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Volatility and Growth in Latin America: An Episodic Approach

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Volatility and Growth in Latin America: An Episodic Approach

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Abstract

This paper compares the pattern of macroeconomic volatility in 17 Latin American countries during episodes of high and low growth since 1970, examining in particular the role of policy volatility. Macroeconomic outcomes are distinguished from macroeconomic policies, structural reforms and reversals, shocks, and institutional constraints. Based on previous work, a composite measure of structural reforms is constructed for the 1970–2004 period. We find that outcomes and policies are more volatile in low growth episodes, while shocks (except U.S. interest rates) are similar across episodes. Fiscal policy volatility is associated with lower growth, but fiscal policy procyclicality is not. Low levels of market-oriented reforms and structural reform reversals are also associated with lower growth.

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I. INTRODUCTION

Latin America is well known for its high macroeconomic volatility and low growth performance relative to other regions. Less well known are the linkages among different kinds of volatility—for instance, the volatility of macroeconomic policies and macroeconomic outcomes—and their effects on long-term growth. This paper aims to further our understanding of volatility and growth in Latin America by comparing the pattern of volatility across episodes of high and low growth since 1970. Of particular interest is the role of policy volatility in accounting for the region's growth performance.

To lay out the stylized facts, the paper takes an episodic approach across 17 Latin American countries. Non-overlapping 10-year periods or episodes of the highest and lowest growth are identified for each country during 1970–2004. These periods are not necessarily the standard decadal panels such as the 1970s or the 1990s and may vary across countries. The variables of interest are compared between these two growth episodes for each country, and common lessons are drawn across the countries.

As a data description tool, this approach complements the standard cross-country growth regression exercises and country case studies, and has some useful advantages. First, it avoids the need to define arbitrary time periods for computing averages and volatilities. There is nothing unique about using the standard decadal panels. The approach allows the data to define the periods of best and worst growth performance. Second, it highlights and utilizes the within-country variation in growth performance to identify potentially important explanators for growth for each country. These explanators can then be used to better understand the determinants of growth across countries, including through cross-country regressions.[2] But highlighting the within-country variation also helps to address one critique of cross-country regressions commonly heard from policy makers, "My country is different," by focusing on factors driving growth within each individual country.[3] Additionally, the approach identifies outliers in the data. Accounting for growth in these outlier countries could make for useful case studies, and policy recommendations may need to be tailored appropriately.

A second aspect in which the paper differs from previous studies is that it attempts to clearly distinguish among macroeconomic outcomes, policies, and shocks in documenting macroeconomic volatility in Latin America. Surprisingly, and somewhat frustratingly, the term "macroeconomic volatility" has been used rather loosely in the literature. It has been applied to characterize output growth volatility, as well as volatility of other macroeconomic outcomes, policies, and shocks. From the perspective of a policymaker, it is critical to

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[2] The episodic approach focuses on bivariate relationships. Cross-country growth regressions test for robustness.

[3] Srinivasan and Bhagwati (2001) caution against using cross-country growth regressions to find answers for a particular country, in part because the "average" answers do not directly help a specific country to determine what its policies should be.

distinguish among factors or variables that are under or outside of his or her control. For example, if Latin America is more volatile than other regions because it experiences more shocks, then the low growth performance can be attributed more to shocks than to bad policy making, although the effects of the shocks would still need to be smoothed by developing a reactive policy framework. On the other hand, if output volatility and low growth are generally caused by variable or inconsistent policies, independent of shocks, a more proactive (and appropriate) policy framework is needed.

In characterizing policy volatility, macroeconomic policy volatility is distinguished from structural policy volatility. The former refers to variability in fiscal and monetary policies, while the latter refers to changes in policies such as product market regulations, trade taxes, regulatory trade barriers, and credit and labor market regulations. Structural reforms and reversals can have independent effects on growth, that is, both the degree of market orientation (the "level" of structural reforms) and the number and intensity of reform reversals can have separate and distinct effects on growth. To analyze the roles of structural reforms and of structural reform volatility, a new index of structural reforms is developed for the Latin American countries from 1970–2004 by combining measures developed by other authors. To our knowledge, such an exercise over an extended time period has not been conducted before—in part, because of lack of measures of structural reforms over long periods of time.

Policymakers in developing and emerging market economies often face financing and other constraints that may limit their policy options. These constraints, which include financial constraints such as lack of access to international capital markets and trade openness and restrictions, could amplify the volatility of macroeconomic outcomes and reduce growth, independent of policies and shocks. This paper examines a broader set of shocks and constraints than has been attempted previously. Within a single framework, the impact of policy volatility (both macroeconomic and structural) on economic growth is analyzed, controlling for shocks, constraints, and political and social characteristics, which directly or indirectly affect macroeconomic outcomes and policies.

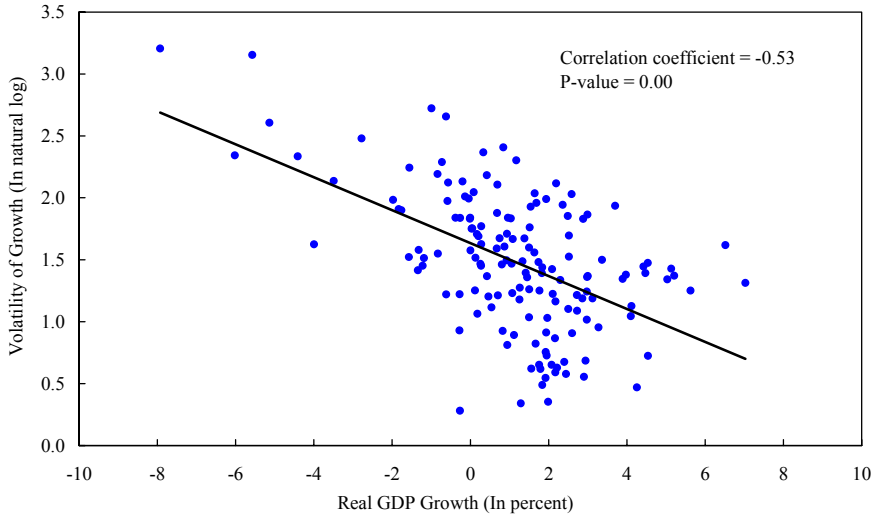
The paper finds, as expected, that volatility of outcomes and policies is higher in episodes of low growth compared to episodes of high growth. Surprisingly though, both the level and volatility of shocks are similar across episodes, with the strong exception of U.S. interest rates. Extreme events—currency crises, banking crises, and debt defaults—are more frequently associated with low growth episodes, but are nonetheless quite common during other episodes as well. Output generally falls during such events, especially simultaneous crises involving a currency crisis. The volatility of discretionary fiscal policy is associated with lower growth, and although there is strong evidence of fiscal policy procyclicality across the region, there is no significant difference between procyclicality in high-growth episodes compared with low-growth episodes. Low levels of market-oriented reforms are also associated with lower growth, as are structural reform reversals. Indeed, there have been several instances of reform reversals in virtually all countries in the region, notwithstanding the progress made since 1970.

The rest of the paper is organized as follows: Section II outlines the methodology of the episodic approach. Sections III–VII document, respectively, the volatility of macroeconomic outcomes, shocks, macroeconomic policy volatility, structural reforms and their reversals, and constraints faced by policymakers during the high and low growth periods. The different factors associated with the growth performance are brought together in Sections VIII and IX. The final section offers some concluding remarks. An appendix lists the data sources.

II. THE BUILDING BLOCKS

The robust negative cross-sectional relationship between volatility and growth was established in a seminal paper by Ramey and Ramey (1995) (Figure 1). Prior to their paper, growth and business-cycle volatility were presumed to be unrelated (see, for example, Lucas 1987). Ramey and Ramey's result is of special importance for Latin America if indeed the region were volatile.

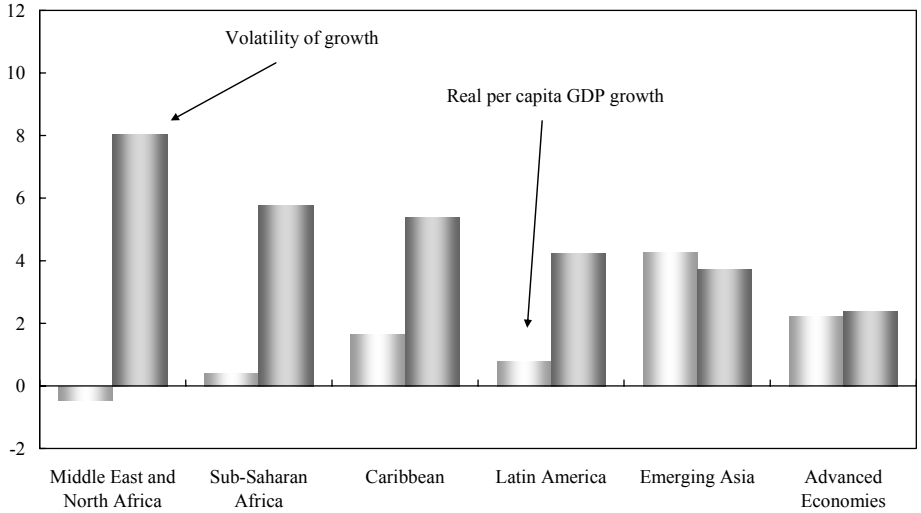
Figure 1. Real GDP Growth and Volatility, 1970-2004



Source: World Bank, *World Development Indicators*

In a comprehensive study conducted at the Inter-American Development Bank, Hausmann and Gavin (1996) documented the extent of macroeconomic volatility in Latin America, and found that Latin America has been more volatile than any other region in the world, with the exception of Africa and the Middle East. This finding remains true even when more recent years are included. During 1970–2004, the volatility of growth (measured by the standard deviation of real GDP per capita growth) was higher in Latin America than in industrial countries and emerging Asian countries but lower than in the Middle East and Africa (Figure 2).

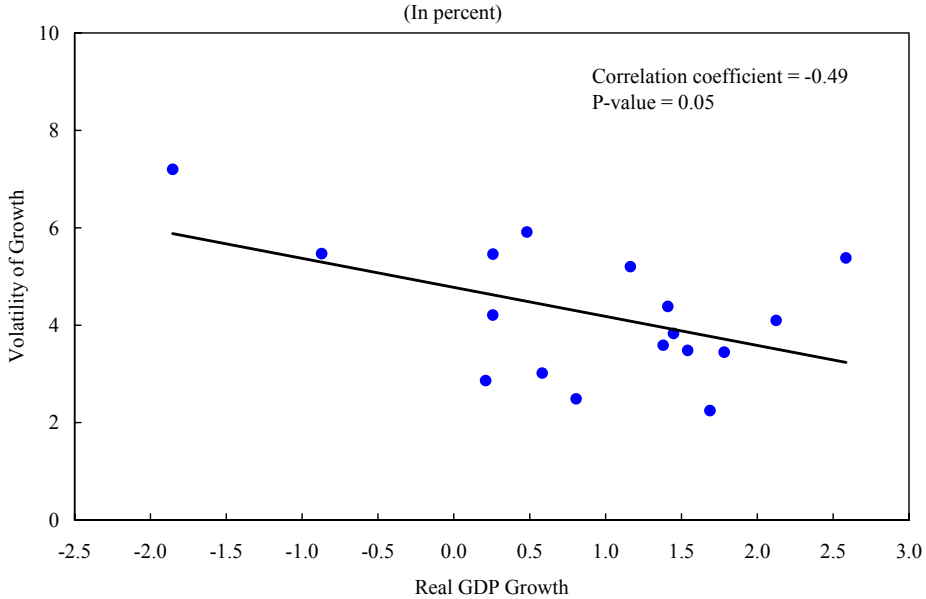
Figure 2. Regional GDP Growth and Volatility, 1970-2004
(In percent)



Source: World Bank, *World Development Indicators*

Within Latin America, the cross-sectional evidence confirms a significant and negative relationship between volatility and growth, even in a small sample of 17 countries (Figure 3). Strikingly, and as is well documented, average per capita growth in each of the countries in the region over the past 35 years has been low—ranging from -2 percent per annum in Nicaragua and -1 percent per annum in Venezuela to an increase of about 2½ percent per annum in Chile. Volatility of growth has been the highest in Nicaragua and lowest in Colombia.

Figure 3. Latin America: Real GDP Growth and Volatility, 1970–2004
(In percent)

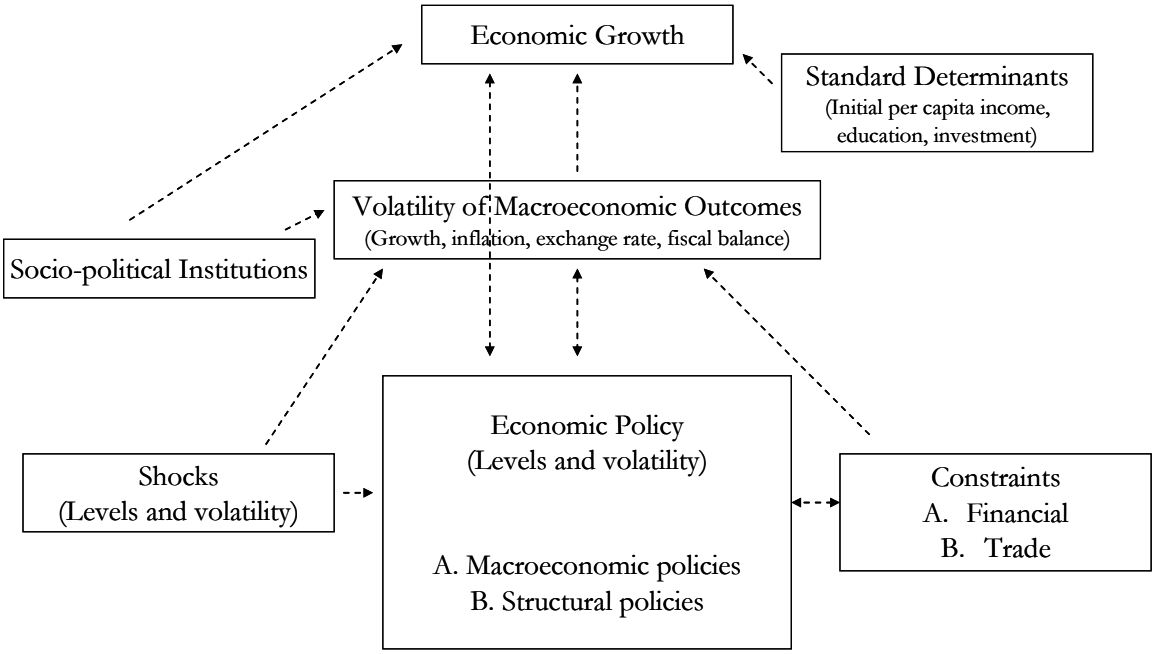


Source: World Bank, *World Development Indicators* .

Several cross-sectional studies on growth have included some measures of macroeconomic volatility to study their impact on growth. However, there is little consensus yet on the channels through which different types of macroeconomic volatility affect growth. There is a need, in particular, to understand better whether this volatility is induced by policies, shocks, or underlying structures of the economies, and how it affects growth.

Figure 4 provides a schematic representation of the channels through which growth may be affected by the volatility of macroeconomic outcomes, shocks, policies, constraints, and socio-political institutions. Broken arrows indicate the direction of causation. Two-way arrows imply that causation could go both ways. Thus, for example, exogenous shocks affect policies and outcomes, but not vice versa. On the other hand, financing constraints and trading restrictions can affect the choices that policymakers may face, and at the same time policies could influence these constraints and restrictions. While it would be highly ambitious and beyond the scope of this paper to explore all possible relationships, an attempt is made to investigate the relationships of particular interest from a policy perspective.

Figure 4. Channels through which Policy Volatility Affects Growth:
A Schematic Representation



A. Methodology: An Episodic Approach

There are several ways of identifying the high and low growth periods in each country. One approach is to examine performance during each decade (for example, the 1970s, 1980s, 1990s, and so on). This is overwhelmingly the approach followed in panel long-term growth studies. The disadvantage is that it cuts the data at arbitrary points in time—at the start and end of each decade. It may well be the case, for example, that the high or low growth periods

start in the middle of a decade, which would not be captured by using arbitrary cut-off points in time.

A second approach is to define the ranges for "high" and "low" growth. For example, a high growth period can be defined as one where growth per annum is more than *x* percent for at least *y* number of years, and similarly for low growth periods. Several papers try to identify and explain either growth accelerations or decelerations. Ben-David and Papell (1998), Rodrik (1999) and Hausmann et al. (2004) focus on growth accelerations, Jones and Olken (2005) look at growth decelerations, and Berg et al. (2006) study the duration of growth spells following an acceleration.

Accelerations and decelerations in previous work are identified using either structural break analysis or arbitrary growth thresholds, or a combination of the two. The problem of the first analysis is that high volatility in developing countries makes it difficult to identify structural breaks. The problem with the second is the converse: one cannot be sure whether growth increases (even persistent ones) that are not identified as structural breaks are random or not. In addition, all of these analyses, by definition, only focus on explaining either the onset or the length of high growth episodes, and hence ignore other aspects of the growth phenomenon that might be relevant to a country's long-run growth performance. For example, if the levels of per capita income and economic development differ significantly across countries, then imposing the same cut off point for all countries may not make sense. Studies have shown that countries with lower per capita incomes tend to grow faster than those with higher per capita incomes (absolute convergence theory). Finally, more relevant for this study, if the high or low growth episodes last for very short periods of time, then it is computationally hard to measure volatility during those periods (at least a few years of data are needed)—a key variable of interest in this paper.

The episodic approach used in this paper attempts to address some of the shortcomings of the above approaches by taking a sufficiently long period of time so that volatility can be measured sensibly and by allowing the data to define the start and end of the high and low growth periods. Specifically, 10-year moving averages of GDP per capita growth are computed, and the 10 consecutive best and worst years identified for each country during the 35-year period (1970–2004). In other words,

> *High growth period in country i* = decade corresponding to *max* (g_{it}),
> where *t* is a 10-year interval corresponding to 1970–79, 1971–80, ..., 1995–2004,
> and *g* is the average annual per capita GDP growth rate in that 10-year interval, and
>
> *Low growth period in country i* = decade corresponding to *min* (g_{it}),
> where *g* and *t* are defined as above.

Non-overlapping 10-year periods of low and high growth are found for 14 of the 17 Latin American countries. The exceptions are Costa Rica, Uruguay, and Venezuela. For these countries, the lowest and highest decades are picked such that the distance between the lowest (highest) and next lowest (next highest) were the smallest in terms of average per capita growth rate during the decade and such that the periods were non-overlapping. These

periods of high and low growth are unique for each country, and form the basis of the subsequent analysis.

III. Level and Volatility of Macroeconomic Outcomes

A. Output Growth

Several interesting facts emerge from defining the high and low growth periods according to this approach (Table 1 documents the level and volatility of output growth). The high and low growth periods do not generally coincide across the countries. Rather, the starting and ending periods for the episodes differ, particularly with regard to the highest growth decade. The 1990s were not the best years, unlike as is sometimes believed. The 1970s remain the best years for about half the countries, while for the others there is no systematic pattern: for six countries, the 1990s were the best; for two, they started in the mid 1980s; and for one, the starting point was the mid 1990s. The best three performers in their respective best decades were Chile (1988–97: 6.1 percent per annum); Paraguay (1972–1981: 5.9 percent per annum); and Brazil (1971–80: 5.8 percent per annum). But even during their respective best decades, growth in the Latin American countries remained below the blistering pace set by the emerging Asian economies.

During their worst decade, all countries recorded near zero or negative growth rates. The 1980s were, as anticipated, the worst or "lost decade" for most but not all countries, the exceptions being Chile, Colombia, Paraguay, Uruguay, and Venezuela. The worst performers during their respective worst decade were Nicaragua (1979–88:−6.7 percent per annum), El Salvador (1979–88) and Peru (1982–91).

In most countries, the volatility of growth was substantially higher during the low growth period. This is most evident in Nicaragua and Chile, but in Argentina and Venezuela, on the other hand, volatility was fairly high and similar in both the high and low growth periods. As a region, volatility was more than twice as high during the worst decade, as compared to the best decade. The negative relationship between volatility and growth in nearly every Latin American country bears out in the time series the cross country evidence found in previous studies.

B. Inflation, Devaluation, and Fiscal Balance

Latin American countries have also experienced substantial volatility in other macroeconomic outcomes, such as inflation, exchange rates and fiscal balances. The growth literature since Fischer (1993) has treated these variables as "explanatory" variables or proxies for policies, but conventional wisdom would argue that they are endogenous and should fall into the category of "outcomes".

Table 2 documents the level and volatility of inflation, devaluation of exchange rates, and the fiscal balance during the best and the worst decades. Average inflation, devaluation, and fiscal imbalance (as a percent of GDP) were two to four times higher during the low growth period compared with the high growth period. While devaluations may move the economy to

equilibrium to ensure competitiveness and hence be associated with expansions (Edwards, 1986), large devaluations may reflect disorderly adjustments to macroeconomic imbalances, namely crises that result in output drops (see below). Table 2 indicates that relatively small devaluations were associated with higher output growth, but larger devaluations were associated with output drops.

The relationship between the fiscal balance and growth is not clear cut. If fiscal balances worsen to stimulate output to prevent a recession, output can be expected to increase. But if the worsening reflects unsustainable policies—a plausible interpretation given the 10-year periods under consideration (presumably longer than business cycle responses)—it can negatively affect output. The latter view has often been dubbed the "credibility factor" or the "expansionary effect of fiscal contraction" (see Giavazzi and Pagano, 1990). Table 2 suggests the dominance of the credibility factor since high growth periods are associated with low fiscal imbalances. In every country except Ecuador, fiscal imbalances were higher during the low growth period.[4]

The volatilities of inflation, devaluation, and fiscal balance were, on average, higher during the low growth period, but by a larger magnitude (three times) for inflation and devaluation. The exceptions are few, but even in those cases the volatilities across high and low growth periods do not differ much. There are significant differences among countries, however, with respect to inflation and devaluation volatility during the low growth period. Colombia, Panama, and Paraguay have relatively low volatility of monetary outcomes, while Argentina, Bolivia, Brazil, Nicaragua, and Peru experienced the highest volatility.

In sum, there is a high co-movement in the volatility of all macroeconomic outcomes, and this volatility is much higher during the low growth period compared to the high growth period in virtually all countries. However, some countries did experience low volatility in both high and low growth periods.

C. Extreme Events—Currency Crises, Banking Crises, and Sovereign Debt Defaults

Large devaluations coincident with low growth in Table 2 could reflect extreme events such as currency crises. Gupta, Mishra, and Sahay (2003) found that about 60 percent of the currency crises in a sample of nearly 200 crisis events around the world from 1970 to 2000 were contractionary. To understand better the contractions during low growth episodes in Latin America, Table 3 documents the extent of macroeconomic crises—sovereign debt defaults, currency crises or banking crises.[5] Concurrent crises would in particular be expected to affect output considerably.

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[4] Gupta, Clements, Baldacci, and Mulas-Granados (2004) find a significant positive relationship between fiscal adjustment and per capita growth. A reduction of one percentage point in the fiscal deficit to GDP ratio leads to an increase in per capita income growth of ½ percentage point in the short and long run.

[5] The data source for currency and banking crises from 1970–1999 is Gupta, Mishra, and Sahay (2003) and for sovereign debt defaults from 1975–2002 is Chuhan and Sturzenegger (2005). For 2000–2004, the sources are IMF economists working on these countries. A dummy variable takes a value of 1 if there is a crisis in a given

(continued…)

The most remarkable, though not entirely unexpected, observation is the sheer number of crises in Latin America. There were a total of 312 crisis observations (combining all three types of crises) during the 1970–2004 period, of which 223 occurred during high and low growth episodes. In other words, nearly 9 crisis observations were recorded on average each year in Latin America. Or, there were about 6 crisis observations per country per decade since 1970.

The number of currency crises and years of sovereign debt default are at least twice as high during low growth episodes, but there is little difference between the numbers of banking crises in the two sub-periods. There were 6 currency crises, 15 banking crises, and 50 debt default observations in the high growth years as compared to 34 currency crises, 14 banking crises, and 104 debt default observations in the low growth years. It may seem surprising that there were several crisis observations during the high growth period. However, the negative effect on output may not have been too high or long lasting if the severity of the crisis was small, if there were no concurrent crises, or if the policy response was quick and appropriate. One can reasonably expect the negative impact to be highest in the first year of a crisis compared with the subsequent years. Hence, it is not altogether surprising that crisis observations were recorded during the high growth period.

Every country in Latin America experienced a crisis of one kind or another. But Colombia did not experience a sovereign debt default and Panama did not experience a currency crisis (which is not surprising given dollarization). Argentina has experienced the maximum number of crises—almost one each year (there were 29 crises over the 35 year period). At the other extreme, Colombia experienced the least number of crises during the entire sample period (6). Most countries had substantially more crises during the low growth years, except Colombia, Uruguay, and Venezuela.

One reason for the association between crises and low long-term growth could be the concurrence of crises. Table 4 documents concurrent crises. The most common occurrence of simultaneous crises during 1970–2004 was currency crises and debt defaults covering 13 countries at various points in time (a total of 26 crisis-years). At the other extreme, concurrent banking and currency crises occurred in only two countries—Argentina and Uruguay.[6] Banking crises and debt default together occurred in 10 countries. All three crises occurred simultaneously in only four countries.

The impact of concurrent crises on output may be measured by the cumulative effect on output one year before, during, and after the year of the crisis. Not surprisingly, the largest declines occurred when all three crises occurred simultaneously (average of nearly 9 percent

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year for a particular country, and 0 otherwise. In the case of sovereign debt defaults, it records not only the year in which the government defaulted but also the subsequent years in which they remained in default.

[6] Uruguay is much smaller than Argentina and has close financial sector linkages with Argentina. Hence, crises in Argentina have perceptible effects on Uruguay.

fall in output). Output also fell significantly when a banking crisis or a debt default occurred at the same time as a currency crisis. Surprisingly though, a debt default combined with a banking crisis may have led to a growth deceleration but not to a fall in output.

In sum, extreme events appear to have been common in Latin America, occurring in both high and low growth periods, but twice as often in the latter. There is a wide variation in the experience across the countries, with Argentina recording the highest and Colombia the lowest number of crises. Debt defaults are the most common type of crisis, followed by currency crises and banking crises. One type of crisis by itself may not lead to a fall in output, but usually does so when combined with other types of crises.

IV. Magnitude and Volatility of Shocks

Latin America is known to be subject to frequent shocks, and the frequency and intensity of exogenous shocks—whether positive or negative—could be one reason for the large volatility of macroeconomic outcomes. Shocks could affect output directly or complicate policy making which in turn could affect output. Tables 5 and 6 document global and country-specific shocks that hit the countries in their respective high and low growth periods.

Two types of global shocks are considered—the growth rate of G-7 industrial countries and U.S. real interest rates. The former affects exports (a substantial part of the exports over this period were to industrial countries), while the latter affects the cost and ability to borrow abroad. Oil prices also constitute a global shock, but are captured in the country-specific terms of trade shocks.

The level and volatility of G-7 growth do not differ much between the high and low growth episodes, but US real interest rates differ significantly. The difference in G-7 growth rates between the two episodes is small (0.4 percent), and the volatility of growth, while small in both episodes, was actually higher during the high growth episode. But the average US real interest rate was significantly lower (about 500 basis points) and the volatility twice as low during the high growth years. In only three countries—Chile, Uruguay, and Venezuela—was the cost of external borrowing higher in the high growth period, which suggests that higher external borrowing costs need not be a drag on growth.

Country-specific shocks including terms of trade shocks, natural disasters, and changes in official development assistance (ODA) could also impact volatility and growth. Natural disasters are not commonly looked at, but disasters could create tremendous havoc to societies, especially smaller ones. For example, in 1998, Hurricane Mitch in Honduras and Nicaragua killed more than 10,000 people and caused as much as US$8.5 billion in damage. The levels and volatility of official development assistance, while somewhat influenced by domestic policies, are largely outside the control of country authorities (see Easterly, 2003, and Barro and Lee, 2002).

The average positive terms of trade shock during the highest growth period is surprisingly negligible (less than ½ percent). The average negative shock during the lowest growth period is also surprisingly small (just over -1 percent). However, these averages mask wide differences in individual country experiences. Nearly 6 of the 17 countries experienced worse

(and negative) terms of trade shocks during their best growth decade. Of the remaining countries where the relationship between growth and terms of trade changes go in the expected direction, the difference between the positive shock during the best years and the negative shock during the worst years is significant only in Chile, Ecuador, and Mexico—all primary commodity producers. Volatility, on the other hand, is high and similar during both periods. Countries exhibiting the highest volatility are Ecuador and Paraguay (during the best growth decade) and Chile (during the worst growth decade). Thus, on average, there is no significant difference in terms of trade shocks between the two growth periods.

Measured by the number of disasters per million people affected, the smaller countries are the most affected by disasters: Costa Rica, Ecuador, Honduras, Nicaragua, and Panama. Interestingly, the number of disasters were much higher during the high growth period. This is perhaps not entirely surprising since sharp declines in output in the year of the disaster are usually followed by a rise in construction activity the following year, financed in large part by grants, and often an improvement in infrastructure that were neglected for a long time.

The relationship between foreign aid and growth has been the subject of considerable recent debate. Some studies have argued for a positive relationship between aid and growth (Hansen and Tarp, 2000, Burnside and Dollar, 2000, Dalgaard, Hansen and Tarp, 2004, and Clemens, Radelet and Bhavnani, 2004), but more recent studies have not found a strong association (Easterly, 2003, Easterly, Levine and Roodman, 2004, and Rajan and Subramanian, 2005a and 2005b). The evidence from the episodic approach confirms this latter finding, although ODA was marginally higher (less than ½ percent of GDP) during the high growth period.[7] Surprisingly, the volatility of ODA was quite small, a finding that contradicts the experience of Africa and cross regional studies (Bulíř and Hamann, 2003).

To summarize, of all the exogenous shocks—global and country specific—only the U.S. real interest rate stands out as being significantly different in the highest growth episode compared to the low growth episode.

V. MACROECONOMIC POLICY VOLATILITY

The stance and volatility of policy are perhaps the hardest measures to conceptualize and compute. Growth regressions commonly use the fiscal balance (as a share of GDP) and inflation (or inflation volatility) as proxies for fiscal and monetary policies. However, both measures are highly endogenous, and are, at best, weak proxies.[8] Even if policies could be measured, should the focus be on the discretionary component or also on the "rules"? The "rules" are important in their own right, but may differ widely across countries, making cross-country comparisons difficult. In some studies, the "rules" used in industrial countries

[7] ODA was somewhat higher (by about 1 percent of GDP) during the high growth period for countries receiving on average more than 2 percent of GDP per year in aid.

[8] Both measures have been discussed in the section on macroeconomic outcomes above (section III.B). In this section, further refinements of fiscal and monetary policy measures are considered.

are replicated for developing countries, which is unlikely to be appropriate (see Ter-Minassian, 2005, and Clements et al., 2006, for a criticism of such approaches).

The literature is more advanced in measuring fiscal rather than monetary policy. Even with respect to fiscal policy, however, Fatás and Mihov (2003) note that there is no consensus on the appropriate methodology for constructing a cyclically-adjusted measure because of simultaneity problems in determining output and the budget.

In this paper, measures of fiscal policy are replicated from the literature while an attempt is made to define new measures of monetary and structural policy volatility. Monetary policy volatility has been measured previously by inflation volatility. To get at the policy aspect more directly, this paper examines instead exchange rate regime changes based on the definition of exchange rate regimes in Reinhart and Rogoff (2004). Structural reform policy volatility (or reform reversals) is based on a new index that is constructed on the basis of existing measures of structural reforms from various sources and is discussed in the subsequent section.

A. Fiscal Policy Volatility

Two concepts of fiscal policy volatility are studied: the first set of measures is based on standard deviations of fiscal expenditures, while the second are measures of fiscal policy procyclicality. The extent of expenditure volatility and procyclicality during high and low growth episodes are documented in, respectively, Tables 7 and 8.

Standard deviation of fiscal expenditures

Two measures of standard deviations are used:

(i) the standard deviation of central government fiscal expenditures as a share of GDP (which captures both the "rules" and the "discretionary" components), and

(ii) a Fatás and Mihov (2005) based measure of discretionary fiscal policy. Discretionary fiscal policy is defined as the residual from a regression of real government spending growth on current macroeconomic conditions: output growth (which is then instrumented to correct for simultaneity), lagged government spending growth and standard controls:

$$\Delta G_{it} = \alpha_i + \beta_i \Delta Y_{it} + \gamma_i \Delta G_{it-1} + \delta_i X_{it} + \varepsilon_{it}$$

where G_{it} is the log of real government consumption in country i in year t, Y_{it} is the log of real GDP, and X_{it} is a set of controls (a time trend, inflation, and inflation squared). Discretion, therefore, is defined as changes in expenditure that are unrelated to macroeconomic conditions or the cycle. Volatility is defined as the standard deviation of the residual, ε_{it}.

The average level of fiscal expenditures was about 3–4 percentage points of GDP lower during the high growth decade compared with the low growth decade, while the average volatility was significantly lower (Table 7). This pattern holds in nearly all countries, although the magnitudes differ. Therefore, reducing fiscal expenditures may not hurt growth on a longer-term basis. Chile is an extreme example where fiscal expenditures were more than 10 percentage points of GDP lower in the high growth period.[9]

The Fatás-Mihov measure of discretionary fiscal policy volatility reveals somewhat different results—the volatility of fiscal policy is only marginally higher in the low growth period. Discretionary government expenditure can be expected to rise during the low growth period, reflected in the higher average level in the low growth decade. But there is wide variation across countries, with Nicaragua a clear outlier. Excluding Nicaragua, the average reduces in the low-growth period compared with the high growth period, suggesting the existence of financing constraints for many countries.

Expenditure procyclicality

Procyclical fiscal policies can affect long-term growth indirectly by amplifying business cycles and increasing output growth volatility. To the extent that growth volatility has a negative impact on growth, procyclical fiscal policies will adversely affect long-term growth.

Here, two measures of fiscal policy procyclicality are used: one is based on Kaminsky, Reinhart and Vegh (2004, henceforth, KRV); and the other is based on Alesina and Tabellini (2005, henceforth, AT). Specifically:

(i) KRV procyclicality measure correlates the cyclical components of real government spending and real GDP. If the correlation is positive, policy is procyclical; and

(ii) the AT measure of procyclicality is obtained from country-by-country regressions of changes in government spending as a share of GDP (S_{it}) on the cyclical components of real GDP (or the output gap) and terms of trade.

$$\Delta S_{it} = \phi_i + \lambda_i GDPgap_{it} + \varphi_i ToTgap_{it} + \theta_i S_{it-1} + \mu_{it}$$

If the coefficient on the output gap (λ_{it}) is positive, that is, if an increase in the cyclical component of GDP is positively related to changes in spending as a share of GDP, then policies are defined to be procyclical.

Table 8 indicates that there is sufficient evidence for procyclical fiscal policies in Latin America. According to the KRV measure over the whole sample period, all countries (except Ecuador) pursued procyclical policies, of which nearly half were strongly significant. The

[9] Chile could prove to be a good case study where the quality of fiscal expenditures may have been very high.

pattern generally holds for the high and low growth subperiods. The Alesina-Tabellini measure also confirms the relationship, with higher and more significant coefficients.

B. Monetary/Exchange Rate Policy Volatility

The inability to find good measures of monetary policy is notorious in the literature. It is particularly difficult in the case of non-industrial countries where data are hard to come by or where financial markets are not well developed. Kaminsky, Reinhart and Vegh (2004) developed a measure based on the Taylor rule, but they themselves did not use it as they encountered several problems. Additionally, the Taylor rule may not be useful in a cross-country context of heterogeneous countries.

This paper develops a measure (albeit an extreme one) to capture exchange rate regime changes. Exchange rate regimes are defined according to Reinhart and Rogoff (2004). Regimes are scored on a 15-point scale on an annual basis for each country, ranging from one extreme (currency board) to the other (free floating). Based on this scoring, two variables are defined: the number of exchange rate regime changes and the intensity of regime changes for each subperiod. The intensity of change is the absolute difference in the score obtained on the 15-point scale.

A priori, the effect of exchange rate regime changes on growth is not obvious. There is some evidence that countries with fixed exchange rate regimes grow slower than those with more flexible regimes (Ghosh et al, 1997), which if true suggests that a move to greater flexibility would help countries grow faster and vice versa. On the other hand, if exchange rates are fixed and there are clear signs of overvaluation, then a move to a more depreciated rate would help growth even if the type of exchange regime itself does not change. In a similar vein, the number and intensity of changes could signify the extent of uncertainty (and hence hurt growth) or could indicate that the authorities are responding flexibly to the external environment (and hence spur growth).

Table 9 shows the number and intensity of changes in the exchange rate regime for each subperiod. The overall picture is not striking. The total number of changes are similar in the two subperiods and the number of changes per country in a 10-year period is a little over one. The intensity of changes varies widely by country, but the pattern across the two subperiods on average is not very different.

VI. Structural Policy Volatility and Reform Reversals

There are several indices of structural reforms for Latin America, but it is difficult to find a sufficiently long, consistent time series for 1970–2004. Sources include the Heritage Foundation (Index of Economic Freedom measure: 1995–2005, annual data), Fraser Institute (Economic Freedom of the World measure: 1970–2003, every five years until 2000 and annual thereafter), Morley et al. (structural reform index measure—for Latin America: 1970-95, annual data), Lora (structural reform index measure—for Latin America: 1985–99, annual data), and the World Bank (Country Policy and Institutional Assessment, CPIA: 1977–2004, annual data). Given the need for annual data from 1970-2004, the measures from the Heritage Foundation and Morley et al. (1999; henceforth,

Morley) were used. The CPIA was dropped because the confidentiality requirements of the World Bank prohibit the reporting of individual country data. Fraser was dropped because it does not contain annual data until 2000, while Lora's index commences from 1985.

Combining appropriately-transformed measures of Morley for 1970–95 with the Heritage Foundation for 1995–2004 provides a consistent new series for 1970–2004 that we call the composite Heritage-Morley index.[10] Nicaragua and Panama were dropped from the sample since they are not reported by Morley. The components of the two measures measure similar types of reforms: both include measures of trade policy reforms, government intervention, tax reforms, foreign investment policy, property rights, domestic financial reforms, privatization, labor market regulations, and regulatory burdens on business.[11]

On the whole, the region has experienced quite significant progress in structural reforms during 1970–2004, but there has been considerable variation across countries. Figure 5 illustrates the progress in structural reforms for the region and for selected countries. Argentina was the most advanced reformer in 1970, but fell behind most other countries in the region by 2004. At the other extreme, Chile was one of the laggards in 1970 but advanced to the top by 2004. Costa Rica maintained a relatively high level of reform orientation during the period, while Ecuador, which started out at the low end, progressed very slowly. Venezuela is the only country whose level of market orientation by 2004 had regressed below the level in 1970.

Figure 6 illustrates the periods of progress and regress in implementing market-oriented structural reforms for the region as a whole. The shaded area indicates the period of reversals (which is a decline in the level of the index). The area under the curve could be considered the "cost" of reform reversals—it shows the intensity of reform reversals and the time taken to revert to the level of reforms achieved before the reversals occurred. For the region, there was quite significant progress in implementing reforms particularly in the latter half of 1980s and during the 1990s. However, there were general periods of reform reversals in the early 1980s and the early 2000s. The reversals during the early 1980s coincided with a period of extreme macroeconomic instability and debt crises, against the backdrop of an unfavorable external environment. The reversals in the more recent period coincide with crises in some countries but not in others, and occurred when the external macroeconomic environment has been conducive to implementing reforms. A closer look suggests that the reversals commenced before the crises began, but were exacerbated by the crises.

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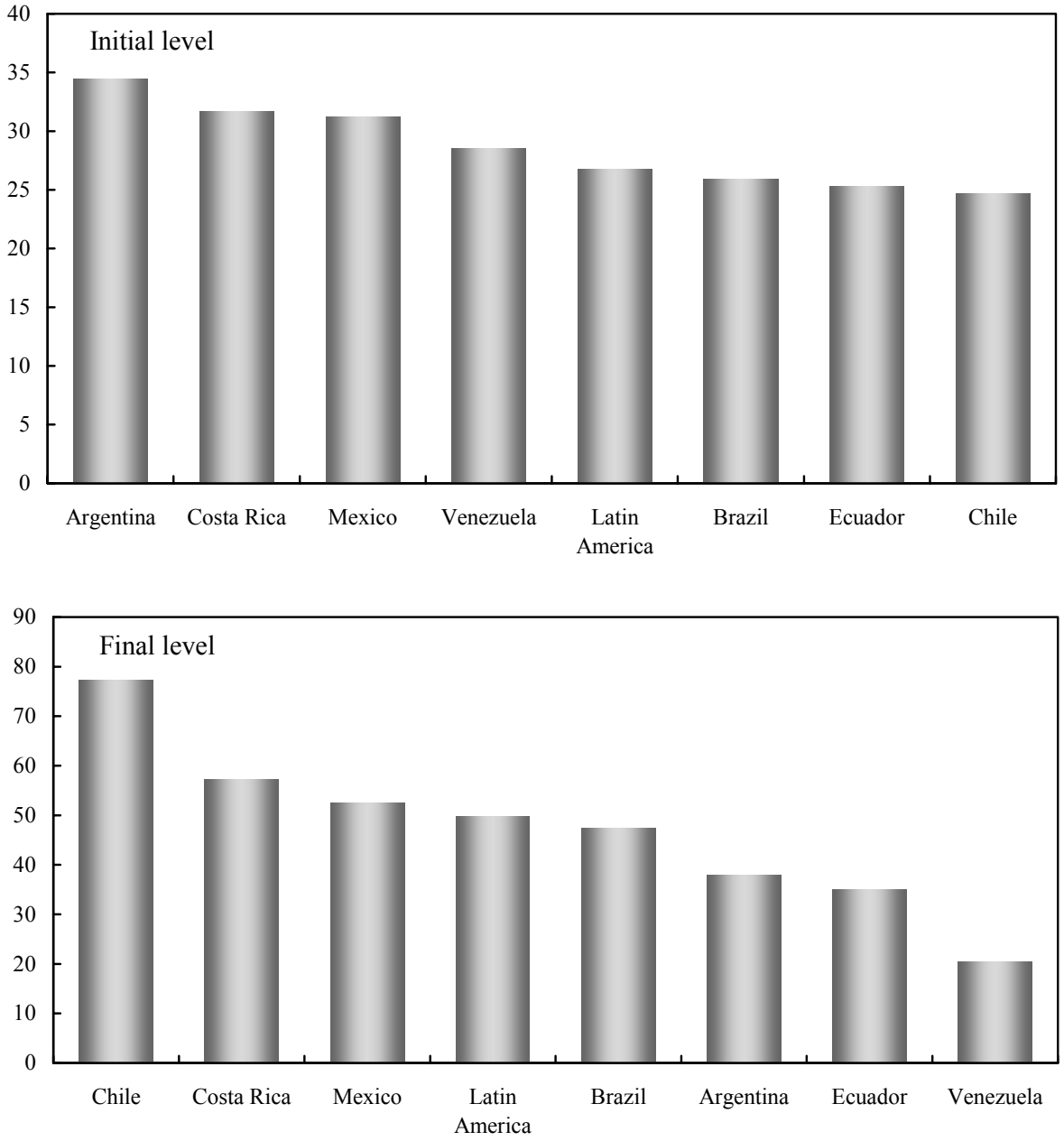
[10] The Heritage Foundation index ranges from one to five with lower numbers indicating greater market orientation of policies. The Morley index ranges from zero to one, with higher numbers denoting greater market orientation. The two measures were normalized from 0 to 100, with higher numbers indicating greater market-oriented reforms. To connect the two series, the data at 1995 were used to rebase the Morley index.

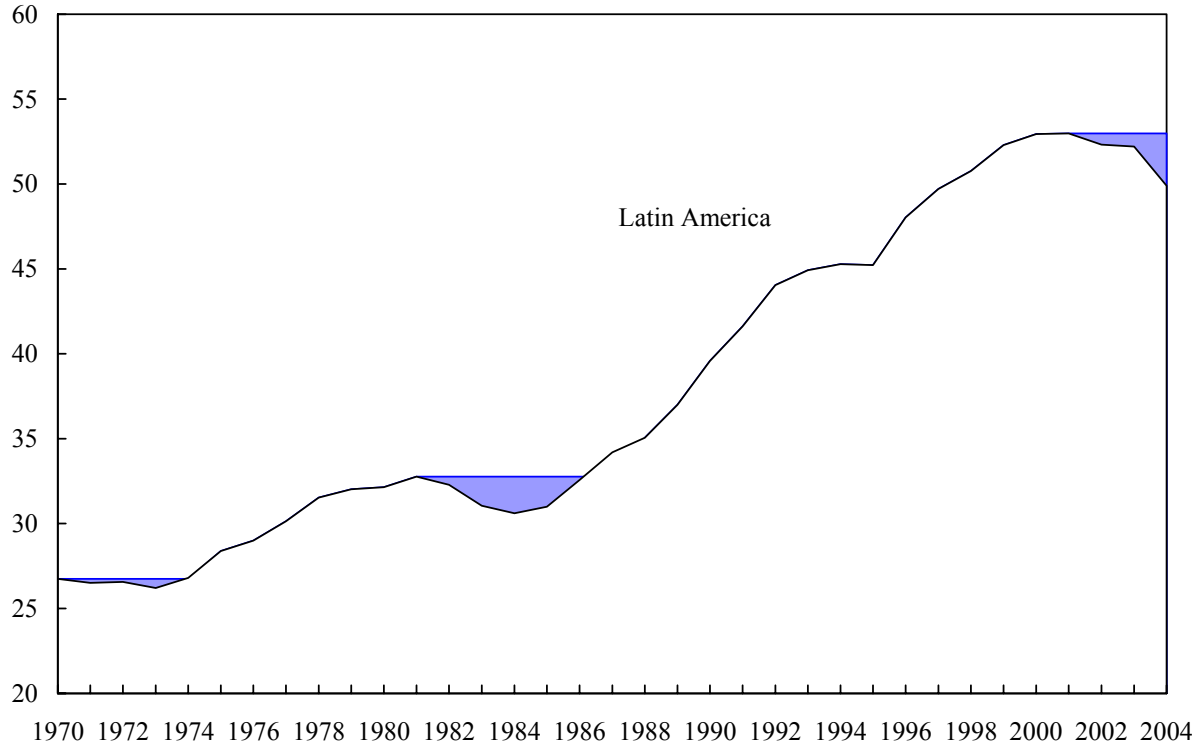
[11] The Heritage Foundation comprises 10 sub-indices that are equally weighted. One of these represents monetary policy, which we considered removing. However, it does not make a qualitative difference to the index. In the regression analysis, we do not use inflation or a monetary measure as an explanatory variable, so there is no "double counting" of monetary policy. Using the series in its complete form has the advantages of being well recognized in the literature and easily comparable with other studies.

Figure 5. Latin America: Progress in Structural Reforms, 1970–2004



Source: Authors, Heritage-Morley Composite Index.

Figure 6. Latin America: Structural Reforms and Reversals, 1970–2004



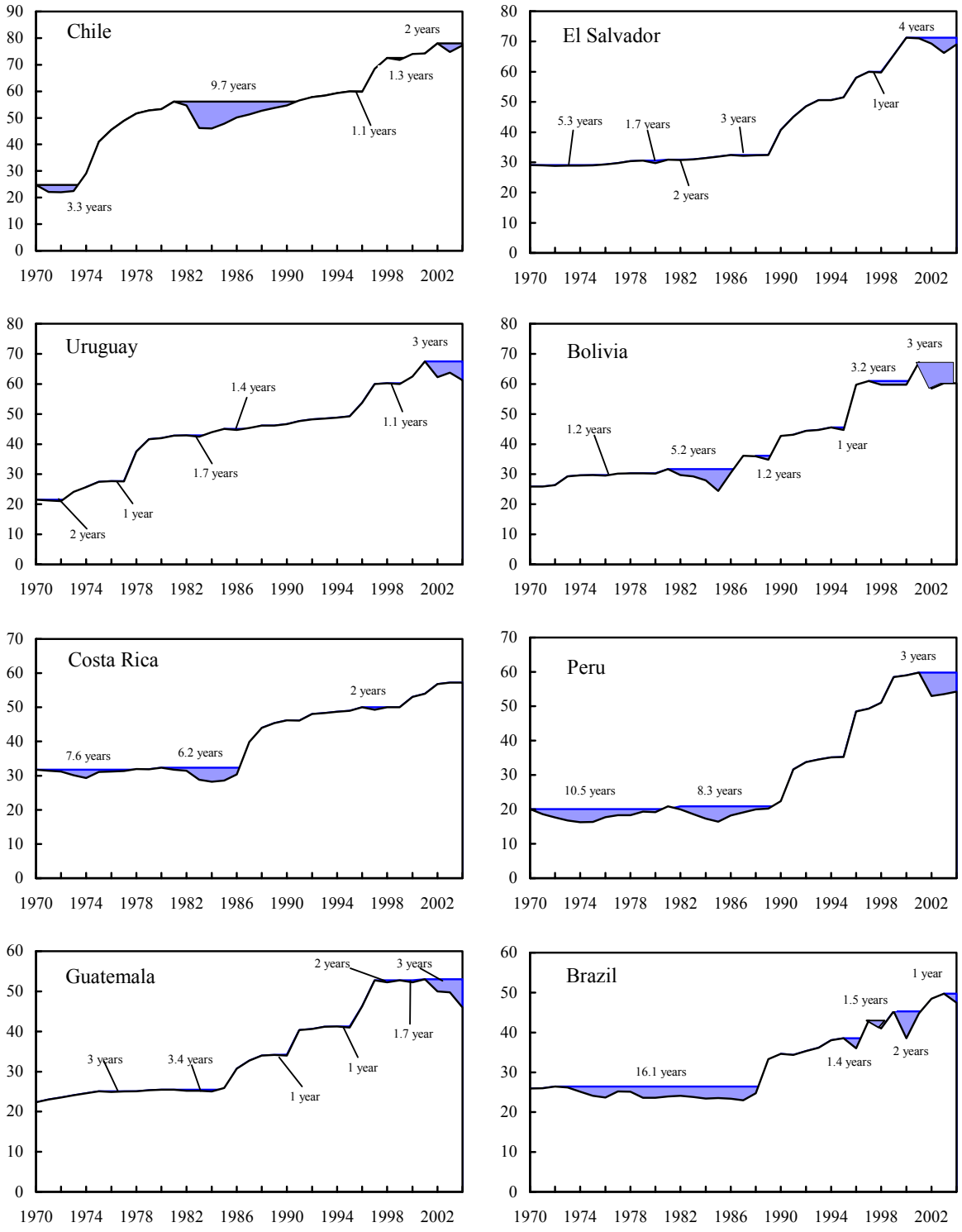
Source: Authors, Heritage-Morley Composite Index.

The variation across countries in the initial extent of reforms in 1970 and the pace of reforms over 1970–2004 is documented in Table 10. Countries are grouped according to high (above-median) and low (below-median) levels of initial reforms, and by fast (above-median) and slow (below-median) pace of reform during the sample period. The first number in parentheses refers to the absolute level of market orientation in 1970, while the second reports the change in the structural reform measure. Brazil is at the median in terms of both the level and the pace of reforms. The most market-oriented countries in 1970 that made the fastest progress are Costa Rica and El Salvador, while those that made the slowest progress are Argentina, Mexico, Venezuela, and Honduras. The least market-oriented countries in 1970 that made the fastest progress are Bolivia, Chile, Guatemala, Uruguay,[12] and Peru, while those that made the least progress are Ecuador and Colombia.

Not only did the initial level and the pace of reforms differ across countries in the region but the volatility of reforms also differed markedly across countries. Figures 7–8 plot the progress in market-oriented reforms and reform reversals for each of the countries. Argentina, Bolivia, Ecuador, Paraguay, and Venezuela stand out for their marked reversals of reforms in recent years.

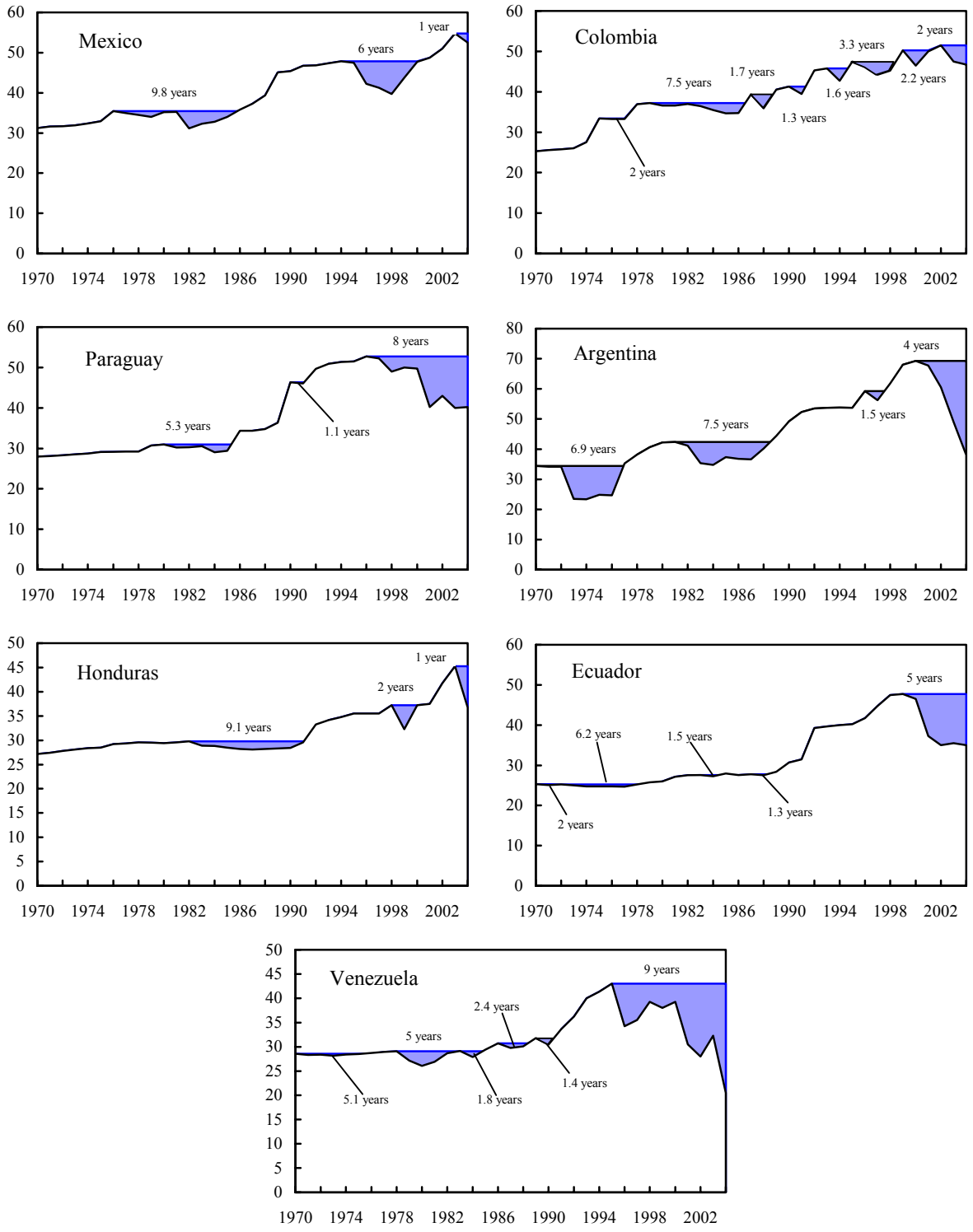
[12] In the fall of 1974, Uruguay liberalized its financial sector overnight.

Figure 7. Latin America: Structural Reforms and Reversals (Fast Reformers), 1970–2004 1/



Source: Authors, Heritage-Morley Composite Index.
1/ Brazil is excluded from the fast reformers.

Figure 8. Latin America: Structural Reforms and Reversals (Slow Reformers), 1970–2004



Source: Authors, Heritage-Morley Composite Index.

All countries experienced reform reversals during 1970–2004. There were 167 reversals in total, excluding Nicaragua and Panama. The highest numbers of reversals were in Argentina, Brazil, Colombia, and Venezuela. The most intense reversals were in Argentina, Chile (during the early part of the sub-period), Paraguay, and Venezuela. The least intense were in Costa Rica, El Salvador, Guatemala, and Uruguay.

Structural reform performance was better during the high-growth episode compared with the low-growth episode. Table 11 documents the average level and trend (or progress) in structural reforms as well as the number and intensity of reform reversals during the high and low growth episodes in each country.[13] During the high-growth episode, the degree of market orientation of structural policies was higher, countries made more progress in structural reforms, the number of reform reversals was fewer, and the intensity of reform reversals was lower.

VII. Constraints Faced by Policymakers

Policy choices in implementing reforms or responding to shocks may be constrained if country authorities face financing, trading or institutional constraints. If two countries faced the same shock, the volatility of policies could be higher in one country if the policymakers in that country faced greater constraints. This section examines three types of constraints: financing constraints, restrictions in external trade, and socio-political features.

A. Financing Constraints

Financing constraints could be measured by access to external capital markets, financial liberalization, capital flows, depth of domestic financial sectors, and levels of public debt. Table 12 documents these measures of financial integration and constraints. The first column indicates a country's access to external private capital markets. This measure, taken from Gelos, Sahay, and Sandleris (2004), is an annual binary variable that takes the value of 1 if the country had access to capital markets, zero otherwise. For example, during its best growth period, Argentina had access to external capital market for 70 percent of the time, while during its worst growth period, it had access 40 percent of the time. On average, Latin American countries had greater access to capital market during their high growth periods. Chile and Uruguay are the only countries that had lower access to external capital during their high growth period.

The second column indicates the degree of financial liberalization, which is also a one-zero annual dummy variable. More financially liberalized countries experienced higher growth. Only Brazil, Colombia, Mexico and Venezuela were financially less liberalized in their high

[13] The trend is the difference between the first and the last year of the relevant period. The "number of reversals" report the number of times the annual index fell during the sample period. The intensity of reversals is the average decline in the index each time it fell. The intensity of reversals is labeled "low", "medium" or "high," based on whether the intensity of reversals is in the first quartile ("low"), the second or third quartile ("medium"), or the fourth quartile ("high").

growth period, but three of these four countries experienced their highest growth period during the 1970s when the liberalization was lower in the world, in general.

The third column indicates capital flows as a share of GDP. On average, capital flowed into the countries during their high growth periods and flowed out during the low growth periods. Colombia, Nicaragua, Paraguay, and Venezuela are exceptions, however. The penultimate column provides a measure of financial depth, namely, the M2-to-GDP ratio. On average, financial depth was the same during the high and low growth periods. On the other hand, debt was higher in the low growth period in virtually all countries, though not significantly so (exceptions are Colombia, Nicaragua, Uruguay, and Venezuela).

B. Trade Integration

Trade openness is expected to be related to higher growth (Dollar and Kraay, 2002, and Chang et al., 2005). Two measures of trade integration are considered: a binary trade liberalization dummy and trade (exports+imports) as a share of GDP. Trade is indeed more liberalized and the economy more open on average during periods of high growth than periods of low growth, but only marginally so (Table 13). Country experiences vary significantly. Five countries—Colombia, Costa Rica, Ecuador, Mexico, and Paraguay—grew faster when their trade regimes were much less liberal, though the best years for each of these countries were in the 1970s when trade regimes in the world were generally less free. Measures of trade openness have been criticized, however, for not capturing the channels through which trade liberalization facilitates growth (see, for instance, Srinivasan and Bhagwati, 2001). Hence, such measures need to be viewed with some caution.

C. Socio-Political and Economic Features

Finally, Table 14 lists some other features that could be considered constraints to policymaking: the level of development (proxied by per capita income), the size of the economy (small size affects flexibility to respond to shocks, though the direction could go either way), the level of human capital (lack of skilled people to conduct policy and contribute to growth), ethnic fractionalization (spending pressures are likely to be higher), polity changes (frequent changes in political legal framework can create uncertainty), and external risk perceptions (higher perceptions of risk by foreign investors could create barriers for policymakers). Some of these factors are also direct determinants of growth, such as human capital development and per capita income.

The number of polity changes have been high in Latin America, dominated by Bolivia, Ecuador, Guatemala and Peru. The intensity of these changes have been high, especially in Peru, Uruguay, and several of the Central American countries. The extent of ethnic diversity has been the highest in Bolivia, Ecuador, and Peru. Income inequality has been the highest in Guatemala, Brazil and Chile, and lowest in Uruguay, Nicaragua and Bolivia.

VIII. WHAT HAVE WE LEARNT SO FAR?

Previous sections have examined the bivariate relationship between growth and other macroeconomic outcomes, shocks, policies, and constraints. This section synthesizes the findings of the previous sections, comparing the statistical significance of the relationships with theory and/or commonly held priors about these relationships. In so doing, it provides insights into the factors that are likely to be important in understanding growth and volatility in Latin America.

Tables 15 and 16 summarize the findings and the hypotheses. In both tables, the rows list the variables of interest. The second column is our prior regarding the direction of relationship between growth and the variable of interest. For example, the volatility of growth in the high growth period relative to the low growth period is expected to be low. Hence, the "expected outcome" is listed as "low." In the third column, "actual outcome" records the actual findings, and the fourth column notes the significance of the bivariate relationship (based on the data for the 17 Latin American countries). If the relationship is significant, the last column records the names of countries that are exceptions. Exceptions could make for potentially interesting case studies.

The bivariate relationship between growth and each of the other macroeconomic outcomes is statistically significant (Table 15). Output volatility, inflation, inflation volatility, devaluation, and devaluation volatility are lower in the high growth period. Fiscal balances are higher and volatility is lower in the high growth period. Currency crises and episodes of debt default are significantly lower in high growth periods, but banking crises are not. There are more banking crises in the high growth period, although the association is not significant. Regarding shocks, only the level and volatility of US real interest rates appear to matter for growth. Terms of trade shocks are not significantly different between high and low growth periods.

Of the macroeconomic policies considered—measures of fiscal expenditure and volatility, fiscal policy procyclicality, and exchange rate regime switches—only three of the seven variables matter (Table 16). Higher growth is statistically significantly related with lower fiscal expenditure, lower fiscal expenditure volatility, and fewer exchange rate regime changes. Among the structural reform measures—level, change, and reversals—only reform reversals are significantly associated with growth. Of the constraints considered, only capital flows and public debt are significantly related to growth.

IX. REGRESSION ANALYSIS—COMPLEMENTING THE EPISODIC APPROACH

The episodic approach identified the statistically significant bivariate relationships between growth and other variables. A regression analysis can complement the episodic approach by testing for robustness of the relationships and ascertaining the variables that are relatively more important for explaining growth. It can also help in assessing performance during the "average", as opposed to just the highest-growth or lowest-growth, years.

In this section, a regression analysis is undertaken dividing the 1970–2004 sample period into three sub periods, 1970–79, 1980–89, and 1990–2004. The volatility of the relevant variables

are computed for each of these sub periods. The choice of three sub periods (as opposed to a single cross section, or larger numbers of sub periods) was governed by two considerations: first, a single cross section of 17 observations would be insufficient for the analysis, and second, sub periods smaller than 10 years would not make much sense for computing volatility. The three sub periods increase the data set to a maximum of 51 data points.

Growth

The key variable of interest is per capita GDP growth. Following Ramey and Ramey (1995) and others, the volatility of per capita growth enters as an explanatory variable; the determinants of volatility are discussed below. No other macroeconomic outcome is used because of endogeneity. Exogenous shocks are introduced in the specification, followed by policy variables. Standard determinants, such as initial per capita income and education, are controlled for, as are socio-political institutions and economic characteristics for each country.

The regression results are presented in Table 17. Below is the regression with the highest explanatory power (accounting for 68 percent of the variation in per capita GDP growth):

Per capita GDP growth = – 0.23 Volatility of growth – 0.50 Average US real interest rate – 0.09 Volatility of discretionary fiscal policy + 0.17 Index of institutional development – 0.0004 Initial per capita income + 0.08 Income inequality – 6.40

All right hand side variables are significant at least at the 10 percent level, and are broadly consistent with the findings from the episodic approach. One exogenous shock—high US real interest rates—dampens growth. Other exogenous shocks are not significant. Regarding macroeconomic policies, the higher the volatility of discretionary fiscal policy, the lower the growth. Moreover, the greater the level of institutional development (or market-orientation of structural reforms), the faster is growth.

The standard control in the growth literature—initial per capita income—is significant with the correct sign. But levels of education are not significant; this is perhaps not surprising since the difference in education among the Latin American countries is relatively low, compared to other regions. The degree of income inequality is positively related with growth. However, in an instrumental variables regression, where growth volatility is instrumented by the explanatory variables for volatility (see next subsection below for these variables), neither initial per capita income nor income inequality remain significant, possibly because the variation across the region is not particularly high.

Volatility

The volatility of growth may be accounted for by the volatility of US real interest rates, intensity of structural reform reversals, and financial liberalization (Table 18). The three variables account for nearly 40 percent of the variation in output growth volatility:

Volatility of real GDP per capita growth = 1.53 Volatility of US real interest rates
+ 0.32 Intensity of structural reform reversals
+ 2.16 Financial liberalization dummy – 0.06

All variables (except the constant) are significant at least at the 5 percent level. Higher volatility of US real interest rates increases the volatility of real GDP per capita growth, as does greater intensity of structural reform reversals. Greater financial liberalization is also related to greater volatility, conforming with the view that greater financial liberalization may go hand-in-hand with macroeconomic crises. Other variables—such as the volatility of G-7 growth, volatility of terms of trade, number and intensity of exchange rate regime, public debt burden, capital flows/GDP, trade openness, trade liberalization, and number and intensity of polity changes—are not significantly related with growth volatility.

X. CONCLUSION

Real GDP per capita growth in Latin America during 1970–2004 has been low. The best performer, Chile, grew at only 2.6 percent per annum, while the worst performer, Nicaragua, experienced a decline in real GDP per capita. During this period, the volatility of growth has also been high. Using an episodic approach, this paper established key stylized facts on growth and volatility in 17 Latin American countries. The best and worst 10-year growth periods were identified for each country, and bivariate relationships established between growth and several variables of interest such as other macroeconomic outcomes, shocks, policies, and constraints. The approach provided an easy way to correlate within-country variation in growth performance with other factors, recognize outliers, and identify variables that are likely to be important explanators for growth within and across countries.

Episodes of relatively high growth differed across countries in the region and were robustly and negatively related with volatility. For nearly half the countries, the 1970s was the best decade (the 1990s were the best for only 6 countries), but the 1980s were the worst years for most countries. On average, the volatility of other macroeconomic outcomes was also negatively related with growth. The volatility of inflation and devaluation was 5–6 times higher, and fiscal balances were worse and its volatility nearly three times higher during the low growth period.

Crises, or extreme macroeconomic events, have been ubiquitous in Latin America. There were over 300 crisis-year observations during 1970–2004, covering currency, debt default, and banking crises. Argentina had the maximum number of crises—an average of one per year—while Colombia had only 6 in the entire 35-year period. There were significantly more currency crises and debt defaults in the low growth period as compared to the high growth period. However, this pattern does not hold for banking crises. Concurrent crises involving a currency crisis generally resulted in a sharp fall in output in the short term.

External shocks account only partly for the volatility in outcomes. Of the shocks considered, just the U.S. real interest rate is significantly related with growth and volatility. The level and volatility of U.S. interest rates were nearly twice as high in the low growth period. The level and volatility of G-7 growth rates were similar in the high and low growth periods. Country-

specific shocks—terms of trade, natural disasters, and official development assistance—were not generally significantly related with growth.

If most external shocks did not matter, did macroeconomic policy volatility contribute to lower growth? Some expenditure-based measures of fiscal policy exhibited higher volatility in the low-growth period. Fiscal policy was strongly procyclical, but this was not related with longer-term growth performance. Common measures of monetary policy were difficult to construct, so changes in the exchange rate regime—the number and intensity of exchange rate regime switches—were studied. Changes in regimes were marginally higher in the low growth period.

Was the pace of structural reforms and reform reversals associated with higher or lower growth? Since there was no time series data for the entire sample period of interest, an index was constructed based on measures developed by the Heritage Foundation and Morley et al. (1999). Despite several episodes of reform reversals, most countries made progress in market-oriented structural reforms during 1970–2004, except Venezuela. The intensity of reversals was highest in Argentina, Bolivia, Paraguay, and Venezuela. Chile, Costa Rica, El Salvador, and Uruguay made the most progress during the 35 years. Greater market-oriented reforms and fewer reform reversals were associated with higher growth.

The ability of policymakers to provide a stable policy environment can be hampered by economic or socio-political constraints. Several kinds of economic constraints were considered—high debt burden, shallowness of domestic financial markets, low access to international capital markets, low level of capital inflows, and domestic trade and capital account restrictions. While public debt was higher and capital inflows lower during the low growth period, none of the other variables were significant. However, in multivariate regressions, public debt and capital inflows were insignificant.

To isolate the most significant factors among the competing set of variables, multivariate regressions were run for the entire sample period for all the countries. US real interest rates were an important factor, but the level and volatility of terms of trade shocks did not matter for growth or volatility. Controlling for shocks, discretionary fiscal policy and institutional development or the level of market-oriented reforms mattered for growth, while the intensity of reform reversals mattered for growth volatility.

Future work on growth and volatility could expand the analysis to other regions, especially on the role of structural reform reversals. Alternative specifications for growth and volatility could be investigated, including whether different explanatory variables matter together. This could be tested by interacting terms, which would reveal the channels through which the explanatory variables may matter. The relationship between reform reversals and crises could also be explored; reform reversals often occurred before crises, but were exacerbated during crises. Future work could examine the details of reform reversals, and investigate the conditions under which reform reversals predict crises. These are areas that we are pursuing further.

Table 1. Latin America: Growth and Volatility, High and Low Years, 1970-2004

	High Decade				Low Decade				Difference Between High and Low Decade	
	Starting Year	Ending Year	Average Growth Per Capita	Output Growth Volatility	Starting Year	Ending Year	Average Growth Per Capita	Output Growth Volatility	Growth	Volatility 1/
Argentina	1991	2000	3.4	5.4	1981	1990	-2.9	5.3	6.3	1.0
Bolivia	1989	1998	2.0	1.0	1978	1987	-3.1	2.2	5.1	2.2
Brazil	1971	1980	5.8	3.2	1981	1990	-0.4	4.7	6.2	1.5
Chile	1988	1997	6.1	2.3	1973	1982	-0.1	7.9	6.2	3.4
Colombia	1970	1979	3.3	1.7	1993	2002	0.2	2.7	3.1	1.6
Costa Rica	1970	1979	3.4	1.9	1980	1989	-0.8	4.5	4.2	2.4
Ecuador	1970	1979	4.1	3.3	1981	1990	-0.5	3.2	4.7	1.0
El Salvador	1990	1999	2.8	1.7	1979	1988	-3.7	5.8	6.5	3.3
Guatemala	1970	1979	3.0	1.6	1981	1990	-1.6	2.7	4.6	1.7
Honduras	1970	1979	2.4	3.6	1981	1990	-0.7	2.6	3.1	0.7
Mexico	1972	1981	4.1	2.2	1982	1991	-0.7	3.4	4.8	1.5
Nicaragua	1995	2004	1.5	1.7	1979	1988	-6.7	10.8	8.2	6.2
Panama	1990	1999	3.7	2.5	1980	1989	-1.4	6.4	5.1	2.6
Paraguay	1972	1981	5.9	2.3	1994	2003	-0.9	2.0	6.8	0.9
Peru	1993	2002	2.4	3.8	1982	1991	-3.4	8.1	5.9	2.1
Uruguay	1985	1994	3.5	3.3	1975	1984	0.2	6.5	3.3	2.0
Venezuela, RB	1984	1993	0.5	5.2	1994	2003	-3.1	5.6	3.7	1.1
Latin America 2/			**3.4**	**2.7**			**-1.8**	**5.0**	**5.2**	**1.8**

Sources: World Bank, *World Development Indicators* ; and IMF staff calculations.

1/ Ratio of volatility in low decade to high decade.
2/ Simple average.

Table 2. Latin America: Inflation, Devaluation, and Fiscal Balance During High and Low Growth Decades, 1970-2004

	During High Growth Decade						During Low Growth Decade					
	Average Inflation	Inflation Volatility	Average Devaluation	Devaluation Volatility	Fiscal Balance	Fiscal Volatility	Average Inflation	Inflation Volatility	Average Devaluation	Devaluation Volatility	Fiscal Balance	Fiscal Volatility
Argentina	13.9	31.1	7.2	21.1	-1.3	0.9	168.2	99.7	170.9	98.7	-3.4	2.3
Bolivia	11.0	4.5	8.5	4.4	-3.5	1.1	119.3	148.7	115.4	158.8	-15.6	15.1
Brazil	32.7	20.7	24.4	18.4	-0.6	1.0	147.3	93.4	140.8	83.4	-9.0	5.7
Chile	13.0	5.5	6.5	6.1	1.7	0.5	78.8	65.4	78.0	80.5	-0.1	4.0
Colombia	17.5	6.6	9.0	3.4	-0.3	1.0	14.6	5.7	11.9	7.1	-4.1	2.1
Costa Rica	9.1	7.6	2.6	5.9	-3.2	1.8	22.7	16.1	22.5	28.9	-2.1	2.4
Ecuador	11.1	4.4	3.3	7.0	-1.8	1.7	31.0	13.7	34.2	19.7	-1.2	2.5
El Salvador	9.9	6.4	5.6	10.3	-1.7	1.0	16.6	5.4	6.9	20.9	-2.7	2.6
Guatemala	8.3	5.6	0.0	0.0	-1.3	0.9	13.5	11.4	15.0	23.0	-2.7	2.0
Honduras	6.4	3.4	0.0	0.0	-1.5	1.1	7.5	5.4	7.2	22.8	-6.7	2.7
Mexico	17.3	6.5	6.7	12.8	-4.8	2.5	49.7	23.6	48.1	32.2	-7.5	5.2
Nicaragua	8.8	2.8	8.6	2.8	-2.6	2.2	118.7	144.6	101.7	243.9	...	...
Panama	1.1	0.4	0.0	0.0	1.9	2.0	3.0	4.1	0.0	0.0	-5.1	2.5
Paraguay	13.1	7.0	0.0	0.0	-0.1	1.0	10.4	3.7	13.0	9.1	-1.1	1.9
Peru	10.7	11.8	10.4	13.6	-2.4	1.0	157.0	135.5	144.2	131.6	-4.8	2.1
Uruguay	54.6	11.6	45.0	13.2	-1.0	1.3	41.4	11.8	39.3	24.6	-2.9	2.9
Venezuela, RB	26.8	15.1	30.5	27.2	-0.6	3.4	33.0	17.9	28.7	25.3	-2.1	2.8
Latin America 1/	**15.6**	**8.9**	**9.9**	**8.6**	**-1.3**	**1.4**	**60.8**	**47.4**	**57.5**	**59.4**	**-4.4**	**3.7**

Sources: World Bank, *World Development Indicators* ; IMF, *World Economic Outlook* ; and IMF staff calculations.

1/ Simple average.

Table 3. Latin America: Crises During High and Low Growth Decades, 1970-2004 1/ 2/

	During High Growth Decade				During Low Growth Decade				Total	
	Currency Crises	Banking Crises	Debt Defaults	Total	Currency Crises	Banking Crises	Debt Defaults	Total	During High and Low	During 1970-2004
Argentina	0	0	3	3	4	4	9	17	20	29
Bolivia	0	1	9	10	3	0	7	10	20	21
Brazil	1	0	0	1	3	1	8	12	13	21
Chile	0	1	3	4	3	1	0	4	8	15
Colombia	0	3	0	3	1	0	0	1	4	7
Costa Rica	0	0	0	0	1	1	9	11	11	14
Ecuador	0	0	0	0	2	0	9	11	11	19
El Salvador	1	1	7	9	1	2	8	11	20	21
Guatemala	0	2	0	2	2	1	2	5	7	9
Honduras	0	0	0	0	1	2	10	13	13	25
Mexico	1	0	0	1	1	0	9	10	11	13
Nicaragua	0	2	6	8	3	0	10	13	21	28
Panama	0	0	7	7	0	0	7	7	14	15
Paraguay	0	1	0	1	2	2	1	5	6	18
Peru	0	1	5	6	1	0	9	10	16	22
Uruguay	0	1	4	5	1	0	2	3	8	14
Venezuela, RB	3	2	6	11	5	0	4	9	20	21
Latin America 3/	**6**	**15**	**50**	**71**	**34**	**14**	**104**	**152**	**223**	**312**

Sources: Gupta, Mishra, and Sahay (2003); Chuhan and Sturzenegger (2005); and IMF desk economists.

1/ Data are from 1975-2000 from Chuhan and Struzenegger (2003).
2/ A dummy variable takes a value of 1 if there is a crisis in a given year for a particular country, and 0 otherwise. In the case of sovereign debt defaults, it records not only the year in which the government defaulted but also the subsequent years in which they remained in default.
3/ Sum.

Table 4. Latin America: Concurrent Crises and Growth, 1970-2004 1/

	Currency and Banking Crises Only	Currency Crisis and Debt Default Only	Banking Crisis and Debt Default Only	All Three Crises Simultaneously
Argentina	1975 (-1.5)		2001 (-19.5)	1982 (-11.7)
Argentina	1981 (-11.4)			1989 (-16.3)
Argentina				1990 (-1.6)
Argentina				2002 (-10.1)
Bolivia		1982 (-14.3)	1991 (4.4)	
Bolivia		1983 (-14.7)		
Brazil		1983 (-4.1)	1985 (14.5)	
Brazil		1989 (-6.5)		
Brazil		1990 (-4.9)		
Brazil		1991 (-8.5)		
Chile		1983 (-11.7)		
Costa Rica				1981 (-18.0)
Ecuador		1983 (-7.4)		
Ecuador		1986 (-2.9)		
Ecuador		1999 (-6.5)		
El Salvador		1990 (4.0)	1983 (-5.6)	1986 (-0.9)
Guatemala		1986 (-4.5)		
Honduras		1990 (-1.4)	1984 (-2.0)	
Honduras		1993 (1.4)	1987 (1.9)	
Honduras			1991 (-0.2)	
Mexico		1982 (-3.3)		
Nicaragua		1979 (-43.8)	1993 (-5.5)	
Nicaragua		1985 (-15.0)	2000 (6.0)	
Nicaragua		1988 (-22.6)		
Paraguay		1987 (1.9)	1988 (7.6)	2002 (-4.0)
Paraguay		1989 (6.6)		
Peru		1976 (-2.5)	1994 (18.9)	
Peru		1987 (1.9)		
Uruguay	2002 (-14.4)		2003 (0.6)	
Venezuela, RB		1984 (-10.6)	1986 (2.2)	
Venezuela, RB		1987 (7.9)		
Venezuela, RB		1995 (-5.0)		
Venezuela, RB		1996 (3.7)		
Latin America 2/	**-9.1**	**-6.3**	**1.8**	**-8.9**

Sources: Gupta, Mishra, and Sahay (2003); Chuhan and Sturzenegger (2005); and IMF desk economists.

1/ Cumulative real GDP per capita growth is reported in brackets for the year in which the crises occurred, the previous year, and the subsequent year.

2/ Simple average.

Table 5. Latin America: Global Shocks–G7 Growth and World Real Interest Rates, 1970-2004

	G-7 Growth Rates of Real Per Capita GDP				U.S. Real Interest Rate			
	During High Growth Decade		During Low Growth Decade		During High Growth Decade		During Low Growth Decade	
	Average	Volatility	Average	Volatility	Average	Volatility	Average	Volatility
Argentina	1.8	0.9	2.3	1.5	3.7	0.5	5.7	1.8
Bolivia	1.7	0.9	2.2	1.6	3.7	0.4	4.4	3.6
Brazil	2.5	2.1	2.3	1.5	0.4	1.8	5.7	1.8
Chile	1.9	1.1	1.8	2.3	3.9	0.6	1.0	2.9
Colombia	2.7	2.0	1.7	0.9	0.7	1.8	3.4	0.7
Costa Rica	2.7	2.0	2.1	1.6	0.7	1.8	5.2	2.8
Ecuador	2.7	2.0	2.3	1.5	0.7	1.8	5.7	1.8
El Salvador	1.7	0.8	2.2	1.6	3.7	0.4	4.7	3.4
Guatemala	2.7	2.0	2.3	1.5	0.7	1.8	5.7	1.8
Honduras	2.7	2.0	2.3	1.5	0.7	1.8	5.7	1.8
Mexico	2.3	2.2	2.3	1.5	0.6	2.1	5.7	1.8
Nicaragua	1.8	0.9	2.2	1.6	3.0	0.9	4.7	3.4
Panama	1.7	0.8	2.1	1.6	3.7	0.4	5.2	2.8
Paraguay	2.3	2.2	1.8	0.8	0.6	2.1	3.3	0.8
Peru	1.7	0.9	2.3	1.5	3.4	0.7	5.7	1.8
Uruguay	2.1	1.2	2.0	2.0	4.5	1.3	2.8	3.8
Venezuela, RB	2.3	1.3	1.8	0.8	4.9	1.7	3.3	0.8
Latin America 1/	**2.2**	**1.5**	**2.1**	**1.5**	**2.3**	**1.3**	**4.6**	**2.2**

Sources: IMF, *World Economic Outlook* ; and Datastream.

1/ Simple average.

Table 6. Latin America: Country-Specific Shocks–Terms of Trade, Natural Disasters, and Official Aid, 1970-2004

	Terms of Trade Growth				Natural Disasters (Per Million People)				ODA/GDP			
	During High Growth Decade		During Low Growth Decade		During High Growth Decade		During Low Growth Decade		During High Growth Decade		During Low Growth Decade	
	Average	Volatility	Average	Volatility	Average	Volatility	Average	Volatility	Average	Volatility	Average	Volatility
Argentina	1.6	8.0	-4.6	10.4	7.1	6.5	4.6	3.5	0.1	0.0	0.1	0.1
Bolivia	-6.1	14.3	0.6	19.9	20.6	17.0	22.8	17.9	10.1	1.3	6.3	1.0
Brazil	0.3	3.4	0.0	1.9	2.1	1.5	3.0	1.7	0.1	0.1	0.1	0.0
Chile	0.9	7.8	-8.1	22.3	15.3	12.2	4.7	4.9	0.3	0.1	0.2	0.6
Colombia	2.9	13.6	1.1	8.4	8.4	7.0	10.7	5.0	1.0	0.7	0.3	0.1
Costa Rica	-0.2	8.9	-0.9	10.7	37.3	51.0	19.5	32.6	1.4	0.3	4.6	2.1
Ecuador	9.8	24.9	-4.6	13.7	20.8	21.2	10.8	13.3	1.2	0.4	1.3	0.7
El Salvador	-0.9	6.3	0.2	19.2	18.9	12.7	12.4	22.6	4.1	2.1	7.0	3.0
Guatemala	2.3	14.1	-2.1	10.0	4.8	7.8	18.0	15.7	1.1	0.2	1.8	1.1
Honduras	2.6	13.9	-0.3	3.3	22.8	22.8	22.6	20.9	3.1	1.1	7.5	2.9
Mexico	4.1	16.8	-7.4	15.9	3.3	1.9	3.9	1.9	0.1	0.0	0.1	0.0
Nicaragua	1.8	12.5	-2.3	18.1	57.0	40.4	13.6	17.7	18.5	5.2	5.8	2.2
Panama	-2.3	11.1	0.8	6.0	38.4	53.2	18.3	23.7	0.9	0.8	0.9	0.3
Paraguay	-2.7	24.9	2.9	5.8	3.3	10.4	18.8	21.4	2.0	0.9	1.1	0.2
Peru	-1.1	6.4	4.5	11.4	13.8	7.0	19.3	8.5	0.9	0.3	1.5	0.4
Uruguay	1.8	7.9	-2.3	6.0	12.9	16.6	0.0	0.0	0.4	0.2	0.2	0.1
Venezuela, RB	-7.5	23.0	3.8	21.3	7.5	4.7	6.0	4.1	0.1	0.0	0.1	0.0
Latin America 1/	**0.4**	**12.8**	**-1.1**	**12.0**	**17.3**	**17.3**	**12.3**	**12.7**	**2.7**	**0.8**	**2.3**	**0.9**

Sources: IMF, *World Economic Outlook* ; and EM-DAT.
1/ Simple average.

Table 7. Latin America: Fiscal Policy Volatility During High and Low Growth Decades, 1970-2004

	Fiscal Expenditure/GDP (Source: IFS)				Fiscal Expenditure/GDP (Source: WEO)				Fiscal Policy Volatility (Fatas-Mihov) 1/			
	During High Growth Decade		During Low Growth Decade		During High Growth Decade		During Low Growth Decade		During High Growth Decade		During Low Growth Decade	
	Average	Volatility	Average	Volatility	Average	Volatility	Average	Volatility	Average	Volatility	Average	Volatility
Argentina	16.2	1.0	...	...	19.6	1.6	19.5	2.7	2.9	11.8	1.6	12.5
Bolivia	27.1	1.2	23.6	12.5	23.5	2.4	21.5	3.8	2.6	10.2	-3.0	10.6
Brazil	17.9	1.5	26.9	6.6	10.8	0.9	15.4	2.4	-3.5	13.0	3.4	12.5
Chile	20.0	1.4	31.6	2.5	21.0	2.2	32.9	3.8	-0.5	6.3	0.9	5.7
Colombia	...	...	17.0	2.9	7.4	0.2	17.2	2.8	-1.6	2.9	1.5	8.0
Costa Rica	16.6	1.5	17.0	2.0	13.3	1.1	15.3	2.8	-1.9	11.1	3.9	14.5
Ecuador	12.9	1.5	14.7	1.1	12.9	1.5	14.7	1.1	-2.2	7.4	-0.7	9.8
El Salvador	13.5	1.6	15.2	2.3	16.2	1.6	18.3	2.7	1.8	10.8	-2.2	10.8
Guatemala	10.9	1.1	11.9	2.0	12.8	0.6	12.1	1.9	-1.4	6.0	1.2	12.1
Honduras	14.3	1.3	21.0	2.7	18.1	1.3	23.2	1.4	0.6	9.5	-2.3	5.6
Mexico	19.5	2.4	23.4	4.7	16.1	1.6	23.7	4.0	1.2	7.7	-1.8	10.4
Nicaragua	20.6	2.4	...	...	22.1	2.1	43.4	12.2	-3.6	10.4	15.1	8.5
Panama	22.9	0.8	29.5	3.0	20.3	2.5	23.4	4.6	0.0	11.0	-4.8	13.9
Paraguay	11.0	0.9	16.8	2.2	10.3	0.7	18.8	2.3	0.0	5.8	-0.8	12.3
Peru	17.2	0.7	16.7	2.6	17.4	0.6	16.6	2.4	0.7	7.5	-0.5	12.7
Uruguay	26.0	3.1	24.2	2.6	22.0	4.2	23.4	2.7	3.9	17.1	-2.6	12.6
Venezuela, RB	20.2	1.2	20.8	2.7	22.9	2.2	22.5	3.2	-3.4	10.9	4.2	12.8
Latin America 2/	**17.8**	**1.4**	**21.0**	**3.5**	**16.9**	**1.6**	**21.3**	**3.4**	**-0.3**	**9.4**	**0.8**	**10.9**

Sources: IMF, *International Financial Statistics* ; IMF, *World Economic Outlook*; and Fatas-Mihov (2003).

1/ Using a broader measure of real fiscal expenditures (total central government expenditures), Fatas and Mihov (2003) is re-estimated over 1970-2004. The residual from the regression, which is the measure of discretionary fiscal policy, is reported.

2/ Simple average.

Table 8. Latin America: Fiscal Policy Procyclicality, 1970-2004 1/

	KRV Correlation Measure 2/						Alesina-Tabellini Measure 3/	
	Whole Sample		During High Growth Decade		During Low Growth Decade			
	Correlation	Pro-/A-/Counter-Cyclical (+/0/-)	Correlation	Pro-/A-/Counter-Cyclical (+/0/-)	Correlation	Pro-/A-/Counter-Cyclical (+/0/-)	Estimated Coefficient	Pro-/A-/Counter-Cyclical (+/0/-)
Argentina	0.25	+	0.89***	+	0.38	+	0.77**	+
Bolivia	0.03	+	-0.19	-	0.14	+	0.52	+
Brazil	0.66***	+	0.31	+	0.92***	+	1.61***	+
Chile	0.14	+	0.49	+	0.18	+	0.21	+
Colombia	0.07	+	-0.23	-	0.23	+	-0.20	-
Costa Rica	0.12	+	0.28	+	0.52	+	0.87**	+
Ecuador	-0.06	-	-0.47	-	0.68**	+	0.02	+
El Salvador	0.10	+	0.29	+	-0.20	-	0.25	+
Guatemala	0.53***	+	-0.02	-	0.75**	+	1.99***	+
Honduras	0.14	+	0.47	+	-0.24	-	0.71	+
Mexico	0.06	+	0.46	+	-0.14	-	0.70	+
Nicaragua	0.37**	+	0.63**	+	0.91***	+	1.48***	+
Panama	0.11	+	0.37	+	-0.07	-	0.36	+
Paraguay	0.39**	+	0.88***	+	0.36	+	1.79***	+
Peru	0.60***	+	0.76**	+	0.54	+	0.92***	+
Uruguay	0.44***	+	0.47	+	0.14	+	0.78**	+
Venezuela, RB	0.34**	+	0.38	+	0.35	+	0.68*	+
Latin America 4/	**0.09**	**+**	**0.20**	**+**	**0.17**	**+**	**0.81*** **	**+**

Sources: Kaminsky, Carmen and Vegh (2004); and authors' estimates.

1/ Significance levels are denoted as follows: 1 percent (***), 5 percent (**), and 10 percent (*).
2/ Correlation of the output gap and the deviation of real central government fiscal expenditures from trend, both measured using the Hodrick-Prescott filter.
3/ Regression of the log deviation of output from trend (output gap) and log deviation of terms of trade from trend on log deviation of real central government fiscal expenditures.
4/ Simple average for correlation, and entire pooled sample for the Alesina-Tabellini regressions.

Table 9. Latin America: Monetary Policy Volatility, 1970-2004

	Exchange Rate Regime Changes, 1971-2001 1/			
	During High Growth Decade		During Low Growth Decade	
	Number	Intensity 2/	Number	Intensity 2/
Argentina	1	12	3	11
Bolivia	1	1	2	3
Brazil	1	4	0	0
Chile	3	1	3	8
Colombia	1	2	1	2
Costa Rica	2	8	2	8
Ecuador	3	11	3	5
El Salvador	1	8	1	4
Guatemala	0	0	3	5
Honduras	0	0	2	6
Mexico	2	3	2	8
Nicaragua	0	0	2	6
Panama	0	0	0	0
Paraguay	1	2	1	3
Peru	2	5	0	0
Uruguay	2	8	2	9
Venezuela, RB	3	2	1	8
Latin America 2/	**23**	**5**	**28**	**7**

Source: Reinhart and Rogoff (2004).

1/ Data are from Reinhart and Rogoff (2004), where exchange rate regimes are scored on a 15-point scale. A change in their rating of an exchange rate regime is counted as a change in the exchange rate regime. The number of changes computes the number of times there were changes to the rating in the given sample period. The intensity of a change is computed as the absolute difference in the rating.

2/ The sum is computed for the number of exchange rate regime changes while a simple average is computed for the intensity of regime changes.

Table 10. Latin America: Fast and Slow Reformers, 1970-2004 1/

		Pace of Reform 2/	
		Fast reformers *(Above median change in index)*	***Slow reformers*** *(Below median change in index)*
Initial level of market orientation 3/	***High level of initial market orientation*** *(Above median in 1970)*	Costa Rica (32, 26) El Salvador (29, 40)	Argentina (34, 4) Mexico (31, 21) Venezuela (29, -8) Paraguay (28, 12) Honduras (27, 10)
		Brazil (26, 22) 4/	
	Low level of initial market orientation *(Below median in 1970)*	Bolivia (26, 34) Chile (25, 53) Guatemala (22, 24) Uruguay (22, 40) Peru (20, 34)	Ecuador (25, 10) Colombia (25, 22)

Source: Authors.

1/ The composite Heritage-Morley index of structural reforms is used to construct this table. Data on Nicaragua and Panama are unavailable.

2/ Pace of reform is measured by the change in index value from 1970 to 2004.

3/ Initial level of market orientation is measured by the value of the index in 1970.

4/ Brazil was the median country in both the initial level of market orientation and in the pace of reform during 1970-2004.

The brackets next to each country contains the initial level of the index and the change in index value from 1970 to 2004.

Table 11. Latin America: Structural Reform Levels, Trends, and Reversals During High and Low Growth Decades, 1970-2004 1/

	During High Growth Decade				During Low Growth Decade			
	Average	Change or Trend	Number of Reversals	Intensity of Reversals 2/	Average	Change or Trend	Number of Reversals	Intensity of Reversals 2/
Argentina	58.2	17.0	2	High	39.8	6.8	5	High
Bolivia	48.1	25.0	3	Medium	30.0	5.9	5	Medium
Brazil	24.9	-2.4	6	Medium	25.8	10.7	4	Medium
Chile	58.1	15.8	1	Low	45.6	32.2	1	Medium
Colombia	30.4	12.0	1	Medium	47.0	5.7	4	High
Costa Rica	31.1	0.2	6	Medium	34.1	13.1	4	Medium
Ecuador	25.1	0.5	4	Low	27.9	3.5	3	Medium
El Salvador	53.0	24.8	1	Low	31.3	1.7	3	Medium
Guatemala	24.3	3.0	1	Low	29.2	8.6	3	Low
Honduras	28.5	2.3	1	Low	28.7	-1.1	5	Medium
Mexico	33.8	3.6	3	Medium	38.0	15.6	1	High
Nicaragua	36.2	28.5	2	High	...	...	...	...
Panama	...	...	...	...	...	...	...	...
Paraguay	29.4	1.9	1	Medium	48.0	-11.4	5	High
Peru	48.4	18.5	1	High	20.4	11.6	4	Medium
Uruguay	46.7	3.8	1	Medium	37.6	16.5	2	Low
Venezuela, RB	32.0	12.1	3	Medium	36.1	-9.1	4	High
Latin America 3/	**38.1**	**9.2**	**38**	**Medium**	**34.6**	**7.4**	**53**	**High**

Source: Authors, the Heritage-Morley Composite Index.

1/ The index ranges from 0 to 100, with a higher number denoting a more reformed economy. Data from 1995-2004 are from the Heritage Foundation, normalized to range from 0 to 100. Data from 1970-1994 are from Morley (1999), normalized to range from 0 to 100, and normalized such that the numbers in 1995 correspond to the Heritage Foundation 1995 numbers.

2/ The low-medium-high characterization is based on whether the intensity of reversals is in the 1st, the 2nd and 3rd quartiles, or the 4th quartile, respectively.

3/ Simple average, except for number of reversals where the total number of reversals is provided.

Table 12. Latin America: Financial Integration and Constraints During High and Low Growth Decades, 1970-2004

	During High Growth Decade					During Low Growth Decade				
	Access to Capital Markets 1/	Financial Liberalization 2/	Capital Flows/ GDP Ratio 3/	M2/GDP 4/	Public Debt/ GDP Ratio 5/	Access to Capital Markets 1/	Financial Liberalization 2/	Capital Flows/ GDP Ratio 3/	M2/GDP 4/	Public Debt/ GDP Ratio 5/
Argentina	0.7	1.0	10	21	30	0.4	0.2	-1	13	42
Bolivia	0.0	0.0	8	34	68	0.0	0.0	2	14	105
Brazil	1.0	0.0	4	14	20	0.7	0.1	-1	13	32
Chile	0.2	1.0	7	37	40	0.7	0.0	6	18	39
Colombia	...	0.0	3	18	19	0.9	1.0	7	21	29
Costa Rica	...	0.0	6	26	32	0.1	0.0	0	37	89
Ecuador	...	0.0	6	21	20	0.1	0.0	-4	21	74
El Salvador	0.1	0.0	3	4	28	0.0	0.0	2	11	35
Guatemala	...	0.0	3	20	7	0.1	0.0	0	23	24
Honduras	...	0.0	7	22	28	0.0	0.0	4	26	69
Mexico	1.0	0.0	3	29	22	0.2	0.1	3	20	47
Nicaragua	0.0	0.0	-1	33	164	0.0	0.0	5	36	140
Panama	...	0.0	33	55	56	...	0.0	-80	36	66
Paraguay	0.0	0.0	2	19	17	0.0	0.0	4	31	29
Peru	0.2	1.0	6	26	43	0.1	0.0	-2	15	56
Uruguay	0.3	0.6	8	39	36	0.4	0.0	5	34	25
Venezuela, RB	0.3	0.5	4	31	54	0.3	1.0	7	18	36
Latin America 6/	**0.4**	**0.2**	**6.5**	**26**	**40**	**0.3**	**0.1**	**-2.5**	**23**	**55**

1/ Dummy variable covering 1980-2000, with 1 indicating access to international capital markets. Source: Gelos, Sahay, and Sandleris (2004).
2/ Dummy variable from 1970-2000, with 1 indicating a liberalized financial sector. Source: Kose, Prasad, and Terrones (2006).
3/ The ratio of capital flows to GDP. Data covers 1970-2000. Source: Kose, Prasad, and Terrones (2006).
4/ Data covers 1970-2004. Sources are WDI and WEO.
5/ Data covers 1970-2003. Source is WDI.
6/ Simple average.

Table 13. Latin America: Trade Liberalization and Integration During High and Low Growth Decades, 1970-2004

	During High Growth Decade		During Low Growth Decade	
	Trade Liberalization 1/	Trade Openness 2/	Trade Liberalization 1/	Trade Openness 2/
Argentina	1.0	19.4	0.0	15.6
Bolivia	1.0	48.9	0.3	52.0
Brazil	0.0	17.2	0.0	17.2
Chile	1.0	61.0	0.7	43.9
Colombia	0.0	29.8	1.0	37.5
Costa Rica	0.0	67.4	0.3	72.2
Ecuador	0.0	49.1	0.0	50.3
El Salvador	1.0	55.3	0.0	54.7
Guatemala	0.0	44.0	0.3	34.7
Honduras	0.0	69.1	0.0	58.3
Mexico	0.0	20.1	0.6	32.1
Nicaragua	1.0	112.4	0.0	51.1
Panama	0.4	75.6	0.0	75.9
Paraguay	0.0	35.3	1.0	76.1
Peru	1.0	31.8	0.1	32.5
Uruguay	0.5	41.5	0.0	39.6
Venezuela, RB	0.0	49.9	0.7	47.6
Latin America 3/	**0.4**	**48.7**	**0.3**	**46.5**

Sources: Kose, Prasad and Terrones (2006); and IMF, *World Economic Outlook* .

1/ Trade liberalization is a 0-1 dummy from Kose, Prasad and Terrones (2006), where 1 denotes liberalized regime. The data cover 1970-2000.
2/ Trade openness is exports plus imports as a share of GDP, from Kose, Prasad, and Terrones (2006) from 1970-2000 and from WEO from 2001-04.
3/ Simple average.

Table 14. Latin America: Socio-Political and Economic Features, 1970-2004

	Real GDP Per Capita (Constant 2000 US$)		Real GDP Billions, 2000 US$	Human Capital Development 1/	Ethnic Fractionalization	Polity Changes 2/		Income Distribution (Top 20 Percent) (Latest)
	1970	2004	2004			Number of Changes	Intensity of Changes	
Argentina	6,617	7,699	286.2	8.8	0.3	6	8.2	56.4
Bolivia	929	1,029	9.3	5.6	0.7	7	3.7	49.1
Brazil	1,831	3,629	649.8	4.9	0.5	4	4.3	63.2
Chile	2,209	5,440	86.8	7.6	0.2	5	5.8	62.2
Colombia	1,192	2,065	93.5	5.3	0.6	3	1.3	61.8
Costa Rica	2,518	4,512	18.4	6.1	0.2	0	0.0	51.5
Ecuador	929	1,439	19.0	6.4	0.7	8	3.9	58.0
El Salvador	1,933	2,122	14.1	5.2	0.2	5	36.6	57.1
Guatemala	1,300	1,677	21.2	3.5	0.5	8	23.6	64.1
Honduras	777	945	6.7	4.8	0.2	7	26.6	58.9
Mexico	3,581	5,953	617.8	7.2	0.5	5	2.8	59.1
Nicaragua	1,474	785	4.4	4.6	0.5	5	30.8	49.3
Panama	2,741	4,340	13.2	8.6	0.6	6	3.7	60.3
Paraguay	879	1,425	8.3	6.2	0.2	5	3.6	61.3
Peru	2,069	2,200	60.6	7.6	0.7	7	54.0	53.2
Uruguay	3,957	5,811	19.7	7.6	0.3	5	38.8	50.1
Venezuela, RB	6,544	4,588	119.8	6.6	0.5	3	1.0	53.4
Latin America 3/	**2,440**	**3,274**	**120.5**	**6.3**	**0.4**	**89**	**14.6**	**57.0**

Sources: World Bank, *World Development Indicators* ; Polity database; Barro and Lee (2000).

1/ Average number of years of schooling for adults aged 15 years and over. Source: Barro and Lee (2000).

2/ The Polity database covering 1970-2003. The number of changes is the number of times that the polity rating changed. The intensity of changes is the average change in rating over the period.

3/ Simple average, except for number of polity changes which is the total number of polity changes from 1970-2003.

Table 15. Latin America: Summary Outcomes and Shocks—Relative Value in High and Low Growth Years, 1970–2004

Value in the High Growth Period Relative to the Low Growth Period	Expected Outcome (Hypothesis)	Actual Outcome (Empirical)	Statistically Significant (Bivariate)	Exceptions 1/
Macroeconomic Outcomes				
Output volatility	low	low	yes	Paraguay
Inflation	low	low	yes	Colombia, Paraguay, Uruguay
Inflation volatility	low	low	yes	Colombia, El Salvador, Paraguay
Devaluation	low	low	yes	Panama, Uruguay, Venezuela
Devaluation volatility	low	low	yes	Panama, Venezuela
Fiscal balance	?	high	yes	Costa Rica, El Salvador
Fiscal balance volatility	?	low	yes	Venezuela
Extreme Outcomes				
Currency crises	low	low	yes	none
Banking crises	low	high	no	*not applicable*
Debt defaults	low	low	yes	Bolivia, Chile, Uruguay, Venezuela
Shocks				
G-7 growth	high	high	no	*not applicable*
G-7 growth volatility	low	low	no	*not applicable*
US real interest rates	low	low	yes	Chile, Uruguay, Venezuela
U.S. real interest rates volatility	low	low	yes	Brazil, Colombia, Mexico, Paraguay, Venezuela
Terms of trade growth	high	high	no	*not applicable*
Terms of trade growth volatility	low	high	no	*not applicable*
Natural disasters	low	high	no	*not applicable*
Natural disasters volatility	low	high	no	*not applicable*
ODA/GDP	?	high	no	*not applicable*
ODA/GDP volatility	low	low	no	*not applicable*

Source: Authors' estimates.

1/ Exceptions reported only when differences in means during high and low growth periods were statistically significant.

Table 16. Latin America: Summary Policies and Constraints in High Relative to Low Growth Years, 1970-2004

Value in the High Growth Period Relative to the Low Growth Period	Expected Outcome (Hypothesis)	Actual Outcome (Empirical)	Statistically Significant (Bivariate)	Exceptions 1/
Macroeconomic Policies				
Fiscal Expenditure to GDP	?	low	yes	Bolivia, Guatemala, Peru
Volatility of Fiscal Expenditure to GDP	low	low	yes	Ecuador, Venezuela
Discretionary Fiscal Policy	?	low	no	*not applicable*
Volatility of Discretionary Fiscal Policy	low	low	no	*not applicable*
KRV Fiscal Procyclicality	?	high	no	*not applicable*
Number of exchange rate regime changes	low	low	yes	Brazil, Peru, Venezuela
Intensity of exchange rate regime changes	low	low	no	*not applicable*
Structural Reform Policies				
Morley-Heritage index	high	high	no	*not applicable*
Morley-Heritage index change	high	high	no	*not applicable*
Morley-Heritage index reversals	low	low	yes	Brazil, Costa Rica, Ecuador, Mexico
Constraints				
Access to capital markets	high	high	no	*not applicable*
Financial liberalization	high	high	no	*not applicable*
Capital flows to GDP	high	high	yes	Colombia, Nicaragua, Paraguay, Venezuela
M2 to GDP	high	high	no	*not applicable*
Public debt to GDP	low	low	yes	Chile, Nicaragua, Uruguay, Venezuela
Trade liberalization	high	high	no	*not applicable*
Trade Openness	high	high	no	*not applicable*

Source: Authors' estimates.

1/ Exceptions reported only when differences in means during high and low growth periods were statistically significant.

Table 17. Explaining Growth by Shocks, Policies, and Institutions

Panel Data: 3 sub-periods during 1970-2004

	1	2	3	4	5	6	7	8	9
Dependent variable: Real GDP per capita growth									
Volatility of real per-capita GDP growth	-0.49 (-3.93) ***	-0.37 (-3.47) ***	-0.34 (-3.13) ***	-0.37 (-3.44) ***	-0.30 (-2.79) ***	-0.34 (-3.50) ***	-0.28 (-2.92) ***	-0.32 (-3.26) ***	-0.23 (-2.48) **
Average U.S. real interest rate		-0.58 (-4.85) ***	-0.67 (-4.54) ***	-0.58 (-4.70) ***	-0.49 (-4.07) ***	-0.49 (-4.50) ***	-0.47 (-4.61) ***	-0.47 (-4.62) ***	-0.50 (-5.11) ***
Average G-7 growth			-0.62 (-1.03)						
Average terms of trade growth				0.00 (0.02)					
Volatility of discretionary fiscal expenditure					-0.14 (-2.36) **	-0.12 (-2.30) **	-0.12 (-2.32) **	-0.10 (-1.89) *	-0.09 (-1.85) *
Institutional development (ICRG index)						0.10 (3.36) ***	0.16 (4.40) ***	0.15 (4.19) ***	0.17 (4.88) ***
Initial per capita income							0.00 (-2.60) **	0.00 (-3.04) ***	0.00 (-2.82) ***
Level of human capital development								0.25 (1.54)	
Income inequality (income received by top 20 percent)									0.08 (2.36) **
Constant	2.68 (4.95) ***	3.98 (7.63) ***	5.49 (3.53) ***	3.98 (7.42) ***	4.91 (7.73) ***	-0.91 (-0.50)	-3.93 (-1.89) *	-4.85 (-2.28) **	-6.40 (-2.86) ***
Number of observations Adjusted R-squared	51 0.22	51 0.47	51 0.47	51 0.46	51 0.51	51 0.60	51 0.65	51 0.66	51 0.68

Source: Authors.

Notes: T-statistics are in parentheses. ***, **, * denote significance at 1 percent, 5 percent, and 10 percent respectively.

Table 18. Explaining Volatility by Shocks, Policies, and Constraints

Panel Data: 3 sub-periods during 1970-2004

	1	2	3	4	5	6	7	8	9
Dependent variable: Volatility of real GDP per capita growth									
Volatility of U.S. real interest rate	0.83 (2.29) **	1.08 (2.23) **	0.83 (2.21) **	0.84 (2.33) **	1.27 (4.00) ***	1.27 (3.83) ***	1.27 (3.98) ***	1.19 (3.08) ***	1.53 (5.11) ***
Volatility of G-7 growth		-0.64 (-0.77)							
Volatility of terms of trade growth			0.00 (0.04)						
Intensity of exchange rate regime changes				0.10 (1.24)					
Intensity of structural reform reversals					0.49 (3.43) ***	0.49 (3.39) ***	0.50 (3.44) ***	0.51 (3.18) ***	0.32 (2.25) **
Capital flows/GDP						0.00 (0.09)			
Public debt/GDP							0.00 (-0.54)		
Trade liberalization dummy								-0.27 (-0.34)	
Financial liberalization dummy									2.16 (3.17) ***
Constant	2.30 (3.23) ***	2.82 (2.88) ***	2.28 (2.73) ***	1.83 (2.27) **	0.51 (0.69)	0.48 (0.60)	0.59 (0.78)	0.70 (0.75)	-0.06 (-0.09)
Number of observations Adjusted R-squared	51 0.08	51 0.07	51 0.06	51 0.09	47 0.27	47 0.25	47 0.26	47 0.25	47 0.39

Source: Authors.

Notes: T-statistics are in parentheses. ***, **, * denote significance at 1 percent, 5 percent, and 10 percent respectively.

Description of the Data

Variable	Definition	Source	Period
Macroeconomic Variables			
Real GDP per capita growth	Log difference of the real GDP per capita	WDI, WEO	WDI(1970-2003), WEO(2004)
Real GDP per capita (in dollars)	GDP per capita (constant $2000)	WDI, WEO	WDI(1970-2003), WEO(2004)
Inflation	Log difference of the consumer price index (2000 = 100)	WDI, WEO	WDI(1970-2003), WEO(2004)
Devaluation	Log difference of the nominal exchange rate (National currency per US dollar - period average).	IFS	1970-2004
Trade openness	Log of the ratio of exports and imports to GDP	Kose, Prasad and Terrones (2006)	1960-2000
Financial openness	Log of the stock of equity-based foreign liabilities to GDP	Kose, Prasad and Terrones (2006)	1960-2000
Trade liberalization dummy	Dummy variable (Open=1, Not open=0)	Kose, Prasad and Terrones (2006)	1960-2000
Financial liberalization dummy	Dummy variable (Open=1, Not open=0)	Kose, Prasad and Terrones (2006)	1960-2000
Access to capital markets	Dummy variable (Access=1, No access=0)	Gelos, Sahay, and Sandleris (2004)	1980-2000
Public debt	Debt outstanding as share of GDP	GDF	1970-2002
Fiscal balance	Central government fiscal balance as a share of GDP	WEO	1970-2004
Real GDP cyclical component	HP filtered cyclical component of real GDP	WDI	1970-2004
Real fiscal expenditure cyclical component	HP filtered cyclical component of real GDP	WEO	1970-2004
Social indicators			
Inequality index	Most recent GINI.	WDI	1992-2002
Income inequality	Ratio of top 20% to bottom 20%.	WDI	1998-2001
Human capital development	Average number of years of schooling for adult age 15 years and above	Barro and Lee (2000)	1970-2000
Policy Variables			
Fiscal expenditure	Central government public expenditure as share of GDP.	WEO	1970-2004
Fiscal expenditure	Government public expenditure as a share of GDP.	IFS	1970-2004
Fiscal policy volatility	Real fiscal expenditure	Fatas and Mihov (2003)	
M2	Money and quasi money as share of GDP.	WDI	1960-2003
Exchange regime changes	Index	Reinhart and Rogoff (2002)	1970-2001
Intensity of exchange rate regime changes	Change in actural exchange regime index	Reinhart and Rogoff (2002)	1970-2001
External shocks			
Terms of trade (TOT)	Log difference of the terms of trade	WEO	1970-2004
Capital flows	Net capital flows as share of GDP	WEO	1970-2004
ODA	ODA as share of GDP	WDI	1970-2003
Natural disaster	Ratio of number of natural disaster to total population	EM-DAT	1970-2004
G7 per capita GDP growth	Composite index	WEO	1970-2004
U.S. interest rate	10-year T-bill rate.	Datastream, CPI from IFS	1970-2004

Description of the Data (continued)

Variable	Definition	Source	Period
Extreme macroeconomic outcomes			
Exchange regime crisis (currency crisis)	Dummy variable (Crisis=1, No crisis=0)	Gupta, Mishra, and Sahay (2003)	1970-1999
Banking crisis	Dummy variable (Crisis=1, No crisis=0)	Gupta, Mishra, and Sahay (2003)	1970-1999
Sovereign debt default	Index	Chuhan and Sturzenegger (2005)	1975-1999, IMF Staff (2000-2004)
Structural reform index			
Heritage score	Overall score (0-5)	Heritage Foundation	1995-2005
Fraser index	Summary index	Fraser Institute	1970-2002
Heritage-Morley index	Composite index combining Heritage Foundation with Morley et al. index	Heritage foundation, Morley (1999)	1970-2004
Reversals	Number of reversals	Heritage foundation, Morley (1999)	1971-2004
Intensity of reversals	Change in actural Heritage-Morley index	Heritage foundation, Morley (1999)	1971-2004
Ethnic fractionalization	Index (0, 1) For details, see Alesina et al (2003).	Romain Wacziarg	
Political variables			
Polity score	Index	Polity database	1970-2003
Change of Polity index	Dummy variable (Change=1, No change=0)	Polity database	1970-2003
Intensity of change of Polity Index	Change in actural Polity score	Polity database	1970-2003

REFERENCES

Alesina, Alberto F. and Guido Tabellini (2005). "Why is Fiscal Policy Often Procyclical?" *NBER Working Paper 11600,* National Bureau of Economic Research, Cambridge, Massachusetts, September.

Barro, Robert J. and Jong-Wha Lee (2002). "IMF Programs: Who is Chosen and What are the Effects?" *NBER Working Paper 8951,* National Bureau of Economic Research, Cambridge, Massachusetts, May.

Ben-David, Dan and David H. Papell (1998). "Slowdown and Meltdowns: Postwar Growth Evidence from 74 Countries," *The Review of Economics and Statistics*, Vol. 80, No. 4 (November), pp. 561–71.

Berg, Andrew, Jonathan D. Ostry and Jeromin Zettelmeyer (2006). "What Makes Growth Sustained?" Mimeo (Washington: International Monetary Fund), February.

Bulíř, Aleš and Javier Hamann (2003). "Aid Volatility: An Empirical Assessment." *IMF Staff Papers,* Vol. 50. No.1, International Monetary Fund, Washington D.C.

Burnside, Craig and David Dollar (2000). "Aid, Policies and Growth." *American Economic Review*, Vol. 90, No. 4, September 2000, pp. 847–68.

Chang, Roberto, Linda Kaltani and Norman Loayza (2005). "Openness Can Be Good for Growth: The Role of Policy Complementaries," Preliminary World Bank Paper, forthcoming, World Bank, Washington, D.C.

Chuhan, Poonam, and Federico Sturzenegger (2005). "Default Episodes in the 1990s: What have we learned?" in Aizenman, Joshua and Brian Pinto (eds.) *Managing Economic Volatility and Crises*, Cambridge University Press, pp. 471–519.

Clemens, Michael, Steven Radelet and Rikhil Bhavnani (2004). "Counting Chickens When the Hatch: the Short-term Effect of Aid on Growth." *International Finance*, 0407010, Economics Working Paper Archive EconWPA.

Clements, Benedict J., Christopher Faircloth and Marijn Verhoeven (2006). "Public Spending in Latin America: Trends and Policy Challenges." Mimeo (Washington: International Monetary Fund), October.

Dalgaard, Carl-Johan, Henrik Hansen and Finn Tarp (2004). "On the Empirics of Foreign Aid and Growth." *Economic Journal*, 114, F191–F216, 2004.

Dollar David and Aart Kraay (2002). "Growth is Good for the Poor." *Journal of Economic Growth*. Vol. 7 (3), pp. 195–225.

Edwards, Sebastian (1986). "Are Devaluations Contradictory?" *The Review of Economics and Statistics*, Vol. 68, pp. 501–7.

Easterly, William (2003). "Can Foreign Aid Buy Growth?" *Journal of Economic Perspectives*, Vol. 17, No. 3, Summer, pp. 230–48.

Easterly, William, Ross Levine, and David Roodman (2004). "New Data, New Doubts: A Comment on Burnside and Dollar's 'Aid, Policies, and Growth'," *American Economic Review*, Vol. 94, No. 3, June.

Fatás, Antonio and Ilian Mihov (2005). "Policy Volatility, Institutions and Economic Growth," *CEPR Discussion Paper* No. 5388, December, Centre for Economic Policy Research, London, U.K.

_____ (2003). "The Case for Restricting Fiscal Policy Discretion." *Quarterly Journal of Economics,* 118, 4 (November), pp. 1419–47.

Fischer, Stanley (1993). "The Role of Macroeconomic Factors in Growth." *Journal of Monetary Economics*, 32, 3 (December 1993), pp. 485–512.

Gelos, R. Gaston, Ratna Sahay, and Guido Sandleris (2004). "Sovereign Borrowing by Developing Countries: What Determines Market Access?" *IMF Working Paper, WP/04/221*, November, International Monetary Fund, Washington D.C.

Giavazzi, Francesco and Marco Pagano (1990). "Can Several Fiscal Contractions be Expansionary? Tales of Two Small European Countries." *NBER Macro Annual*, pp. 75–110.

Ghosh, Atish R., Anne-Marie Gulde, Jonathan Ostry and Holger Wolf (1997). "Does the Nominal Exchange Rate Regime Matter?" *NBER Working Paper No. W5874,* January.

Gupta, Poonam, Deepak Mishra, and Ratna Sahay (2003). "Output Response to Currency Crises." *IMF Working Paper* WP/03/320, November, International Monetary Fund, Washington, DC.

Gupta Sanjeev, Benedict Clements, Emanuelle Baldacci, and Carlos Mulas-Granados (2004). "Front-Loaded or Back-Loaded Fiscal Adjustments: What Works in Emerging Market Economies?" in Sanjeev Gupta, Benedict Clements, and Gabriela Inchauste, eds., *Helping Countries Develop: The Role of Fiscal Policy*, International Monetary Fund, Washington, D.C.

Hansen, Henrik and Finn Tarp (2000). "Aid Effectiveness Disputed." *Journal of International Development*, Vol. 12(3), pp. 375–98.

Hausmann, Ricardo and Michael Gavin (1996). "Securing Stability and Growth in a Shock Prone Region: The Policy Challenge for Latin America." Inter-American Development Bank, *Working Paper No*. 315, January 1996. Inter-American Development Bank, Washington, D.C.

Hausmann, Ricardo, Lant Prichett and Dani Rodrik (2004). "Growth Accelerations," National Bureau of Economic Research, *Working Paper 11566* (June), Cambridge, Massachusetts.

Hnatkovska, Viktoria and Norman Loayza (2005). "Volatility and Growth," in Joshua Aizenman and Brian Pinto, eds., *Managing Economic Volatility and Crises: A Practitioner's Guide."* (Cambridge, NY, Cambridge University Press).

Jones, Benjamin F., and Benjamin A. Olken, (2005). "The Anatomy of Start-Stop Growth." National Bureau of Economic Research, *NBER Working Paper No.* 1152 (July), Cambridge, Massachusetts.

Kaminsky, Graciela L., Carmen Reinhart, and Carlos Vegh (2004). "When it Rains, it Pours: Procyclical Capital Flows and Macroeconomic Policies." National Bureau of Economic Research, *NBER Working Paper No.* 10780 (September), Cambridge, Massachusetts.

Kose, Ayhan M., Eswar S. Prasad, and Marco E. Terrones (2006). "How Do Trade and Financial Integration Affect the Relationship between Growth and Volatility?" *Journal of International Economics*, 66, 1 (June), 176–202.

Loayza, Norman, Pablo Fajnzylber, and César Calderón (2004). "Economic Growth in Latin America and the Caribbean: Stylized Facts, Explanations, and Forecasts." Central Bank of Chile, *Working Paper* No. 265, June. Central Bank of Chile, Santiago, Chile.

Lora, Eduardo (1997). "A Decade of Structural Reforms in Latin America: What Has Been Reformed and How to Measure it." *Inter-American Development Bank Working Paper* Green Series No. 348, March. Inter-American Development Bank, Washington, D.C.

Lucas, Robert (1987). "Models of Business Cycles". Oxford: Blackwell.

Mody, Ashoka and Martin Schindler (2004). "Argentina's Growth: A Puzzle?" Mimeo (Washington: International Monetary Fund).

Morley, Samuel A., Machado, Roberto and Pettinato, Stefano (1999). "Indexes of Structural Reform in Latin America." *Serie Reformas Económicas 12*. ECLAC, Economic Development Division.

Perry, Guillermo (2002). "Can Fiscal Rules Help Reduce Macroeconomic Volatility in the Latin America and the Caribbean Region?" *World Bank Policy Research Working Paper* 3080, June. World Bank, Washington, D.C.

Rajan, Raghuram and Arvind Subramanian (2005a). "What Undermines Aid's Impact on Growth?" *IMF Working Paper WP/05/126*, June. IMF, Washington, D.C.

Rajan, Raghuram and Arvind Subramanian (2005b). "Aid and Growth: What Does the Cross-Country Evidence Really Show?" *IMF Working Paper WP/05/127*, June. IMF, Washington, D.C.

Ramey, Garey and Ramey Valerie A. (1995). "Cross-Country Evidence on the Link Between Volatility and Growth." *American Economic Review,* Vol. 85, No. 5 (December), pp. 1138–51.

Reinhart, Carmen M. and Kenneth S. Rogoff (2004). "The Modern History of Exchange Rate Arrangements: A Reinterpretation." *Quarterly Journal of Economics*, MIT Press, Vol. 119, No. 1, pp. 1–48.

Rodrik, Dani, 1999, "Where Did All the Growth Go? External Shocks, Social Conflict, and Growth Collapses," *Journal of Economic Growth,* 4 (December): pp. 385–412.

Sala-i-Martin, Xavier (1997). "I Just Ran Two Million Regressions." *American Economic Review*, Vol. 87, No. 2, pp. 178–83.

Srinivasan, T.N. and Bhagwati, Jagdish (2001), "Outward Orientation and Development: Are Revisionists Right?" in Deepak Lal and Richard Shape (Eds.) *Trade, Development and Political Economy: Essays in Honor of Anne Krueger*, London, Palgrave.

Ter-Minassian, Teresa (2005). "Cyclicality of Fiscal and Cyclically Adjusted Fiscal Balances." IMF Board Paper, SM/05/05, November. International Monetary Fund, Washington, D.C.