross-country evidence on the effectiveness of inflow restrictions). By contrast, evidence on the effects of restrictions on outflows is much less conclusive. Overall, it appears that restrictions on short-term capital inflows may have a role in achieving outcome-based macroeconomic stability in developing countries.

In addition to maturity mismatches, external borrowing may also create fragility in the form of currency mismatches. Developing countries may suffer from “original sin”—an inability to denominate external borrowing in their own currencies—which causes exchange rate risk to be borne by domestic residents rather than by foreign residents (Eichengreen and Hausmann 1999). In the short run the key is to promote the efficient distribution of this exchange rate risk within the domestic economy by ensuring—through regulatory means—that it is appropriately priced and therefore borne by those best able to bear it (typically agents holding foreign currency assets—including exporters—or those with a high degree of risk tolerance). In the longer term a larger role in ameliorating the problem of currency mismatches would be assumed by institutional changes that promote credible nominal stability, thus mitigating exchange rate risk. This perspective is consistent with the experience of a few emerging economies—such as Chile, Mexico, Poland, and South Africa—for which domestic currency-denominated external borrowing is becoming a reality, even if only marginally at first.

Complementarities Among Pro-Growth Policies

But most of the burden of jumpstarting growth in developing countries must fall on pro-growth policies outside the macroeconomic arena. Aside from the fundamental

policies, securing property rights, and establishing market-oriented incentives, such policies may include, for example, an open international trade regime, national innovation policies, well-functioning factor markets, and an investor-friendly legal and regulatory environment. In some cases these policies actually facilitate reforms aimed at macroeconomic stability—for example, disinflation or the correction of a real misalignment are easier and less costly to achieve with well-functioning labor and financial markets. The key lesson is that policies of this type are mutually complementary with policies that focus on creating and preserving macroeconomic stability. An unstable macroeconomic environment tends to undermine the growth benefits of such policies. Nonetheless, the 1990s showed that macroeconomic stability alone is not enough: policies outside the macroeconomic arena are indispensable for harvesting the fruits of macroeconomic stability in the form of sustained high rates of economic growth.

Notes

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1. Easterly (2001) also viewed the crises of the 1990s as a symptom of, rather than an explanation for, the slow growth of the 1990s.

2. In recent years, there has been renewed interest, sparked by Ramey and Ramey (1995), in the adverse effects that real and nominal instability can have on economic growth, as documented by a growing empirical literature on the subject. For a recent evaluation, see Hnatkovska and Loayza (2004).

3. The decline in developing country volatility over the 1990s is also documented by De Ferranti and others (2000), Rodrik (2001), and Hnatkovska and Loayza (2004). The same result holds if volatility is measured by a robust statistic such as the interquartile range instead of the standard deviation. The decline in volatility was statistically significant: formal tests strongly reject the hypothesis that the cross-country distribution of growth volatility did not change between the 1980s and 1990s and the hypothesis that the changes in volatility across the two decades are centered at zero.

4. The decline in aggregate volatility also extends to other variables more directly related to individuals' welfare, such as income and consumption growth, although to varying extents. In particular, the volatility of private consumption growth declined relative to the previous decade but mainly in low-income countries; in middle-income countries consumption volatility remained virtually unchanged from the record highs of the 1980s.

5. In a smaller country sample (whose time coverage ends in 1997), Bordo and others (2001) also found that the frequency of currency crashes declined in the 1990s compared with the preceding 15 years.

6. The evidence for increased stability of the external environment is presented in the working paper version of this article (Montiel and Servén 2004), which also includes additional figures.

7. In India, for example, continuing large primary deficits (averaging close to 4 percent of GDP in the late 1990s) were the main factor behind persistently high debt ratios. More dramatically, fiscal vulnerabilities had a prominent role in some of the major recent financial crises: the Russian Federation in 1998, Ecuador in 1999, and Argentina in 2002. In Argentina, the expansionary fiscal stance taken during the 1995–97 boom left authorities virtually no room to adjust to the global real and financial slowdown after the Russian crisis of 1998 and to the real appreciation of the peso under the hard dollar peg (Perry and Servén 2003).

8. In Argentina and Uruguay, for example, the 2002 exchange rate collapse more than doubled the debt to GDP ratio—from 50 percent of GDP to more than 140 percent in Argentina and from 40 percent to more than 80 percent in Uruguay. Across emerging markets debt dollarization remained pervasive: the median ratio of foreign currency debt to total public debt rose over the late 1990s to exceed 55 percent by 2001.

9. The degree of real dollarization and the perceived stability of the real exchange rate also matter, as do financial system regulations and the availability of other assets that shelter investors from nominal instability, such as instruments indexed to domestic inflation, as in Chile, or short-term interest rates, as in Brazil (IMF 2002; De la Torre and Schmukler 2003). Thus the interpretation in the text should be taken as suggestive rather than as conclusive.

10. Ironically, under these circumstances incipient progress along conventional dimensions of macroeconomic stability, such as disinflation, may even have made financial crises more likely. For example, the use of the exchange rate as a nominal anchor may have encouraged agents to ignore exchange rate risk and in the case of hard pegs, as in Argentina, may have made it more difficult for regulators to induce financial institutions to factor such risk into their portfolio allocations without raising fears of a possible abandonment of the peg.

11. The recent analytical literature on crises continues to stress weak fundamentals as a prerequisite for the occurrence of crises but emphasizes the key role of ingredients such as self-fulfilling expectations and multiple equilibria in triggering them. These views assign an increasingly important role to financial system imperfections in full-blown balance of payments crises (Krugman 1999).

12. There are good reasons why crisis volatility (due to large adverse shocks) should entail greater growth costs than normal volatility. On the one hand, with a given set of risk management mechanisms, large shocks may be more difficult to absorb than small ones. These threshold effects of volatility have been found to be empirically relevant to investment (Servén 2003). On the other hand, asymmetries built into the economy mean that negative shocks have qualitatively different consequences than positive ones. A clear example is buffer stocks—for example, bank liquidity or international reserves. Large adverse shocks (or a succession of small negative ones) can exhaust them and trigger an adjustment mechanism very different from the one associated with positive disturbances. The same applies to firms' net worth: once it becomes negative, adjustment proceeds through bankruptcies, with the corresponding destruction of productive assets. Hnatkovska and Loayza (2004) provided empirical evidence that crisis-type volatility is significantly more adverse for growth than normal volatility.

13. Such arrangements are currently maintained by Brazil, Chile, Colombia, the Republic of Korea, Mexico, Peru, South Africa, and Thailand. The longest running of these arrangements, in Chile, was remarkably successful in maintaining price stability throughout the 1990s, while avoiding severe episodes of real exchange rate volatility. More recent converts to this type of nominal institutional arrangement have also been quite successful since its (admittedly recent) adoption.

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