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ECONOMIC GROWTH IN LATIN AMERICA AND THE CARIBBEAN: STYLIZED FACTS, EXPLANATIONS, AND FORECASTS

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Resumen

Los objetivos del presente informe son: primero, describir los hechos estilizados del crecimiento de los países de América Latina y el Caribe (ALC) comparado con países típicos del mundo durante el periodo 1960-2000. Segundo, se presenta un análisis del crecimiento económico de ALC basado en el enfoque de Barro y Lee (1994) y Easterly, Loayza y Montiel (1997), que vincula la tasa de crecimiento del PIB per cápita para una muestra larga de países con variables económicas, políticas y sociales. El modelo estimado se usa para evaluar el desempeño en materia de crecimiento de nuestros países. Tercero, se presentan pronósticos de crecimiento futuro para los países de ALC considerando el resultado de nuestras estimaciones y utilizando un conjunto diverso de supuestos.

Abstract

The main goals of the present report are: first, describe the main stylized facts of growth in Latin America and the Caribbean (LAC) countries compared to typical countries in the world over the 1960-2000 period. Second, we attempt to explain the economic growth performance in LAC countries using the approach in Barro and Lee (1994) and Easterly, Loayza, and Montiel (1997), which consists of linking aggregate economic, political, and social variables to growth rates in GDP per capita for a large sample of countries. We use the estimated model to project the growth rates in most LAC countries and examine whether their performance has been close to expected values. Third, we present some forecasts for the future growth performance of LAC countries considering the cross-country empirical results and using a variety of assumptions.

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Las proyecciones de crecimiento de largo plazo presentadas para todos los países (incluyendo a Chile) reflejan la metodología propia del presente trabajo, y no corresponden a las proyecciones de crecimiento del Banco Central de Chile. Agradecemos a Francisco Gallego por su excelente asistencia de investigación. Se agradecen los comentarios de Eduardo Engel, Eduardo Fernández-Arias, Ross Levine, Patricio Meller, Guillermo Perry, Klaus Schmidt-Hebbel, Luis Servén, y Raimundo Soto. También se agradece a Marco Arena, Patricia Cortés, Linda Kaltani, y Pedro Tuesta por comentarios, sugerencias y colaboración. Las opiniones y conclusiones del presente trabajo no representan aquellas del Banco Mundial o del Banco Central de Chile.

INTRODUCTION

After repeated international crises, cases of interrupted reforms, and instances of macroeconomic mismanagement, several countries in Latin America and the Caribbean are experiencing severe economic downturns at the start of the new century. Just as in the aftermath of the Tequila crisis, the success of market-oriented reforms is called into question, and people from politicians to academics propose a change of economic policy away from the "Washington Consensus." In this context, it becomes necessary to reassess the growth performance of countries in the region, explain the underlying sources of their economic growth –or lack thereof-, and design a strategy for further reform. This study intends to contribute to this effort.

We cannot overstate the importance of income growth for economic, social, and even political development. Countries that grow strongly and for sustained periods of time are able to reduce significantly their poverty levels, strengthen their democratic and political stability, improve the quality of their natural environment, and even diminish the incidence of crime and violence.¹ Economic growth is not a panacea; but even in the cases where it does not have a direct beneficial impact, it facilitates the implementation of public programs that deal with the people, places, and issues left behind.

No wonder, then, that enormous amount of talent and effort has been invested in understanding the process of economic growth. The recent surge in academic research on endogenous growth and the policy preoccupation with poverty-alleviating growth are only two of many demonstrations that economic growth is at the center of attention in research and policy circles. This study takes advantage of the received literature to analyze the growth performance in Latin America and the Caribbean, using in particular the methods and findings of macroeconomic and cross-national empirical studies.

The objectives of the study are the following. First, describe the basic characteristics (or stylized facts) of economic growth in Latin American and Caribbean countries. Second, explain the differences across countries and over time in economic growth based on regression analysis. And, third, forecast the changes in economic growth for the next decade based on both regression results and projections on the future behavior of growth determinants.

¹ See Barro (1996 and 2002), Easterly (1999), Dollar and Kraay (2002), and Fajnzylber, Loayza, and Lederman (2002).

Our goal is to contribute with insights, arguments, and evidence to answer some of the central questions surrounding economic growth in Latin America and the Caribbean, among them,

- How similar are countries in Latin America and the Caribbean with each other regarding their patterns of economic growth? Can we speak of common regional trends? What are the major exceptions? And, is Latin America and the Caribbean unique in the world, or to what extent are its growth characteristics shared by other regions?
- Is physical capital investment crucial to start up growth? And, is investment responsible for the major shifts in economic growth, or is it factor productivity?
- What lies behind the economic downturn of the "lost decade" of the 1980s? And, what explains the economic recovery of the 1990s? In particular, what is the role of structural and stabilization policy reform? To what extent can business-cycle movements and shifting external conditions explain the patterns of fall and recovery experienced in the last decades?
- What can be realistically expected for economic growth in Latin America and the Caribbean for the first decade of the new century? If Latin America and the Caribbean make significant progress in economic reforms, what is the region's growth potential? What are the areas of economic policy that are more likely to render an increase in economic growth?

As mentioned above, this study will take a cross-country perspective. That is, it will derive implications for Latin American and Caribbean countries from the international evidence on the patterns and determinants of economic growth. Thus, in its descriptive section, the study will examine the growth performance of individual countries in the context of regional and world trends; and, in its econometric section, the study will apply the estimates from cross-country regressions to analyze the economic and social factors that drive per capita GDP growth in each country in the region. This report can be seen as a complement to individual country-case studies. It can provide them with the basic international context in terms of both descriptive patterns and empirical explanations of output growth behavior.

The cross-country approach to the study of economic growth in Latin America has produced a rich literature. Table I.1 presents some of the most prominent papers in this area. They differ in the sample of countries and periods used, in their estimation techniques, and in the explanatory variables considered as growth determinants. Despite these differences, there are notable similarities in some basic results. First, there is clear evidence of conditional convergence among LAC countries, meaning that poorer countries tend to growth faster than richer ones, other things equal. Second, structural factors such as human capital (proxied by years of schooling, enrollment rates, or literacy indices), financial depth (measured as the ratio of broad money or private credit to GDP), public infrastructure (proxied by the availability of phones, roads, and electricity), and low government burden have a positive and robust relationship with growth. Third, growth is discouraged by high and volatile inflation rates as well as by real exchange rate misalignment, indicating a link between macroeconomic stability and long-run growth. And, fourth, external shocks (as captured, for instance, by terms of trade or capital flow shocks) impact significantly on economic growth.

The plan of the report is the following. Section I describes the main stylized facts of growth in Latin America and the Caribbean from four different macro perspectives. We first review the growth performance of Latin American and Caribbean countries by decades (1960s to 90s) in comparison to the typical countries in the region and in the world. Then, we decompose these countries' GDP growth into its cyclical and trend components and examine their main characteristics. Next, we conduct Solow-type growth accounting to assess the contribution of capital accumulation, expansion of the labor force, and improvement of total factor productivity. Finally, we study the dynamic relationship between saving, investment, and growth, using a VAR methodology in a cross-country panel setting.

In section II, we attempt to explain the economic growth performance in Latin American and Caribbean countries from a cross-country perspective. We follow the approach in Barro and Lee (1994) and Easterly, Loayza, and Montiel (1997), which consists of linking aggregate economic, political, and social variables to growth rates in GDP per capita for a large sample of countries. The estimated model is then used to project the growth rates in most Latin American and Caribbean countries and examine whether their performance has been close to expected values.

Section III presents some forecasts for the future growth performance of Latin American and Caribbean countries considering the cross-country empirical results and using a variety of assumptions. In this respect, we also start an evaluation of further sources for growth in these countries. Section IV concludes.

I. STYLIZED FACTS

1. Growth in Latin America and the Caribbean and the World, 1960-2000.

For the world as a whole, the rate of growth of output per capita has followed a declining path since the 1960s (see Figure I.1 and Table I.2). To some extent, this reflects the trend in industrialized countries and their influence on the developing world. There are, however, some notable differences across geographic regions. The economic growth rate in East Asia and the Pacific increased in the 1970s and 80s and declined slightly in the 90s. This region experienced the highest growth rates in the last four decades of the 20th century. Although at a lower level, the growth experience in South Asia in the last two decades has also been one of success, reaching rates of per capita output growth beyond 3% per year with remarkable stability.

Other regions, including Latin America and the Caribbean, have had rather unsatisfactory growth performances. The rates of economic growth of Eastern Europe and Central Asia exhibit the fastest decline from the 1960s onwards, arriving at negative rates in the 1990s that reveal the high costs of adjustment from planned to market economies. The regions of Latin America and the Caribbean, the Middle East and North Africa, and Sub-Saharan Africa share some interesting features –they had their best growth rates in the 1960s and 70s, suffered a large decline in the 1980s, and then recovered somewhat in the 1990s. For the first two regions, the recovery of the 1990s meant an increase in output per capita, while for Sub-Saharan Africa this only implied a deceleration of its downward spiral. The negative growth rates from which Sub-Saharan Africa suffered in the last two decades are a major concern and appear to be the result of an unfortunate combination of poor policies, social conflict, and negative external shocks.

Coming back to Latin America and the Caribbean, there are some interesting disparities as well as common features across countries in the region regarding economic growth in the last 4 decades (see Figures I.2, I.3a-f and Table I.3). Fifteen out of seventeen countries in continental Latin America experienced negative growth rates in the 1980s, a truly "lost decade." The exceptions were Chile and Colombia: during the 1980s, Chile had the merit of being an early reformer, and Colombia was the country with the best record of macroeconomic stability and external credit worthiness in the region. The 1990s was a decade of reform and recovery. Except for Ecuador, Paraguay, and, surprisingly, Colombia, all countries in continental Latin American underwent an increase in growth rates in the 1990s with respect to the previous decade. In several countries the improvement was quite notable; such is the case of Argentina, Chile, Uruguay, Bolivia, Peru, Costa Rica, El Salvador, Guatemala, Mexico, Nicaragua, and Panama. These countries have in common that they conducted strong market-oriented reforms and/or accomplished processes of economic and political stabilization. However, only in a few instances –Argentina, Chile, Costa Rica, El Salvador, and Peru--, the recovery in the 1990s resulted in economic growth rates that surpassed or at least matched those of the 1960s and 70s.

The Caribbean countries showed less uniform patterns of economic growth. The Dominican Republic, Trinidad and Tobago, Guyana, and Suriname are similar to Latin American countries in that they experienced a sharp drop in economic growth in the 1980s and a substantial recovery in the 1990s. On the other hand, The Bahamas, Barbados, Belize, and the small island countries share in common a decreasing trend in growth rates since the 1960s and 70s. Even more worrisome is the situation of Haiti and Jamaica. Marred by political instability and economic mismanagement, Haiti has suffered negative growth in three decades of the last 40 years; and Jamaica, afflicted from crime and violence and repeated banking crises, failed to sustain the increase in growth in the 1980s and came back to negative rates in the 90s.

These growth trends raise several interesting questions. One of them is whether the ups and downs in economic growth observed in countries and regions can be traced to changes in domestic economic policies or to differing external conditions. For instance, is the growth decline in Latin America and the Caribbean in the 1980s and subsequent recovery in the 1990s a product of misguided policies in the former period and economic reform in the latter? Another, possibly more difficult question is whether the apparently good growth performance in some years is fueled by unsustainable policies that eventually lead to sharp economic contractions. This could have been the case in Latin America and the Caribbean and, to a larger extent, Eastern Europe and Central Asia in the 1960s and 70s –strong growth promoted by distortionary policies that eventually resulted in the crises of the 1980s. In the second section of the report, we address directly the first question --on the sources of growth-- and indirectly the second one --on the long-run merits of various policies for economic growth.

2. Trend and Cyclical Components of GDP Growth

The present section expands the results from section I.1 by analyzing the permanent and transitory components of economic growth in Latin America and the Caribbean and other regions around the world for the period 1960-2000. We decompose the (log of) GDP per capita

into its trend and cyclical components by applying the Baxter and King (1999) band-pass filter on annual data. In order to implement this filter, we only consider countries that meet a minimum requirement on their time-series sample size, which we set at 20 consecutive annual observations. In the calculation of regional averages we use the balanced sample used in the previous section, all of whose countries meet the minimum requirement. We first examine the growth rate of trend output per capita and then analyze the volatility of the cyclical component.

Trend Growth. For all regions and most countries, the growth rate of the trend component of per capita GDP resembles the total growth rate when measured as decadal or longer period averages (compare Figures I.1 with I.4, Tables I.2 with I.4, and Table I.3 with I.5). The over-time pattern of trend growth follows the ups and downs of total growth across decades, with the difference that the changes in trend growth tend to be less pronounced. Thus, for example, the pattern of decline in the 1980s and recovery of the 1990s that characterizes total growth in Latin America, the Middle East, and Africa is also evident in the behavior of trend growth in these regions. This indicates that for these regions, the pattern of decline and recovery should be studied from the perspective of long-run growth.

As the experience in Latin America illustrates, however, trend growth changes less intensely than total growth. For example, the trend component of growth in the 1970s does not show the same degree of permanent improvement as total growth may indicate; and, by the same token, trend growth in the 1980s is not as poor as total growth implies. The methodological implication of this analysis is that working with period averages to analyze permanent growth is a good practical approximation, provided that cyclical reversion is taken into account, particularly if the periods are not very long (say, 5 or 10 years).

Cyclical Volatility. Although the focus of this report is long-run growth, considering cyclical volatility is relevant because its impact transcends the business cycle and because it informs on the quality and sustainability of growth. Overall, industrial countries are the least volatile, followed by the countries in South Asia (see Figure I.5 and Table I.6). Moreover, both show declining volatility since the 1970s, the decade of large oil shocks. A similar declining trend characterizes the Middle East and Africa, although at larger levels of volatility than industrial or South Asian countries. An interesting observation is that in developing countries in general, increases in volatility are accompanied by falls in trend growth. In Eastern Europe, the sharply declining levels of long-run growth since the 1970s go together with rapidly increasing

volatility, quite an undesirable combination. The other side of the coin is the good performance of East Asia and the Pacific, where volatility decreased as trend growth increased since the 1970s.

In Latin America and the Caribbean, changes in volatility across decades also mirror the opposite changes in trend growth; thus, volatility increased in the poor decade of the 1980s and declined in the recovery decade of the 1990s. These patterns are remarkably similar across countries in the region (see Table I.7). Most countries experienced an increase in volatility in the 1980s. Among the large countries, only Chile and Colombia saw their volatility decrease in this decade, but these are also the only countries for which trend growth rose in the 1980s. In 28 out of 32 Latin American and Caribbean countries, volatility declined in the 1990s with respect to the 1980s, and for many of them even with respect to the 1970s. The four exceptions where volatility deteriorated, most notably Colombia and Haiti, also experienced a fall in trend growth rates. In summary, the 1990s was a recovery decade for most of Latin America and the Caribbean both in terms of declining volatility and rising long-run growth.

3. Growth Accounting

As documented in the first section of this report, the growth performance of most Latin American and Caribbean countries changed radically in the course of the past four decades. During the 1980s most countries had to deal with severe recessions and experienced rates of growth well below those of the 1960s and 1970s. The 1990s, on the contrary, were years of recovery in most of the region. As shown in section I.2, although cyclical recovery plays a role, trend changes are mostly behind the growth fluctuations from decade to decade. This suggests that the structural components of growth must be considered in any attempt to explain the growth performance of the region. On this basis, this section uses growth accounting methodologies to decompose the sources of output growth into the accumulation of factors of production and the growth rate of total factor productivity.

The analysis of the sources of economic growth dates back to the late 1950s, when Jan Tinbergen, Moses Abramovitz and, most notably, Robert Solow first decomposed output growth in a weighted average of the rate of growth of labor and capital, and a residual that became known as total factor productivity growth (TFP).² Although the so-called "Solow residual" was nothing more than the unexplained part of economic growth, economists increasingly became

² See Chapter 3 of Elias (1992).

accustomed to viewing the residual as a measure of technological change. During the 1960s and 1970s new contributions by Edward Denison, Zvi Grilliches, Dale Jorgenson and John Kendrick, among others, led to the use of more general production functions and a more accurate measurement of inputs and outputs. Denison made the important contribution of taking into consideration the changes in both the quantity and quality of labor and capital inputs. In the case of labor, for instance, Denison accounted not only for changes in the size of the labor force but also for shifts related to age, gender, hours of work, and unemployment. These and other improvements in the basic growth accounting methodology led to TFP estimates for the U.S. that were much lower than Solow's.

Despite the use of these adjustments, the contribution of TFP was still found to be large: a comparative study by Christensen, Cummings and Jorgenson (1980) found that over the 1947-73 period TFP accounted for 33% of GDP growth in the United States, 42% in Japan and more than 50% in several European countries. More recently, the lower rates of GDP growth of developed countries seem to have been accompanied by lower rates of productivity growth – the so-called "productivity slowdown."

For Latin America, the most detailed study to-date of the sources of growth is Elias (1992), covering seven countries from 1940 to 1980. He found an average TFP contribution to GDP growth of 28%. There was, however, considerable variation across countries, with TFP contributions ranging from zero in Peru and 10% in Venezuela, to 37% in Mexico and 40% in Chile. Although less detailed than Elias's, the exercise performed by De Gregorio (1992) covered a larger number of Latin American countries (twelve), during the period 1950-1985. As in the case of developed countries, De Gregorio finds a positive correlation between GDP growth rates and TFP contributions to overall growth.

Additional comparisons between the sources of growth in Latin America and in other regions can be performed using the results of aggregate growth accounting exercises covering large cross-sections of countries. Collins and Bosworth (1996), for example, produce growth decompositions for 88 countries during the periods 1960-1973 and 1973-1994. In the former period, they find that TFP was responsible for 53% of the region's growth in output per worker,

compared to 42% in the United States, 46% in other industrial countries, and 31% in East Asia.³ During the same period, the TFP contribution to the growth of output per worker was 49% in the Middle-East, 16% in Africa and 6% in South Asia. After 1973, productivity growth slows down in almost all regions of the World –the only exception being South Asia where it accelerates – but the reductions are sharpest in Latin America, the Middle East and Africa, where the TFP contribution to growth becomes negative.

Taken together, these studies point to two quite relevant results. The first is that the contribution of TFP to overall growth is larger when growth itself becomes larger. The second is that whatever the contribution of TFP to the *level* of the output growth, movements in TFP explain to a large extent the *changes* that output growth experiences. The latter result is confirmed by Easterly and Levine (2001), who in addition find that the cross-country variation in GDP growth rates is mostly driven by cross-country differences in total factor productivity.

Before presenting the new detailed evidence collected in this paper for Latin America, it is worth emphasizing some of the general limitations of the growth accounting methodology. First, the TFP component of growth is by definition a residual, being calculated as the difference between output growth and a weighted average of the growth in the quantity and quality of factors of production. As such, any measurement errors present in the variables used to measure labor and capital are mechanically imputed to TFP. If, for instance, we fail to account for improvements in the quality composition of capital stocks or the labor force, we will tend to over-estimate the TFP component. Similarly, if the quantities of labor and capital that are actually used in production are considerably lower than their available stocks (or installed capacity), the resulting TFP estimates will be under-estimated.

A second limitation is associated with the fact that growth accounting is a descriptive methodology and does not provide specific insights into the factors that underlie the TFP growth component. Thus, although most economists tend to think of TFP as a measure of technological change, one could also make the case that TFP reflects the role played by economies of scale and externalities in many of the "new" growth models, or even the occurrence of changes in the sectoral composition of output.

³ Note that Collins and Bosworth (1996) report decompositions of the growth in output per worker, but do not report labor force growth rates. Thus, the TFP contributions mentioned in the text are comparable across the periods and regions covered by Collins and Bosworth, but cannot be compared to the TFP contribution to GDP growth reported in the other studies mentioned in the text.

Finally, although growth accounting exercises provide a useful first approximation to the sources of economic growth, the results depend to some extent on the assumption of independence between employment growth, capital accumulation and productivity growth. This assumption, however, can be criticized on several grounds. For instance, as argued by Klenow and Rodriguez-Clare (1997), TFP growth can help materialize previously unprofitable investment projects, so that the rate of capital accumulation would depend on productivity growth. Similarly, many technological innovations are embodied in capital goods and, thus, associated with investment, which makes TFP growth dependent on the rate and factors that determine capital accumulation, including the availability of a labor force with minimum levels of human capital.

All these limitations suggest that great caution should be used when employing growth accounting results for more than descriptive purposes. For instance, we believe that these problems are important enough to warrant skepticism regarding regressions analysis that employs the TFP residual as dependent variable. Although below we find that the TFP component of growth is largely responsible for the shifts in growth from decade to decade for most Latin American countries, we will not attempt to distinguish the determinants of capital accumulation from those of TFP growth via regression analysis. Rather, in the second part of the paper, we will focus on GDP growth as a whole as the dependent variable of interest for econometric analysis.

With these caveats in mind, we now turn to the growth accounting exercise. It covers twenty Latin American countries over the 1960-2000 period. The data sources for each country are detailed in tables A.1 through A.20 of the appendix; these include several international organizations, national agencies, as well as previous local and international studies. As many others before, we apply the standard Solow-style procedure to decompose output growth into the contributions of capital, labor, and productivity growth. We use three different approaches to derive the Solow decomposition. In all of them, the contribution of total factor productivity is obtained as a residual once the growth contributions of capital and labor have been imputed. The first method does not adjust for the "quality" of labor, as measured by the average level of educational attainment. This adjustment is made in the second and third methods. In addition, the third method introduces adjustments for the actual utilization of the stocks of labor and capital.

To describe the approach employed in each method, consider a neoclassical production function that depends on physical capital K, labor L, and the level of total factor productivity A. Assuming a Cobb-Douglas production function, we have,

 $Y = AK^{\alpha}L^{1-\alpha}$

We assume that there are no adjustment costs in capital accumulation, and that there is perfect competition in the markets for production factors, so that the latter are paid their social marginal products. Taking logs and time derivatives, leads to the standard estimate for the growth rate of productivity,

TFP Growth $1 = GdpGrowth - S_{K} * CapGrowth - (1 - S_{K}) * LaborGrowth$

where S_K is the share of capital in income. This is our first Solow decomposition, in which capital growth consists simply of investment net of depreciation and labor growth comprises only the expansion of the working-age population.⁴

In our second Solow decomposition, we adjust for changes in the quality of labor associated with increases in educational attainment. We thus consider the following humancapital-augmented variation of the previous production function,

$$Y = AK^{\alpha} (HL)^{1-\alpha}$$

where *H* is an index of the quality of the labor force, based on its educational attainment. Following Collins and Bosworth (1996) and Bernanke and Gurkaynak (2001), for each country "*i*" we construct H_i as a weighted average of the shares *Eij* of the population with educational levels "*j*",

$$H_i = \sum_j W_j E_{ij}$$

where the weights W_j are based on the social returns to schooling at each educational level. We use estimates of W_j based on Psacharopoulos (1994) for the primary, secondary and tertiary levels of education, and data on educational attainment from Barro and Lee (2000). Our second approach to the measurement of TFP growth is then calculated as,

TFP Growth $2 = GdpGrowth - S_K * CapGrowth - (1 - S_K) * (LaborGrowth + SchoolGrowth)$ where *SchoolGrowth* is the log difference of the *H* index.

⁴ The estimates of S_K vary across countries but not over time. Data are taken from different sources (see Appendix A). The median S_K is 0.35, the lower bound is 0.27 (Costa Rica), and the maximum is 0.45 (Venezuela).

Finally, our third approach adds controls for the rate of utilization or employment of capital and labor. We adjust for the degree of utilization of the capital stock by using, as a proxy, the rate of labor employment. Regarding labor, we adjust for employment by, first, deducting from the working-age population the number of inactive and unemployed people and, second, adjusting for the number of hours actually worked. Thus, our third alternative for measuring TFP growth is,

TFP Growth $3 = GdpGrowth - S_K * CapGrowthA dj - (1 - S_K)* (LaborGrowthAdj + SchoolGrow th) where CapGrowthAdj is the utilization-adjusted growth rate of capital, and LaborGrowthAdj is the employment- and hours-adjusted growth rate of labor.$

Figures I.6, I.7 and I.8 show the results of growth decompositions performed with the three alternative approaches for the median Latin American and Caribbean countries of our sample for each decade of the 1961-2000 period.⁵ Tables I.8, I.9 and I.10 present growth accounting results by decades for each of 20 countries with available data.⁶ In each case, we present the average annual GDP growth rate, followed by the components of growth due to labor, capital and TFP. The contributions of the factors of production are calculated as their rates of growth multiplied by the corresponding shares in income.⁷

As shown in Figure I.6, according to the simplest growth decomposition the median Latin American and the Caribbean country saw the TFP contribution to growth decline from the 1960s to the 1980s and experience a strong recovery during the 1990s. This median results are confirmed by individual country patterns (see Table I.8). For the simplest TFP measure, 17 out of 20 countries experienced negative TFP growth during the 1980s, a phenomena that in the 1960s and 1970s was restricted to, respectively, one and five countries and during the 1990s was again observed in only six countries. The median and individual country results show that most of the changes in GDP growth are associated to changes in TFP growth, with labor and capital stocks exhibiting much lower over-time variation.

⁵ The countries whose decompositions are depicted in the graphs are selected on the basis of the annual rate of GDP growth in each decade: with this criterion, the median countries are Peru, Honduras, Brazil and Mexico, respectively for the 1960s, 1970s, 1980s, and 1990s.

⁶ In the case of the third approach, data are not available to perform the growth decomposition during the 1960s, and in the 1970s and 1980s, data are available for only 12 and 19 countries, respectively.

⁷ See the Appendix A for details on the calculation of the growth components. Data on the growth of the stocks of labor (with and without the adjustment for education) and capital, as well as on the rates of capacity or employment utilization are provided for each country and period.

Similar trends are depicted in Figures I.7 and I.8. Since educational attainment has increased in almost every period and country, the effect of adjusting for the quality of labor is that of lowering the component of GDP growth that is attributable to the growth of TFP. As for the adjustments for factor utilization, during recessions they have the effect of reducing the measured growth provided by labor and capital, thus increasing measured TFP growth. During recoveries, those adjustments have the opposite effect, which is to reduce the estimated rate of TFP growth. Given that our units of observation consist of decade averages per country, the adjustment for cyclical factor utilization is found to be small in general, although not negligible for some countries. At the decade frequency, the adjustment for the quality of human capital turns out to produce major changes in the measurement of TFP contribution. Taken together, these adjustments render for the median country even more negative rates of TFP growth during the 1980s and smaller although still positive rates during the 1990s.

As argued by Barro (1999), the negative rates of TFP growth observed in many countries in Latin America and the Caribbean for long periods in the last 40 years are "hard to understand as technical regress in the sense of literal forgetting of technology". Rather, they could reflect a loss in efficiency of the private and public sectors due to misguided policies and weak institutions.

Comparing the 1980s with 1990s, the results obtained with the most complete method indicate an increase of about 2.1% in the rate of TFP growth of the average LAC country, which amounts to about 90% of the average increase of 2.3% in GDP growth between those two decades. The countries with the most notable performance in terms of productivity growth during the 1990s are Argentina, Bolivia, Chile, Costa Rica, and the Dominican Republic, all of which experienced TFP growth rates above 1% per year in average during this decade. For these countries, TFP growth in the 1990s was higher not only with respect to the 1980s but also the previous two decades. A second group comprises eleven countries that also experienced significant increases in their rates of TFP growth with respect to the 1980s. On average, those increases were of 2.9%, which amounts to 130% of the average increase in their rate of GDP growth. However, although in this group the 1990s were characterized by much higher TFP growth than the 1980s, average productivity growth was still close to zero during the past decade. This group includes Brazil, Colombia, Ecuador, El Salvador, Guatemala, Mexico, Nicaragua, Panama, Paraguay, Peru, and Uruguay. In a final, small group, Honduras, Jamaica,

Trinidad and Tobago, and Venezuela, the growth rate of TFP actually decreased from the 1980s to the 1990s.

All in all, the main conclusion from the growth accounting exercises is that the recovery in output growth experienced by the vast majority of the countries in the region during the 1990s was driven, in eighty percent of the cases, by large increases in their rates of TFP growth. This result is consistent with the international evidence presented in Easterly and Levine (2001) to the effect that changes in growth are mostly driven by total factor productivity and less so by factor accumulation. Moreover, the large role of TFP in the swings in the growth rate from the 1970s to the 1980s and then to the 1990s confirms what had already been suggested in the previous section: the growth drop of the 1980s and recovery of the 1990s is not the exclusive result of a cyclical turnaround; rather, the large changes in the rates of TFP growth indicate an important role of structural changes in the workings of the region's economies.

4. Growth, Investment, and Saving

Here we use dynamic reduced form models to analyze the relationship between real GDP per capita growth and the rates of domestic investment and saving. Specifically, our analysis attempts to determine whether changes in a given variable have a lasting impact on another, and whether the behavior of a variable may help predict the future path of another.

We evaluate the dynamic relationship between our variables of interest by formulating a bivariate vector autoregression (VAR) for samples of cross-country and time-series data, in the spirit of Attanasio, Picci, and Scorcu (2000). Our bivariate system has the following specification:

$$\begin{bmatrix} x_{i,t} \\ y_{i,t} \end{bmatrix} = \begin{bmatrix} A_{11}(L) & A_{12}(L) \\ A_{21}(L) & A_{22}(L) \end{bmatrix} \begin{bmatrix} x_{i,t-1} \\ y_{i,t-1} \end{bmatrix} + \begin{bmatrix} \overline{x}_i \\ \overline{y}_i \end{bmatrix} + \begin{bmatrix} \varepsilon_{i,t} \\ \varepsilon_{i,t} \\ \varepsilon_{i,t} \end{bmatrix}$$

where $y_{i,t}$ represents the growth rate of the economy for country *i* at time *t*, and $x_{i,t}$ is a forcing variable, that is, in turn, investment, national saving, or foreign saving rates. The matrix $A_{jk}(L)$

is a polynomial in the lag operator L. The terms \overline{x}_i and \overline{y}_i capture unobserved country-specific effects, and $\varepsilon_{i,t}^x$ and $\varepsilon_{i,t}^y$ represent the regression residuals.⁸

We consider three bivariate systems in our analysis, namely, Investment-Growth, National Saving-Growth, and External Saving-Growth. The panel VARs include 4 lags of each variable; further lags do not enter significantly in the regressions and are, thus, excluded in the reported estimation. Our sample consists of 136 countries, each with at least 20 consecutive annual observations for the 1960-2000 period.

In Table I.11 we present the results of the panel VAR estimation for the full sample of countries as well as for the sub-samples of industrial, developing, and Latin American countries. First, we present the effect of changes in a given variable, say x, on another, say y. The direct impact of x on y, given the past history of y, is given by the sum of the coefficients on all lagged x (which, using the properties of the lag operator, is equal to $A_{21}(1)$). In the table, we report the estimated direct impact and the p-value for the null hypothesis of no effect. We also present the p-value of the Granger causality test from x to y, where the null hypothesis is that all the coefficients of the polynomial $A_{21}(L)$ are zero and therefore information on variable x does not have predictive power over y. The two issues of interest --namely, impact and Granger-causality-- are related but not identical. There may be cases when a variable has predictive power for another, yet its impact is zero because coefficients on different lags cancel each other. However, in the relationships we consider, it is usually the case that when the direct impact is statistically zero, there is also no indication of Granger causality.

Growth and Investment

The results related to the growth-investment VAR are presented in the first two columns of Table I.11. Taking growth as the dependent variable, we find that it is not highly persistent (with an autoregression coefficient of 0.15 for the full sample of countries) and, surprisingly, negatively affected by past investment. Blomstrom et al. (1996) and Attanasio et al. (2000) also find a negative impact of lagged investment on economic growth. At first glance, this result appears to be counterintuitive; however, the literature offers some possible explanations. One is that investment is limited by saving, moving together contemporaneously; and since higher

⁸ A similar approach has been undertaken by Chong and Calderon (2000), in their analysis of the causal relationship between institutions and growth, and by Calderon, Loayza and Serven (2004), in their

saving precedes an anticipated reduction in growth, investment will be inversely correlated with future growth. Another explanation is that given that investment is less costly when growth is higher, then firms will undertake more investment in the present if they expect growth rates to decline in the future. Both explanations require forward-looking behavior and a certain degree of capital market imperfection.

Considering now investment as the dependent variable, we find that it has a high degree of inertia (0.76 for the full sample of countries) and is positively preceded by economic growth. By increasing the rates of return and inducing higher savings, growth encourages and allows for new investment. This result is consistent with the evidence from Lipsey and Kravis (1987) and Blomstrom, Lipsey and Zejan (1996), using 5-year average data, as well as Attanasio, Picci and Scorcu (2000), using annual frequency data.

Growth and National Saving

Focusing first on growth as the dependent variable, we find that in the sample of all and developing countries national saving negatively Granger-causes growth. This is in fact what many models of consumption would predict (Campbell, 1987): individuals increase their savings if they anticipate declines in future income (the "saving for a rainy day" hypothesis). In the case of industrial countries, however, we do not find a significant impact from lagged saving on growth. Our results are consistent with those reported by Carroll and Weil (1994) and Attanasio et al. (2000).

When the national saving rate is considered as the dependent variable, we first find that this rate is as persistent as the investment rate. More interestingly, we find that growth Grangercauses national saving, with stronger growth rates predicting higher saving rates. This result holds for all samples under consideration. It may be explained by the life-cycle model of consumption if growth benefits more the working-age population (who save) than the retired population (who dis-save). The model of subsistence consumption gives a different mechanism for the same result: economic growth lifts people's income beyond minimum consumption at levels that allow them to start saving. Not all models, however, predict a positive correlation between lagged growth and saving (for instance, those that feature habit formation; see Attanasio et al. 2000).

examination of the dynamic relationship between Greenfield and Mergers & Acquisitions FDI, domestic investment, and growth.

Growth and Foreign Saving

The dynamic relationship between foreign saving and growth also shows some interesting features. We first find that the foreign saving rate is only a little less persistent than the rate of national saving in all samples.

Lagged foreign saving does not have a robust relationship with growth across the subsamples of countries. For the full and developing country samples, lagged foreign saving rate has a positive but not significant relationship with growth. However, this relationship is significantly negative in the sample of industrial countries. This contradicts simple versions of the intertemporal approach to the current account (whose deficit correspond to the measure of foreign saving invested in the country) but may be consistent with capital flow models that allow an investment reaction to anticipated growth declines (see, for example, Kraay and Ventura 2000).

Focusing now on the foreign saving rate as the dependent variable, we find a positive causal relationship from growth to foreign saving that is significant for the full sample of countries as well as for the samples of industrial and developing economies. This result is consistent with portfolio diversification models where international capital inflows are driven by higher domestic returns (see Calderón, Loayza, and Servén 2003).

To summarize this section, the main conclusion from dynamic analysis at annual frequencies is that growth helps predict investment, national saving, and foreign saving, exerting a positive influence on future outcomes of these variables. Conversely, increases in growth are not led by surges in saving or investment rates.

5. Summary

After two decades of solid growth, most countries in Latin America and the Caribbean suffered a sharp drop in output per capita in the 1980s. However, the region recovered and restarted growth in the 1990s, with remarkable upturns in some countries. Although the drop of the 1980s and recovery of the 1990s had some elements of cyclical reversion, it was mostly a trend phenomenon, to be thus explained with structural factors. What is behind these trend changes? Dynamic analysis shows that changes in investment and saving do not help predict future changes in growth. In fact, it is the other way around: upsurges in growth precede a rise in investment and saving. Moreover, growth accounting reveals that it is productivity growth and not capital accumulation what lies behind the major shifts in per capita output growth in the last

decades in Latin America and the Caribbean. Therefore, in order to understand the patterns of growth in the region, we need to address the policies, institutions, and reforms that drive the economy's productivity. To this purpose, we turn next.

II. DETERMINANTS OF GROWTH

In this section, we attempt to explain the economic growth performance of individual LAC countries using regression analysis. This econometric analysis is applied to data consisting of a multi-country and multi-period sample. We follow the largest strand of the empirical endogenous-growth literature, which seeks to link a country's economic growth rate to economic, political, and social variables using a large sample of countries and time periods.⁹ The estimated model is used to project the change in growth rate for each country and then examine whether its performance has been close to expected values.

1. Setup

In the majority of growth studies, the estimated regression equation is of the following form:

 $y_{i,t} - y_{i,t-1} = \alpha y_{i,t-1} + \beta' X_{i,t} + \varepsilon_{i,t}$

where y is log of output per capita, X is a set variables postulated as growth determinants, and ε is the regression residual. The subscripts *i* and *t* refer to country and time period, respectively. For simplicity, the length of the time period is normalized to 1; then, the expression on the lefthand side of the equation is the growth rate of output per capita in a given period. On the right hand side, the regression equation includes the (log) level of output per capita at the start of the period (to account for transitional convergence) and a set of explanatory variables measured during the same period.

We estimate the following variation of the standard growth regression:

$$y_{i,t} - y_{i,t-1} = \alpha \ y_{i,t-1} + \alpha_C (y_{i,t-1} - y_{i,t-1}^T) + \beta' X_{i,t} + \mu_t + \eta_i + \varepsilon_{i,t}$$
(1)

where y^T represents the trend component of output per capita, $(y_{i,t-1} - y^T_{i,t-1})$ is the output gap at the start of the period, μ_t is a period-specific effect, and η_i represents unobserved countryspecific factors. The inclusion of the output gap as an explanatory variable allows us to control for cyclical output movements and, thus, differentiate between transitional convergence and

 $[\]frac{1}{9}$ See, for example, Barro (1991 and 1999), and King and Levine (1993).

cyclical reversion. Accounting for cyclical factors is important in our case because we work with relatively short time periods (i.e., 5-year and 10-year averages). The time-specific effect, μ_t , allows to control for international conditions that change over time and affect the growth performance of countries in the sample. The term η_i accounts for unobserved country-specific factors that both drive growth and are potentially correlated with the explanatory variables.

2. Growth Determinants

There are a large variety of economic and social variables that can be proposed as determinants of economic growth. We focus on the variables that have received most attention in the academic literature and policy circles. These variables can be divided into five groups: transitional convergence, cyclical reversion, structural policies and institutions, stabilization policies, and external conditions (see Appendix B for details on definitions and sources).

Transitional Convergence. One of the main implications of the neoclassical growth model, and indeed of all models that exhibit transitional dynamics, is that the growth rate depends on the initial position of the economy.¹⁰ The "conditional convergence" hypothesis maintains that, *ceteris paribus*, poor countries should grow faster than rich ones because of decreasing returns to accumulable factors of production. We control for the initial position of the economy by including the (log of the) **initial level of real GDP per capita** in the set of explanatory variables.

Cyclical Reversion. Although our main objective is to account for long-run trends in economic growth, in practice –both for econometric estimation and forecasts-- we work with relatively short-time periods (5- or 10-year averages). At these frequencies, cyclical effects are bound to play a role. We include some explanatory variables that are not standard in the long-run growth literature but capture important elements of the business cycle. One of them deals with cyclical reversion to the long-run trend. (Other cyclical factors are included under the category of stabilization policies, introduced below). We account for cyclical reversion by including the **output gap** at the start of the period as a growth determinant. Apart from improving the regression fit, by controlling for the initial output gap we avoid overestimating the speed of transitional convergence (which is derived from the coefficient on initial output per capita).

¹⁰ See Barro and Sala-i-Martín (1995) and Turnovsky (2000) for a review.

The output gap used in the regression is given by the difference between (the log of) potential and actual GDP per capita around the start of the period. We use the Baxter-King filter (introduced in section I) to decompose the (log) of GDP per capita and estimate annual series of potential (trend) and cyclical output for each country in the sample.

Structural Policies and Institutions. The underlying theme of all the endogenous growth literature is that the rate of economic growth can be affected by public policies and institutions. Although there may be disagreement on what policies are most conducive to growth or the sequence in which policy changes must be undertaken, there is no doubt that governments can and do influence long-run growth in their countries. While theoretical work has usually studied one or the combination of a few policies, empirical work has tended to be comprehensive in the sense of considering a wide array of policy and institutional determinants of growth.¹¹ Given our empirical objective, we also take a comprehensive approach to explaining economic growth performance. Thus, we consider explanatory variables representing all major categories of public policies. In this subsection, we focus on structural policies and institutions. In the next one, we consider stabilization policies is arbitrary. However, the division helps us examine the trends and roles of policies directed to growth in the long run from those related also to cyclical fluctuations.

The first area of structural policies is **education**, and human capital in general. One of the founding papers of the endogenous growth literature, Lucas (1988), focused on the crucial role of human capital in long-run growth. It showed how the effects of human capital could counteract the forces of diminishing returns in other accumulable factors of production –such as physical capital- to render long-run growth. Obviously it was not the first study to highlight the role of education, but it promoted a wide search for the channels through which human capital drive long-run growth.¹² Apart from the direct role of human capital as a factor of production, education and human capital can serve as a complement to other factors such as physical capital and natural resources (see De Gregorio and Bravo-Ortega, 2002), determine the rate of

¹¹ See Lucas (1988), Barro. (1991), Romer (1989), Bencivenga and Smith (1991), Easterly and Rebelo (1993), King and Levine(1993), Borensztein et al.(1995), Ben-David and Loewy (1997), Levine(1997), Eicher (1999), Turnovsky (2000), Levine, Loayza, and Beck (2000), and Dollar and Kraay (2002).

¹² See Mincer (1984), Otani and Villanueva (1990), Barro (1989), and Romer (1989).

technological innovations in countries that produce technology, and facilitate technological absorption in countries that imitate it (see Borensztein et al., 1998, and Olofsdotter, 1998).

We measure the policies directed to increase education and human capital in general with the rate of gross secondary-school enrollment.¹³ This "flow" measure captures more closely current policies on schooling and human capital investment than "stock" measures related with educational attainment of the adult population or life expectancy.

The second policy area is related to **financial depth.** Well-functioning financial systems promote long-run growth. They influence economic efficiency and economic growth through different channels. Financial markets facilitate risk diversification by trading, pooling, and hedging financial instruments. They can help identify profitable investment projects and mobilize savings to them. Moreover, financial systems can help monitor firm managers and exert corporate controls, thus reducing the principal-agent problems that lead to inefficient investment. There is ample evidence from firm-level, industry-level, and cross-country studies that financial development leads to higher growth.¹⁴

Our measure of financial depth is the ratio of private domestic credit supplied by private financial institutions to GDP. We concentrate on credit from and to the private sector because the incentives to perform efficiently are clearer and stronger for private agents. For this reason and the relatively wide availability of data for this variable, this is the preferred proxy for the size and activity of financial markets in recent empirical studies.¹⁵ It is also significantly correlated with other proxies such as M2/GDP, the traditional measure of financial depth, and indicators of other aspects of financial markets, such as the size and activity of stock markets.¹⁶

The next area of economic policy is **international trade openness.** The literature points out five channels through which trade affects economic growth.¹⁷ First, trade leads to higher specialization and, thus, gains in total factor productivity (TFP) by allowing countries to exploit their areas of comparative advantage. Second, it expands potential markets, which allows

¹³ This is the variable used as proxy for human capital in Barro (1991), Mankiw, Romer, and Weil (1992), and Easterly (2001).

¹⁴ See Levine (1997) for a review of the theoretical foundations for the role of financial development and a summary of the available macro and micro empirical evidence.

¹⁵ See Beck, Demirguc-Kunt, and Levine (2000), and Levine, Loayza, and Beck (2000).

¹⁶ The correlation between private domestic credit by the private financial sector/GDP with M2/GDP is 0.72; and its correlation with stock market capitalization/GDP and the turnover ratio is, respectively, 0.52 and 0.30.

¹⁷ See Lederman (1996).

domestic firms to take advantage of economies of scales and increase their productivity. Third, trade diffuses both technological innovations and improved managerial practices through stronger interactions with foreign firms and markets. Fourth, freer trade tends to lessen anticompetitive practices of domestic firms. Finally, trade liberalization reduces the incentives for firms to conduct rent-seeking activities that are mostly unproductive. The bulk of the empirical evidence indicates that the relationship between economic growth and international openness is indeed positive, and that it reflects a "virtuous cycle" by which higher openness leads to growth improvement and this in turn generates larger trade.

Our measure of openness is the volume of trade (real exports plus imports) over GDP, adjusted for the size (area and population) of the country, for whether it is landlocked, and for whether it is an oil exporter.¹⁸ For us, this structure-adjusted volume of trade is preferable to the common, unadjusted measure because some of our econometric estimates and projections are based on cross-country comparisons. Without the adjustment, we would be unfairly attributing to trade policy what is merely the result of structural country characteristics (for instance, small countries are more dependent on international trade than large ones; oil exporters can have quite large volumes of trade and at the same time impose high import tariffs; and landlocked countries tend to face larger transport and trading costs and, thus, trade less than other countries.)

The next area is related to the government burden, and it focuses on the drain that government may represent for private activity. Although government can play a beneficial role for the economy (as discussed below), it can be a heavy burden if it imposes high taxes, uses this revenue to maintain ineffective public programs and a bloated bureaucracy, distorts markets incentives, and interferes negatively in the economy by assuming roles most appropriate for the private sector.¹⁹

To account for the burden of government we use as proxy the ratio of government consumption to GDP. The rational for this choice is that much of current (or consumption) expenditures by government do not have a clear social return and, in fact, are mostly devoted to cover the bureaucracy's wage bill. Of course, there are exceptions and one could argue that we should subtract from government consumption, expenditures on health, education, and the police, which are not wasteful but may promote growth. However, we do not make this

¹⁸ See Pritchett (1996) for a similar adjustment.
¹⁹ See Corden (1990), Fischer (1993), and Engen and Skinner (1996).

adjustment because we lack consistent data for a large sample of countries on these expenditure categories. Moreover, some of the other explanatory variables (namely, GDP per capita and the measures of governance discussed below) can help control for the fact that not all government consumption can be regarded as an obstacle to growth.²⁰

Another important area of policy involves the availability of **public services and infrastructure**. The importance of productive public services in generating long-run growth has been highlighted in the analytical work of Barro (1990) and Barro and Sala-i-Martin (1992), among others. These have underscored the channels through which public services and infrastructure affect economic growth. Whether they are treated as classic public goods or subject to congestion, public services and infrastructure can affect growth by entering directly as inputs of the production function, by serving to improve total factor productivity, and by encouraging private investment through property rights protection. In any case, their theoretical importance has been well established, and recent empirical studies confirm this conclusion.²¹

There are a few alternative measures of public services and infrastructure. Among them, the variables with the largest cross-country and time-series coverage focus on the provision of infrastructure. Due to data considerations, we work with telecommunications capacity, measured by the number of main telephone lines per capita. There are a few alternative proxies of public infrastructure, such as energy generation capacity (e.g., megawatts of electricity produced per capita) and transport facilities (e.g., kilometers of paved roads per capita). However, these measures are highly correlated with each other, and we expect the results to be qualitatively similar for any of them.²²

The last area is related to **governance**. This large area comprises several aspects of the institutional quality of government, including the respect for civil and political rights, bureaucratic efficiency, absence of corruption, enforcement of contractual agreements, and

²⁰ This variable is used as proxy for government burden in Barro (1991), Barro and Sala-i-Martin (1995), Easterly, Loayza, and Montiel (1997), and Bekaert, Harvey and Lundblad (2001).

²¹ See Loayza (1996) and Calderón and Servén (2003, 2004).

 $^{^{22}}$ The correlation coefficient between telephone lines and electricity generated and paved roads are 0.80 and 0.72, respectively. The correlation between any of the three variables and their first principal component is at least 0.9.

prevalence of law and order. After the seminal work by Mauro (1995) and Knack and Keefer (1995), governance has received increasing attention as a determinant of economic growth.²³

The recent empirical cross-country literature has used various subjective indices to measure different aspects of governance and compare them across countries and over time. In general these indices are highly mutually correlated, which suggests that the underlying processes they measure are quite interdependent.²⁴ In our regression analysis, we use the first principal component of four indicators reported by Political Risk Services in their publication *International Country Risk Guide* (ICRG). They are the indicators on the prevalence of law and order, quality of the bureaucracy, absence of corruption, and accountability of public officials. All of them enter with almost identical weights in their first principal component.

Stabilization Policies. As argued above, the fact that we work with relatively short-time periods (5- or 10-year averages) for econometric estimation and forecasts forces us to consider policies that are normally associated with economic stabilization and crises. By controlling for them, we avoid producing biased estimates for the effects related to conditional convergence and structural policies. Also, by including stabilization policy variables, the regression fit and forecasting power increases significantly over horizons that are relevant to economic policy (again, 5 to 10 years). A possibly more important reason for including stabilization policies in a growth regression is that they not only affect cyclical fluctuations but also long-run growth. In fact an argument can be made that cyclical and trend growth are interrelated processes (see Fatás, 2000a and 2000b), which implies that macroeconomic stabilization and crisis-related variables have an impact not only over short horizons but also on the long-run performance of the economy (see Fischer, 1993).

Fiscal, monetary, and financial policies that contribute to a stable macroeconomic environment and avoid financial and balance-of-payments crises are important for long-run growth. By reducing uncertainty, they encourage firm investment, reduce societal disputes for the distribution of ex-post rents (for instance between firm owners and employees in the face of high unexpected inflation), and allow economic agents to concentrate on productive activities (rather than trying to manage high risk).

²³ See, for instance, Barro (1996), Kaufman, Kraay, and Zoido-Lobatón (1999b), and the survey in Przeworski and Limongi (1993).

²⁴ The correlation coefficients between the ICRG index (that we use) and Gastil's index of civil liberties and the Business Environment Risk Intelligence index are 0.79 and 0.85, respectively.

The first area in this category is related to macroeconomic stabilization policies. This is a vast subject, and we consider two interrelated effects of fiscal and monetary policies. The first is the **lack of price stability** and is measured by the average inflation rate for the corresponding country and time period. This is a good summary measure of the quality of fiscal and monetary policies and is positively correlated with other indicators of poor macroeconomic policies such as fiscal deficits and the black-market premium on foreign exchange.²⁵ The inflation rate is the indicator of macroeconomic stability in many cross-country growth studies, including Fischer (1993), Easterly, Loayza, and Montiel (1997), and Barro (2001b), Bekaert, Harvey, and Lundblad (2001). The second aspect is the **cyclical volatility of GDP** and reflects the lack of output stability. It is measured by the standard deviation of the output gap for the corresponding country and period.

The second area is related to **external imbalances and the risk of balance-of-payments crises** and is measured by an index of real exchange rate overvaluation. This index is constructed following the methodology in Dollar (1992) and Easterly (2001). RER overvaluation captures the impact of monetary and exchange-rate policies that distort the allocation of resources between the exporting and domestic sectors. This misallocation leads to large external imbalances, whose correction is frequently accompanied by balance-of-payments crises and followed by sharp recessions.

The third area concerns the occurrence of **systemic banking crises** and serves to account for the deleterious effect of financial turmoil on economic activity, particularly over short and medium horizons. Banking crises may be the product of an inadequate regulatory framework for financial transactions, which leads to over-lending and unsustainable consumption booms. They can also result from monetary and fiscal policies that put undue burden on creditors and financial institutions. This is the case of, for instance, monetary policies that are overly contractionary or fiscal policies that tap excessively on scarce domestic financial resources only to default on debt repayment later on. The occurrence of banking crises is measured by the fraction of years that a country undergoes a systemic banking crisis in the corresponding period, as identified in Caprio and Klingebiel (1999).

²⁵ The correlation coefficient between the inflation rate and the ratio of fiscal deficit to GDP and the black-market premium is, respectively, 0.24 and 0.26.

External Conditions. The economic activity and growth of a country is not only shaped by internal factors but also by external conditions. These have an influence on the domestic economy both in the short and long runs. There is ample evidence of transmission of cycles across countries via international trade, external financial flows, and investors' perceptions about the expected profitability of the global economy.²⁶ Moreover, changes in long-run trends can also be spread across countries. This is achieved through, for example, the demonstration effect of economic reforms and the diffusion of technological progress.²⁷

We take into account external conditions by including two additional variables in the growth regression. They are the **terms of trade shocks** affecting each country individually and a **period-specific shift** affecting all countries in the sample. Terms of trade shocks capture changes in both the international demand for a country's exports and the cost of production and consumption inputs.²⁸ The period-specific shifts (or time "dummy" variables) summarize the prevalent global conditions at a given period of time and reflect worldwide recessions and booms, changes in the allocation and cost of international capital flows, and technological innovations. Easterly (2001) finds that worldwide factors –such as the increase in international interest rates, the growth slowdown of industrial countries, the rise in the debt burden of developing economies, and the development of skill-biased technical innovations- explains the marked decrease in developing countries' growth rates in the 1980s and 90s with respect to the previous two decades.

3. Sample and Descriptive Statistics

As said above, we estimate a dynamic model of per capita GDP growth rates using (cross-country, time-series) panel data. Our sample is dictated by data availability and contains countries representing all major world regions. Most of the regression analysis is conducted using averages of 5-year periods. However, for comparison purposes and to check the robustness of the main results, we also estimate the econometric model with observations consisting of decade and full-period averages. See Appendix C for a complete list of countries in the sample.

²⁶ See Baileau (1996), Eicher (1999), Miller and Upadhyay (2000), and Alcala and Ciccone (2001).

²⁷ See Helliwell and Chung (1990), Dohse (1996), Ben-David and Loewy (1997), and Keller (2002).

²⁸ Terms of trade shocks is an important variable in several empirical studies on growth, such as Easterly et al. (1993), Fischer (1993), Barro and Sala-i-Martin (1995), and Easterly, Loayza and Montiel (1997).

The main sample contains 78 countries and, for each of them, a minimum of 3 and a maximum of 8 non-overlapping five-year observations spanning the years 1961-99 (evidently, the panel is unbalanced).²⁹ A minimum of 3 observations per country is required to run the instrumental-variable methodology outlined below. Since one observation must be reserved for instrumentation, the first period *in the regression* corresponds to the years 1966-70. The total number of observations in the 5-year sample is 350.

The sample based on 10-year averages consists of an unbalanced panel of 65 countries and 175 observations. The observations correspond to the years 1961-70, 1971-80, 1981-90, and 1991-99. Finally, the sample based on full-period averages consists of one observation for 70 countries. A country is included in the sample only if it has complete information for at least 30 years during the period 1966-99. The economic growth rate in this case is calculated as the log difference between the averages corresponding to 1996-99 and 1966-70, divided by 30.

Descriptive Statistics of Economic Growth and Its Determinants. Table II.1 presents descriptive statistics for the data in the samples of 5- and 10-year averages. The first panel shows univariate statistics, including the mean, standard deviation, minimum, and maximum of all variables. The dependent variable, the rate of growth of GDP per capita, shows considerable dispersion, with a range of almost 20 percentage points in the 5-year data. The variables that represent various aspects of economic development, such as the initial GDP per capita, show a skewed distribution with a long and thin lower tail (which reveals the presence of a few very underdeveloped countries in the sample). The inflation rate, the index of RER overvaluation, and the frequency of banking crises also present a skewed distribution, but in their case it reflects a few instances of extreme macroeconomic mismanagement and crisis. The remaining variables show a symmetric distribution, with almost no outliers. In general, the 10-year data have similar means but lower standard deviation and range than the 5-year data do.

The second panel shows correlations between pairs of variables. The correlation between the rate of economic growth and the initial level of GDP per capita is positive, a finding known as "absolute divergence"(that is, richer countries tend to grow faster than poorer ones). The correlation between economic growth and the remaining explanatory variables have the expected

²⁹ For the calculation of a period's growth rate, the base corresponds to the final year of the previous period (1960 for 1961-65, 1965 for 1966-70, etc.). The last five-year period (1996-99) contains only 4

signs: positive with indicators of economic, policy, and institutional development, and negative with measures of economic mismanagement and crisis. The only exception is the correlation with government consumption, which is nearly zero. Regarding the correlations between explanatory variables, two basic facts can be observed: First, the indicators of development (such as income per capita, secondary school enrollment, financial depth, phone lines per capita, and governance) are all highly mutually correlated. Second, variables that denote policy mismanagement and crisis (such as inflation, RER overvaluation, banking crisis, and output volatility) are positively correlated with each other and, in general, negatively correlated with the indicators of development.

4. Estimation Methodology

The proposed growth regression poses some challenges for estimation. The first is the presence of unobserved period- and country-specific effects. While the inclusion of period-specific dummy variables can account for the time effects, the common methods to deal with country-specific effects ("within" or "difference" estimators) are inappropriate given the dynamic nature of the regression. The second challenge is that most explanatory variables are likely to be jointly endogenous with economic growth, and, thus, we need to control for the biases resulting from simultaneous or reverse causation. In the following paragraphs we outline the econometric methodology we use to control for country-specific effects and joint endogeneity in a dynamic model of panel data.

We use the Generalized-Method-of-Moments (GMM) estimators developed for dynamic models of panel data that were introduced by Holtz-Eakin, Newey, and Rosen (1990), Arellano and Bond (1991), and Arellano and Bover (1995). Taking advantage of the data's panel nature, these estimators are based on, first, differencing regressions and/or instruments to control for unobserved effects, and, second, using previous observations of explanatory and lagged-dependent variables as instruments (which are called "internal" instruments).

After accounting for time-specific effects and including the output gap in the set of explanatory variables X, we can rewrite equation (1) as follows,

$$y_{i,t} = \alpha y_{i,t-1} + \beta' X_{i,t} + \eta_i + \varepsilon_{i,t}$$
⁽²⁾

In order to eliminate the country-specific effect, we take first-differences of equation (2),

years and all calculations are adjusted correspondingly.

$$y_{i,t} - y_{i,t-1} = \alpha \Big(y_{i,t-1} - y_{i,t-2} \Big) + \beta' \Big(X_{i,t} - X_{i,t-1} \Big) + \Big(\varepsilon_{i,t} - \varepsilon_{i,t-1} \Big)$$
(3)

The use of instruments is required to deal with, first, the likely endogeneity of the explanatory variables, and, second, the problem that, by construction, the new error term, $\varepsilon_{i,t} - \varepsilon_{i,t-1}$, is correlated with the lagged dependent variable, $y_{i,t-1} - y_{i,t-2}$. Taking advantage of the panel nature of the data set, the instruments consist of previous observations of the explanatory and lagged dependent variables. Given that it relies on past values as instruments, this method only allows current and future values of the explanatory variables to be affected by the error term. Therefore, while relaxing the common assumption of strict exogeneity, our instrumental-variable method does not allow the *X* variables to be fully endogenous.

Under the assumptions that (a) the error term, ε , is not serially correlated, and (b) the explanatory variables, *X*, are weakly exogenous (i.e., the explanatory variables are assumed to be uncorrelated with future realizations of the error term), the GMM dynamic panel estimator uses the following moment conditions.

$$E\left[y_{i,t-s}\cdot\left(\varepsilon_{i,t}-\varepsilon_{i,t-1}\right)\right] = 0 \quad for \ s \ge 2; t = 3, \dots, T$$

$$\tag{4}$$

$$E\left[X_{i,t-s}\cdot\left(\varepsilon_{i,t}-\varepsilon_{i,t-1}\right)\right] = 0 \quad for \ s \ge 2; t = 3, \dots, T$$
(5)

The GMM estimator based on these conditions is known as the *difference* estimator. Notwithstanding its advantages with respect to simpler panel data estimators, there are important statistical shortcomings with the difference estimator. Alonso-Borrego and Arellano (1996) and Blundell and Bond (1997) show that when the explanatory variables are persistent over time, lagged levels of these variables are weak instruments for the regression equation in differences. Instrument weakness influences the asymptotic and small-sample performance of the difference estimator. Asymptotically, the variance of the coefficients rises. In small samples, Monte Carlo experiments show that the weakness of the instruments can produce biased coefficients.³⁰

To reduce the potential biases and imprecision associated with the usual difference estimator, we use a new estimator that combines in a *system* the regression in differences with

³⁰ An additional problem with the simple *difference* estimator relates to measurement error: differencing may exacerbate the bias due to errors in variables by decreasing the signal-to-noise ratio (see Griliches and Hausman, 1986).

the regression in levels (developed in Arellano and Bover, 1995, and Blundell and Bond, 1997). The instruments for the regression in differences are the same as above. The instruments for the regression in levels are the lagged *differences* of the corresponding variables. These are appropriate instruments under the following additional assumption: although there may be correlation between the levels of the right-hand side variables and the country-specific effect in equation (2), there is no correlation between the *differences* of these variables and the country-specific effect. This assumption results from the following stationarity property,

$$E[y_{i,t+p} \cdot \eta_i] = E[y_{i,t+q} \cdot \eta_i] \quad and$$

$$E[X_{i,t+p} \cdot \eta_i] = E[X_{i,t+q} \cdot \eta_i] \quad for \ all \ p \ and \ q$$
(6)

The additional moment conditions for the second part of the system (the regression in levels) are:³¹

$$E[(y_{i,t-1} - y_{i,t-2}) \cdot (\eta_i + \varepsilon_{i,t})] = 0$$

$$\tag{7}$$

$$E[(X_{i,t-1} - X_{i,t-2}) \cdot (\eta_i + \varepsilon_{i,t})] = 0$$
(8)

Thus, we use the moment conditions presented in equations (4), (5), (7), and (8) and employ a GMM procedure to generate consistent and efficient parameter estimates.

Using the moment conditions presented in equations (4), (5), (7), and (8), we employ a Generalized Method of Moments (GMM) procedure to generate consistent estimates of the parameters of interest and their asymptotic variance-covariance (Arellano and Bond, 1991, and Arellano and Bover, 1995). These are given by the following formulas:

$$\hat{\theta} = (\overline{X}' Z \hat{\Omega}^{-1} Z' \overline{X})^{-1} \overline{X}' Z \hat{\Omega}^{-1} Z' \overline{y}$$
⁽⁹⁾

$$AVAR(\hat{\theta}) = (\overline{X}' Z \hat{\Omega}^{-1} Z' \overline{X})^{-1}$$
(10)

where θ is the vector of parameters of interest (α , β), \overline{y} is the dependent variable stacked first in differences and then in levels, \overline{X} is the explanatory-variable matrix including the lagged dependent variable (y_{t-1} , X) stacked first in differences and then in levels, Z is the matrix of

³¹ Given that lagged levels are used as instruments in the differences specification, only the most recent difference is used as instrument in the levels specification. Using other lagged differences would result in redundant moment conditions (see Arellano and Bover, 1995).

instruments derived from the moment conditions, and $\hat{\Omega}$ is a consistent estimate of the variancecovariance matrix of the moment conditions.³²

The consistency of the GMM estimators depends on whether lagged values of the explanatory variables are valid instruments in the growth regression. We address this issue by considering two specification tests suggested by Arellano and Bond (1991) and Arellano and Bover (1995). The first is a Sargan test of over-identifying restrictions, which tests the overall validity of the instruments by analyzing the sample analog of the moment conditions used in the estimation process. Failure to reject the null hypothesis gives support to the model. The second test examines the null hypothesis that the error term $\varepsilon_{i,t}$ is not serially correlated. As in the case of the Sargan test, the model specification is supported when the null hypothesis is not rejected. In the *system* specification we test whether the differenced error term (that is, the residual of the differenced error term is expected even if the original error term (in levels) is uncorrelated, unless the latter follows a random walk. Second-order serial correlation of the differenced residual indicates that the original error term is serially correlated and follows a moving average process at least of order one. This would reject the appropriateness of the proposed instruments (and would call for higher-order lags to be used as instruments).

Technical note: Endogenous and exogenous variables, and choice of instruments. We work with a rather large number of explanatory variables (13) and the cross-sectional dimension of our data set is small (78 countries) by the standards of common panel data. Therefore, in order to avoid over-fitting problems, we work with a reduced number of instrumental variables. Specifically, we have three types of variables: exogenous, endogenous with other variables' instruments, and endogenous with own instruments. The exogenous variables are the terms of trade shocks and the initial output gap (their instruments are the current regression values themselves). The endogenous variables with others' instruments are the frequency of banking crisis and the governance proxy. These are variables that either vary sporadically over time or

³² In practice, Arellano and Bond (1991) suggest the following two-step procedure to obtain consistent and efficient GMM estimates. First, assume that the residuals, $\varepsilon_{i,t}$, are independent and homoskedastic both across countries and over time. This assumption corresponds to a specific weighting matrix that is used to produce first-step coefficient estimates. Then, construct a consistent estimate of the variancecovariance matrix of the moment conditions with the residuals obtained in the first step, and use this matrix to re-estimate the parameters of interest (i.e. second-step estimates). Asymptotically, the secondstep estimates are superior to the first-step ones in so far as efficiency is concerned.

for which we do not have sufficient historical data. Therefore, their own past values are not appropriate instruments, forcing us to rely on past values of the other variables as instruments. Finally, the remaining explanatory variables are treated as endogenous variables with their own instruments. In order to further reduce the risk of over-fitting bias, we use only the first acceptable lag as instrument. That is, for the regression in differences we use only the twice-lagged level of the corresponding variable; and for the regression in levels we use the once-lagged difference of the same variable.

5. Estimation Results

Tables II.2 and II.3 present the model estimation results. In Table II.2, we report the results obtained with various estimation methods on the sample based on 5-year averages. In Table II.3, we present the results corresponding to the regressions on different horizons; that is, using the samples based on 5-year, 10-year, and 30-year averages. The last column of each table shows our main results, that is, those obtained with the GMM *system* estimator on the 5-year sample.³³ We first discuss the main results and then compare them with the rest in Tables II.2 and II.3. Before proceeding, we should remark that the employed specification tests support the GMM-*system* estimation of our model. That is, the Sargan and serial correlation tests cannot reject the null hypothesis of correct specification of the main model.

Transitional Convergence. The coefficient on the initial level of GDP per capita is negative and statistically significant. In contrast to the "absolute divergence" result observed above, the negative coefficient on initial income indicates that there is "conditional convergence"; that is, holding constant other growth determinants, poorer countries grow faster than richer ones. Given the estimated coefficient, the implied speed of convergence is 1.84% per year, with a corresponding half-life of about 38 years (this is the time it takes for half the income difference between two growing countries to disappear solely due to convergence).³⁴ It is interesting to note that this estimate for the speed of convergence is almost identical to that estimated in the early cross-country growth regressions (e.g., Barro, 1991). Previous panel regressions estimated faster speeds of convergence, claiming that this was due to their correction

 $^{^{33}}$ The last column of Tables 3 and 4 are identical. It is repeated to facilitate comparison with other results.

of the downward bias produced by unobserved country-specific effects (see Knight, Loayza, and Villanueva, 1993, and Caselli, Esquivel, and Lefort, 1996). However, by working with shorter time periods, these panel studies introduced an upward bias due to cyclical reversion to the trend; for instance, a post-recession recovery was confused with faster convergence. In this study we control for both country-specific effects and cyclical factors, and we find that their corresponding biases on the speed of convergence nearly cancel each other.

Cyclical Reversion. The estimated coefficient on the initial output gap is negative and significant. This indicates that the economies in the sample follow a trend-reverting process. That is, if an economy is undergoing a recession at the start of the period, it is expected that its growth rate be higher than otherwise in the following years so as to close the output gap. Likewise, it is expected that a cyclical boom be followed by lower growth rates. The cyclical reversion effect is sizable --according to the point estimate, if initial output is, say, 5% below potential output, the economy is expected to grow about 1.2 percentage points higher in the following years.

Structural Policies and Institutions. All variables related to structural policies present coefficients with expected signs and statistical significance. Economic growth increases with improvements in education, financial depth, trade openness, and public infrastructure. It decreases when governments apply an excessive burden on the private sector. These results are broadly supported by a vast empirical literature on endogenous growth, including Barro (1991) on the role of education, trade, and government burden, among other variables; Dollar (1992) on trade openness; Canning, Fay, and Perotti (1994) on public infrastructure; and Levine, Loayza, and Beck (2000) on financial depth. Apart from the sign and statistical significance of the coefficients, there is important information in their actual estimated size. However, we leave the analysis of the economic significance of these variables for the next section. There, we discuss the explanatory variables' role in explaining and forecasting the growth performance of Latin American and Caribbean countries.

Perhaps surprisingly, we find that governance does not have a statistically significant impact on economic growth, and the corresponding coefficient even presents a negative sign.

³⁴ Linearizing the neoclassical growth model around the steady state, the annual speed of convergence is given by the formula $(-1/T)*ln(1+T\alpha)$, where T represents the length of each time period (that is, 5 in the main sample) and α is the estimated coefficient on initial GDP per capita. The half-life in years is given by ln(2)/annual speed of convergence. See Knight, Loayza, and Villanueva (1993).
This is so despite the fact that the governance index has the second largest positive correlation with the growth rate of GDP per capita. To check the robustness of this result, we replaced the ICRG index with each of its components in turn, namely, the indicators on bureaucratic efficiency, corruption, law and order, and accountability. We also replaced it with Gastil's index on civil rights. The estimated coefficients were never statistically significant, although for some governance proxies (law and order and bureaucratic efficiency) the coefficient sign became positive. Dollar and Kraay (2003) obtain a similar result --when they control for trade openness, various measures of governance have a relatively weak effect on growth, particularly over medium-term horizons (i.e., decadal growth). We interpret these results as saying that the effect of governance on economic growth works through the actual economic policies that governments implement. In a sense our results contrast with those in Easterly and Levine (2002), who find that governance and not specific policies matter for explaining cross-country differences in *income levels*.

Stabilization Policies. For the variables in these categories, all estimated coefficients carry the expected signs and statistical significance. In general, economic growth decreases when governments do not carry out policies conducive to macroeconomic stability, including the absence of financial and external crises. Similarly to Fischer (1993), we find that an increase in the inflation rate leads to a reduction in economic growth. Likewise, the volatility of the cyclical component of GDP has a negative impact on the growth rate of GDP per capita. This reveals an important connection between business-cycle factors and economic growth, a subject seldom explored in the endogenous growth literature. Our results in this regard are consistent with the theoretical and empirical work by Fatás (2000a and 2000b) and Hnatkovska and Loayza (2004).

The overvaluation of the real exchange rate also has a negative impact on economic growth. This effect is likely to work through a combination of mechanisms. An overvalued exchange rate produces a misallocation of resources away from export-oriented sectors, not so much for commodities (which tend to be price inelastic) as for manufactured goods (which have stronger links with the overall economy). Moreover, real exchange rate overvaluation generates a strong risk of balance-of-payments crises, which if severe are followed by a sharp and lasting decline of real economic activity. Similarly, we find that the frequency of systemic banking crises has a negative and large effect on economic growth: countries that experience a continuous

banking crisis over, say, a five-year period suffer a slowdown in their annual growth rate of almost 3 percentage points.

External Conditions. Negative terms-of-trade shocks have the effect of slowing down the economy's growth rate. This result is consistent with previous studies. In one of them, Easterly, Kremer, Pritchett, and Summers (1993) find that "good luck" in the form of favorable TOT shocks are as important as "good policies" in explaining growth performance over medium-term horizons (e.g., decades).

Regarding the period shifts (or time dummies), we find that world growth conditions experienced a gradual change for the worse from the 1960s, with the biggest downward break occurring at the beginning of the 1980s. Broadly speaking, the deterioration of world growth conditions between the 1970s and 80s leads to a decrease in a country's growth rate of about 1.5 percentage points. Considering only world growth conditions, our results indicate that any country in the sample is expected to grow almost 3 percentage points more slowly in the 1990s than in the 1960s. This is a considerable effect. After noting the world growth slowdown after 1980, Easterly (2001) concludes that worldwide factors are partly responsible for the stagnation of developing countries in the last two decades in spite of policy reforms.

Comparison with Results under Other Estimation Methods and Time Horizons

Table II.2 presents the estimation results obtained with four different methods applied on the same sample and explanatory variables. The first (Col. 1) is the pooled OLS estimator, which ignores the presence of country-specific effects and treats all variables as exogenous. The second (Col. 2) is the within OLS estimator, which demeans all variables using corresponding country means prior to OLS estimation. Thus, this method eliminates country-specific effects but ignores the joint endogeneity of the explanatory variables (including the initial level of income). The third method (Col. 3) is the GMM *levels* estimator, which uses instruments to control for joint endogeneity but ignores country-specific effects. The fourth (Col. 4) is the GMM *system* estimator, which as explained above, accounts for country-specific effects and joint endogeneity.

It is interesting to note that, with the exception of governance, all explanatory variables carry coefficients of the same sign under the four estimation methods. The statistical significance and estimated size of most variables are also remarkably similar across estimation methods. The sign of the coefficient associated with governance changes from positive to negative once joint endogeneity is taken into account, but in three of the four cases this coefficient is not statistically significant.

Table II.3 shows the estimation results obtained under various time horizons. Col. 1 presents the growth regression for a single cross-section of countries, where each observation corresponds to a country average over the period from the late 1960s to the late 1990s (about 30 years). Here we include all variables in the categories of convergence factors and structural policies and institutions, and one variable in the category of stabilization policies (the inflation rate). According to the received literature, these are the most pertinent for growth over a long time span. We estimate the model with OLS, given that the cross-sectional nature of the sample does not allow the use of internal instruments or the correction for time- and country-specific effects. Our cross-sectional OLS exercise is the one that most closely resembles those in the empirical growth literature. Col. 2 presents the growth regression using observations consisting in decade averages for each country. Given the panel nature of this sample, we can use the same model specification (that is, explanatory variables and estimation method) as in our main regression (presented in Col. 3).

All variables carry coefficients of the same sign in the regressions over different time horizons (except for governance). The statistical significance and size of the estimated coefficients are similar with a few exceptions. In the case of the cross-sectional regression financial depth and trade openness are not statistically significant. In view of their significance under different estimation methods, we can conjecture that their lack of statistical significance in the cross-sectional regression is due to the omission of variables such as banking crisis and terms-of-trade shocks, which control for some negative aspects of financial depth (credit booms) and trade openness (external vulnerability). In the case of the decades regression, RER overvaluation, banking crises, and education do not appear to be statistically significant. The lack of significance of the educational variable in some specifications (within OLS, GMM *levels*, and GMM *system* on decades) should serve to alert us concerning the pitfalls of educational measures as proxies for human capital, as discussed in Pritchett (2001).

6. Growth Explanations

We now employ the estimated econometric model to explain (or project) the growth rate of individual countries for various time periods. For this, we use both the main regression estimated coefficients and the actual values of the explanatory variables for the periods under consideration. Our objectives are, first, assessing the contribution of each category of explanatory variables to a country's expected growth and, second, examining whether the country's actual performance is close to expected values. We conduct two types of comparative exercises. The first is a comparison of a country's growth rate from one period to the next. That is, we use the model to explain the *changes* over time in economic growth for a single country. As explained below, this comparative exercise does not require an estimate of unobserved country-specific effects. The second is a comparison between the growth rates of two different countries at the same period of time. This exercise does require estimating country-specific effects.

Explaining Changes in Growth Rates over Time

Derivation of Projection Formulas. Making explicit that our basic regression uses periods of 5 years, the regression equation is given by,

$$\frac{(y_{i,t} - y_{i,t-5})}{5} = \alpha y_{i,t-5} + \beta' X_{i,t} + \mu_t + \eta_i + \varepsilon_{i,t}$$
(11)

Then, the change in the growth rate between two periods for the same country is,

$$\frac{(y_{i,t} - y_{i,t-5})}{5} - \frac{(y_{i,t-s} - y_{i,t-s-5})}{5} = \alpha(y_{i,t-5} - y_{i,t-s-5}) + \beta'(X_{i,t} - X_{i,t-s}) + (\mu_t - \mu_{t-s}) + (\varepsilon_{i,t-s-5}) + \beta'(X_{i,t-s-5}) + \beta$$

where s is the distance in years between the corresponding end (or start) points of the two periods under comparison. Since we work with non-overlapping periods, s can take the values of 5, 10, 15, etc. in the 5-year comparisons. Note that the country-specific effect disappears from the expression on growth changes given that it is constant over time. The projected change in growth is obtained by taking expectations of both sides of the equation:

$$E\left[\frac{(y_{i,t}-y_{i,t-5})}{5} - \frac{(y_{i,t-s}-y_{i,t-s-5})}{5}\right] = \hat{\alpha}(y_{i,t-5}-y_{i,t-s-5}) + \hat{\beta}'(X_{i,t}-X_{i,t-s}) + (\hat{\mu}_t - \hat{\mu}_{t-s})$$
(12)

where hatted coefficients represent estimated values.

Equation (12) provides the formula to calculate the projected changes in growth rates between two 5-year periods, as well as the corresponding contribution of each explanatory variable (or groups of variables) to the projection. We are also interested in explaining the changes in growth between two 10-year periods. In order to be consistent with the 5-year comparisons, we must use the same data and estimated model (i.e., coefficients and period shifts). After a few lines of algebra, we can get from equation (12) and expression for the projected change in growth rates between two 10-year periods, based on 5-year information:

$$E\left[\frac{(y_{i,t} - y_{i,t-10})}{10} - \frac{(y_{i,t-s} - y_{i,t-s-10})}{10}\right] = \hat{\alpha}\left(\frac{(y_{i,t-5} + y_{i,t-10})}{2} - \frac{(y_{i,t-s-5} + y_{i,t-s-10})}{2}\right) + \hat{\beta}'\left(\frac{(X_{i,t} + X_{i,t-5})}{2} - \frac{(X_{i,t-s} + X_{i,t-s-5})}{2}\right) + \left(\frac{(\hat{\mu}_{t} + \hat{\mu}_{t-5})}{2} - \frac{(\hat{\mu}_{t-s} + \hat{\mu}_{t-s-5})}{2}\right)$$
(13)

Given that we work with non-overlapping periods, in the 10-year comparisons s can take the values of 10, 20, etc.

Discussion. Table II.4 presents the projections for the change in growth rates between decades for each available country in Latin America and the Caribbean (see also Figures II.1 and II.2). Table II.5 presents the projections for growth changes between consecutive 5-year periods. We also present the contribution to the projected change from our major categories of explanatory variables, namely, transitional convergence, cyclical reversion, structural policies, stabilization policies, and external conditions. Appendix D presents a table per country where the contribution of each explanatory variable is presented separately.

It is particularly interesting to study the change between the 1990s and 80s. The reason is that during the last decade, many countries in Latin America and the Caribbean --such as Argentina, Bolivia, El Salvador, and Peru-- underwent strong market-oriented reforms (see Burki and Perry, 1997, and Loayza and Palacios, 1997). These were partly motivated by the belief that the reforms would generate high economic growth. Consequently, the success of the reforms has been judged by the ensuing growth improvement in the country (see Easterly, Loayza, and Montiel, 1997). Our methodology allows us to reassess this question as it gauges what growth improvement could have been expected from policy changes and other developments from the 1980s to the 90s. We organize the discussion on the projections around the contribution of the reform process, extending the analysis not only to between the last two decades but also to developments since the 1970s.

As we can see in Table II.4, Panel A, for all 20 LAC countries under consideration the growth contribution from structural policies was positive in the 1990s with respect to the 1980s (see Figure II.3). For 15 of them, the contribution from stabilization policies was also positive.

In the case of the star reformer, Peru, the estimated growth impact of structural and stabilization reforms reached about 3.75 percentage points. For the rest, however, the gains were more modest. In fact for most reforming countries (Argentina, Bolivia, Chile, Colombia, El Salvador, Nicaragua, Panama, and Uruguay), the estimated growth contribution from improvements in structural and stabilization policies ranged between 2.5 and 3 percentage points. This gain in growth is considerable but not as large as it was initially expected. At the beginning of the 1990s, many reform advocates envisaged that the market-oriented reforms would generate growth rates in Latin America and the Caribbean comparable to those of the East Asian tigers. These expectations proved to be overly optimistic and may have laid the ground for subsequent complaints against the reforms.

Cyclical recovery is also important to explain the higher growth of the 1990s vis-a-vis the 1980s. By the end of the 1980s most countries were experiencing a deep recession, the recovery from which led them to higher growth in the 1990s. This is the case for 15 out of 20 countries in LAC. In the case of Argentina, the contribution from cyclical recovery explains more than 25% of the large increase in its growth rate in the 1990s. For Brazil, cyclical recovery was also a strong force for growth in the 1990s, explaining more than 50% of the growth acceleration. The long-run counterpart of cyclical reversion, transitional convergence, also led to higher growth in the 1990s than 80s for about half of the countries. Even when the convergence effect was negative, its size was rather small. As explained above, the usual effect of transitional convergence is to produce lower growth rates over time. The effect is opposite in many LAC countries because trend output (and not only cyclical output) fell during the 1980s. The only exception was Chile, for which the 1980s was not a "lost decade."

External conditions played against growth in the 1990s vis-a-vis the 80s for all countries in LAC, except one (the Dominican Republic, who had strong positive terms-of-trade shocks at the beginning of the 1990s). In most cases, however, the negative effect did not surpass half a percentage point of the growth rate.

Has Latin America and the Caribbean's growth performance in the aftermath of the reform process been disappointing? In general no, but there are exceptions and some worrisome trends. Sixteen out of 20 countries in LAC grew more in the 1990s than in the previous decade. In some cases the growth improvement was quite remarkable –it surpassed 4 percentage points in Argentina, El Salvador, Nicaragua, and Peru. Moreover, for 80% of the LAC countries, the

actual growth improvement between the 1980s and 90s was virtually equal or greater than the projected change in the growth rate according to the regression analysis. This leads to the conclusion that for the majority of countries in LAC, the realized growth rate in the aftermath of the market-oriented reforms has not been disappointing: Controlling for non-policy factors, countries that reformed their economies the most experienced a correspondingly larger growth improvement in the 1990s.

There are, however, some countries whose actual growth change from the 1980s to the 1990s was significantly below what could be projected. The clearest cases are Colombia and Haiti, whose actual decline in growth rates contrasted sharply with the projected improvement: for them, the difference between actual and projected rates exceeded 3 percentage points. It is doubtful, however, whether these disappointing cases can be used as evidence of policy reform failure. It is more likely that the inability to explain Colombia and Haiti's growth deterioration resides on our empirical model's failure to consider the negative effects of criminal violence and political instability. The experience of Colombia and Haiti can be regarded as the flipside of what happened in El Salvador and Nicaragua in the 1990s. These Central American countries were able to resolve the civil war and political strife that afflicted them in the 1980s and their growth improvement in the 1990s was well above what our model could project. Falling into civil war impairs a country's growth performance in ways that are not captured by standard determinants, and, conversely, recovering from civil conflict and political trouble is bound to have a beneficial impact on growth.

What was the extent of the growth decline in the "lost decade" of the 1980s and what factors may explain it? The comparison of the growth experience between the 1980s and 70s offers some interesting insights to answer this question (see Table II.4, panel B). In 18 out of 20 LAC countries the growth rate fell in the 1980s. The exceptions were Chile and Jamaica.³⁵ For the majority of countries, there was modest progress in structural policies, but this was vastly overshadowed by the worsening in stabilization policies (see Figure II.4). For about half of the countries in LAC, the combined effect of changes in structural and stabilization policies was negative, and just in 4 countries the positive growth effect went beyond 1 percentage point. The only clear case of policy improvement in the 1980s is Chile, for which the combined contribution

³⁵ See Bergeoing et al. (2002) for an interesting discussion as to how Chile managed to "find" what appeared to be a lost decade for this country as the 1980s was for the rest of Latin America.

of structural and stabilization reforms rendered about 3 percentage points of growth expansion. For the majority of countries, transitional convergence and cyclical reversion played against growth in the 1980s vis-a-vis the 70s. The cyclical-reversion effect was sizable in some countries, particularly, Argentina, Brazil, Chile, Ecuador, Haiti, and Paraguay. For these countries, the expansion of the late 1970s proved to be a transitory phenomenon. External factors also played against growth in the 1980s with respect to the 70s. As observed above, the beginning of the 1980s represented a downward break for world growth conditions, and this shows in the large and negative effect that external conditions had on growth in all LAC countries.

Can the empirical model explain the "lost decade" of the 1980s and the recovery of the 1990s? Qualitatively, the answer is yes. In all cases where the actual growth rate fell in the 1980s vis-a-vis the 1970s, the model projected a decline. Likewise, the model projected a growth increase in those countries where growth actually accelerated in the 1990s. Quantitatively, the extent of the fit between actual and projected changes varies across countries. In some countries the fit is quite acceptable for at least one of the comparisons, for example, Argentina, Bolivia, Brazil, Chile, Honduras, Jamaica, Mexico, Peru, and Uruguay. However, in general the model is unable to explain the full extent of the fall in growth rates from the 1970s to the 80s and the complete extent of the rise from the 1980s to the 90s. We can conjecture that this may be due to the following two factors, or a combination of both. The first is that for countries in LAC, the initial output gap may have a larger effect on subsequent growth than what is the case for the average country in the sample. This possibility is consistent with the relatively high volatility of cyclical output exhibited by countries in LAC (see section I.2). In fact if we double the size of the output gap coefficient -- thus doubling the size of the cyclical reversion effect-- the fit between actual and projected changes in growth rates between the 1970s, 80s, and 90s improves quite remarkably. The second possibility is that external conditions may impact on countries in LAC differently than on other countries in the world. If we consider that international conditions were less favorable for growth in LAC than in other regions during the 1980s --possibly because the debt crisis and consequent drainage of international capital flows hurt LAC disproportionately--, then the model can explain more closely the growth decline from the 1970s to the 80 and the increase from the 1980s to the 70s.

The questions on the sources of growth and the role of policy reform can also be addressed from comparisons between consecutive 5-year periods (see Table II.5). The comparison between 1991-95 and 1986-90 resembles that between the 1990s and 80s, that is, during and before the reforms. The contributions from all categories of growth determinants are qualitatively alike those in the comparison between the 1980s and 90s. Also similarly, in 80% of LAC countries, the actual change in the growth rate was greater than or within ½ percentage point from the projected change. However, in most reforming countries –most notably Argentina, Panama, and Peru-- actual improvements in growth rates between the early 1990s and late 1980s far surpassed our projections. Thus, from the perspective of the mid-1990s, the growth payoff from reform appeared to be well beyond projections. As discussed below, the growth behavior of the second-half of the 1990s showed, however, that part of the growth gains were only temporary in nature.

The comparison between the first and second halves of the 1990s show a rather worrisome trend. The growth rate declined in the latter part of the 1990s in 14 out of the 20 countries in LAC. In 11 of those, the model correctly projected a decline in growth rates. However, in almost all cases of growth slowdowns, the actual decline far exceeded the projected one. In the comparisons between 5-year periods, our model's inability to account for the *extent*, though not the direction, of changes in growth is evident, maybe more so than in the comparisons between decades. As we indicated above, this shortcoming of the model may be due to the differential response of LAC countries to cyclical effects and external conditions, vis-a-vis other countries. An optimistic implication from this possibility is that a large portion of the recent growth decline should be viewed as a business-cycle phenomenon and not as a permanent change.

Explaining Differences in Growth Rates across Countries

Derivation of Projection Formula. We focus the comparison across countries on their growth performance in the decade of the 1990s. For consistency with previous projections, we base this comparison on 5-year information (data and estimated coefficients). To facilitate the comparisons, we need to choose a single benchmark country. We select Chile, the country that grew the most in the 1990s in the Latin America and Caribbean region.

Working from equation (11), we can get the following expression for the difference in growth rates between the benchmark country j and any other country i, at the same time period,

$$E\left[\frac{\left(y_{j,t} - y_{j,t-10}\right)}{10} - \frac{\left(y_{i,t} - y_{i,t-10}\right)}{10}\right] = \hat{\alpha}\left(\frac{\left(y_{j,t-5} + y_{j,t-10}\right)}{2} - \frac{\left(y_{i,t-5} + y_{i,t-10}\right)}{2}\right) + \hat{\beta}'\left(\frac{\left(X_{j,t} + X_{j,t-5}\right)}{2} - \frac{\left(X_{i,t} + X_{i,t-5}\right)}{2}\right) + \left(\hat{\eta}_{j} - \hat{\eta}_{i}\right)$$
(14)

Note that the period shifts do not appear in the formula because the comparisons are made at the same time period. In this case, however, we need estimates for the country-specific effects. We can obtain them from the growth regression residuals of each country. Specifically, writing equation (11) in terms of the estimated coefficients and solving for the country-specific effect,

$$\hat{\eta}_{i} = \frac{(y_{i,t} - y_{i,t-5})}{5} - (\hat{\alpha}y_{i,t-5} + \hat{\beta}'X_{i,t} + \hat{\mu}_{t}) - \hat{\varepsilon}_{i,t}$$

We assume that we have enough time periods per country so that the average of $\hat{\varepsilon}$ for a given country across time periods is approximately equal to its true mean of zero. Then,

$$\hat{\eta}_i \cong \frac{\sum_{i=1}^{T_i} \frac{\left(y_{i,t} - y_{i,t-5}\right)}{5} - \left(\hat{a}y_{i,t-5} + \hat{\beta}'X_{i,t} + \hat{\mu}_t\right)}{T_i}$$

Thus, the country-specific effect is estimated as the sample average of the growth residuals per country. The assumption that the sample mean approaches the true mean of the error term is rather strong in our case (given the small number of time-series observations per country, T_i). Therefore, the comparison across countries must be taken with caution.

Discussion. Often in policy circles Chile has been cited as a successful case of policy reforms. The main evidence of Chile's success has been its high and sustained growth since the mid 1980s. From structural transformations (such as the privatization of public enterprises) to stabilization measures (such as a monetary regime based on inflation targeting), Chilean policy reform has served as a model to be imitated and, with the benefit of hindsight, improved upon for countries in the region and elsewhere. In this section, we use our estimated empirical model to attempt an explanation for the difference in growth rates during the 1990s between Chile and each other LAC country in the sample.

Chile has grown more than any other country in Latin America and the Caribbean by a margin as low as 1.3 percentage points, in the case of Argentina, and as high as 7.9, in the case

of Haiti. As Table II.6 shows, the model can explain at least 50% of the difference between the leader and the rest. In some cases –such as, Argentina, Bolivia, Costa Rica, El Salvador, Jamaica, Peru and Venezuela--, the fit between actual and projected differences with respect to Chile is quite high (within a 20% interval). In general, the largest share of the growth differential is explained by differences in structural policies, which confirms the belief that Chile's superior performance has been driven by better policies. Naturally, structural policies have a larger explanatory importance the more relatively backward the country is in this respect; hence, for instance, structural policies explain more than 3 percentage points of the growth differences in the cases of Haiti, Honduras, and Nicaragua. It is interesting that differences in structural policies retain their explanatory importance even in cases where income levels are similar to Chile's. Such is the case of Argentina, Brazil, and Venezuela, for which structural policies account for over 2 percentage points of the growth differential.

For some countries, stabilization policies also play an important role in explaining the growth difference with respect to the leader. This is the case of Argentina, Brazil, Ecuador, Jamaica, Nicaragua, Paraguay, Peru, and Venezuela, for which differences in stabilization policies account for at least 1 percentage point of the growth differential. Other countries --such as Bolivia, Colombia, and Uruguay-- have made enough progress in this respect so that the difference with respect to the leader is negligible.

Cyclical reversion and external conditions are not major forces explaining the growth differentials with respect to Chile. The only relevant exception is Argentina, for which the cyclical recovery from the recession at the end of the 1980s helped close the growth gap with Chile by about 1 percentage point. Transitional convergence, on the other hand, is an important factor behind the growth differential, but it plays in the opposite direction for the majority of countries. Put more clearly, given that Chile has one of the highest income levels in the region, the forces of transitional convergence push for the majority of countries –specifically, those poorer than Chile-- to grow faster than the leader. Thus, considering only transitional convergence, Bolivia, El Salvador, Dominican Republic, Haiti, Honduras, Nicaragua, Paraguay, and Peru should have grown by at least 1.4 percentage points more than Chile did during the 1990s.

Finally, unobserved country-specific effects can also be important to explain the growth differences with respect to Chile. There is a group of countries, many of them located in Central

America and the Caribbean, for which country-specific factors not captured by the model's explanatory variables cause them to grow over 2 percentage points less than the leader. To a lower degree, this also applies to Bolivia and Venezuela. For all these countries, there is the challenge of identifying the specific characteristics –such as natural resources, geographic location, and legal and political heritage-- that represent a continuous obstacle for economic growth over the long run. Conversely, for countries such as Argentina and Brazil, unobserved specific factors could make them grow faster than the current leader.

III. GROWTH IN THE FUTURE

What can be realistically expected for economic growth in Latin America and the Caribbean in the next decade? And, if Latin America and the Caribbean make significant progress in economic reforms, what is the region's growth potential? A proper answer to these questions calls for a comprehensive, multifaceted approach. In this section, we address the issue of LAC's future growth from the perspective of cross-national empirical results. That is, we use the estimates obtained in our cross-country, panel regressions to forecast economic growth for the majority of countries in Latin America and the Caribbean for the following decade. To do so, we work under alternative assumptions for the behavior of the variables that drive growth.

To answer the question concerning realistic growth expectations, we project growth under the assumption that the explanatory variables continue their recent past trends into the next decade. To address the issue regarding the region's growth potential under a scenario of sharp reform, we consider the possibility that the policy determinants of growth in each country move to the top 25% of the LAC region and the world.

1. Future Growth under Realistic Expectations

Forecasting any economic variable is a difficult and ungrateful task. This is particularly so in the case of economic growth because of its dependence on a host of factors difficult to control and predict. With this warning, we proceed with the forecasting exercise based on the estimated cross-country model presented in the previous section. We assume that the estimated quantitative relationship between the growth rate of GDP per capita and its proposed determinants is correct and stable across countries and over time. We then use the corresponding estimated coefficients to calculate the growth effects of future changes in the model's explanatory variables. Therefore, the quality of the forecasting exercise depends on three factors: first, the correct specification of the regression model; second, the accuracy and future stability of the estimated regression coefficients; and third, the prediction precision for all explanatory variables.

Forecasting period. The forecasting period corresponds to the first decade of the 21st century, specifically the years 2000-10. That is, the projection period starts immediately after the regression period, examined in the previous section, ends (1999). Since we complete this report at the beginning of 2004, we have the advantage of knowing the major characteristics and trends on economic growth in LAC at the beginning of the forecasting period.

Projections for growth determinants. In practical terms, we need two ingredients to generate a growth forecast. The first are the estimated regression coefficients, which we take from the previous sections. The second are projections for the future behavior of the proposed growth determinants. Given that our intention is to provide "realistic" forecasts, we use recent trends in each variable to project their behavior into the next decade. In practice this means that for the majority of variables, we use univariate regression models to formulate the predictions. In these models, the explanatory variables consist of linear, logarithmic, and/or quadratic trends, as well as autoregressive terms. Table III.1 describes the methods to generate the prediction for each explanatory variable in the growth model.

We now comment on the predictions for variables that are treated in a somewhat different way. First, to account for transitional convergence, we use the actual level of GDP per capita at the start of the period (2000) and a model-consistent forecast for GDP per capita at the middle of the period (2005). We do this for consistency with the within-sample decade projections presented in the previous section. Second, for systemic banking crises, we use a panel data model to estimate the probability of crisis based on an index of real exchange rate overvaluation and the previous occurrence of crisis. For the first years of the forecasting period (2000-2003), we update the series on systemic banking crises using the criteria in Caprio and Klingebiel (1999). In general, we estimate low probabilities of new banking crises in countries that did not have one in the 1990s or early 2000s, and for those that did we estimate a gradually decreasing probability of reoccurrence. This is consistent with the belief that Latin American and Caribbean countries can learn how to successfully minimize the risk of banking crises in the future (hopefully, this assumption does not mean a departure from the "realistic" scenario). Third, for inflation, the output gap, and cyclical volatility, we use the projections supplied by Consensus

Economics Inc. (2002) and the World Economic Outlook (2002) for the initial years of the forecasting period, along with our own projections. Finally, regarding world growth conditions that determine the period shift (or period dummy), we assume that they will remain approximately the same in the next decade as in the 1990s. This may be a controversial assumption given that world growth conditions have differed notably between decades in the past. We base this assumption on the fact that the declining trend in world growth rates observed since the beginning of the 1980s appears to be tapering off over time. Our assumption is on the conservative side, considering that the World Bank's *Global Economic Prospects* (2002) actually predict and increase in world per capita income growth from 1.2% in 1991-2000 to 1.8% in 2001-10, and in industrial countries from 1.8% to 2.2%. We should note, however, that if world growth conditions shifted in the next decade, the region's growth performance would be considerably affected.

Forecasts for the average country in Latin America and the Caribbean. The forecasting results are presented in Table III.2. The average LAC country in the sample grew by 1.44% in terms of output per capita during the 1990s. According to our projections the average increase in the period 2000-10 would be about 0.56 percentage point, rendering a projected average growth rate of about 2% for the next decade. The region's projected average is not the result of outlying observations, as evidenced by the fact that the mean and median projections are quite similar.

The projected increase in growth would occur despite the negative growth effects of transitional convergence and cyclical reversion, which jointly would produce a decrease in the growth rate of per capita GDP by about 0.4 percentage points. These negative effects are explained by the fact that for the average (and typical) country in LAC, both trend and cyclical output were higher at the end of the 1990s than at the beginning of the same decade.

Both structural and stabilization policies would play a role in supporting an increase in growth in the next ten years (see Figures III.1 and III.2). Developments in education and public infrastructure would contribute 0.21 and 0.27 percentage points, respectively, to the growth rate of per capita GDP. Increased trade openness would contribute 0.15 percentage points to the growth rate, and financial deepening about half that amount. Reflecting the trend towards larger governments in LAC, the only structural factor producing a decline in the growth rate would be

the government burden on the economy, which would account to a reduction of 0.18 percentage points.

Regarding stabilization policies, the further reduction of inflation and real exchange rate overvaluation would jointly contribute a little below 0.1 percentage points to the growth rate, while lower cyclical volatility would increase growth by 0.22 percentage points. Avoiding banking crises has a lot of potential for growth improvement, and a few countries benefit from this by resolving the banking crises experienced in the 1990s (e.g., Brazil, Jamaica, and Mexico). However, for the average country this will not have a large effect (0.1) as many countries in the region continue or even start to suffer from systemic banking crises at the beginning of the decade (e.g., Argentina, Dominican Republic, and Uruguay).

External conditions are particularly difficult to predict. Our projections take a safe route and give external conditions a minor role for growth in the next decade. The average country in the region would receive a mild growth boost from the projected favorable improvement in the terms of trade (about 0.04 percentage points). Given the assumption that world growth conditions would remain the same in the next decade as they were during the 1990s, their contribution to growth acceleration in LAC is nil.

Country forecasts. Individual country forecasts reveal some interesting features and departures from the region's average (see Figure III.3). Chile would continue to be among the region leaders although suffering a decrease of 1 percentage point with respect to the 1990s (with 4% of annual growth of GDP per capita). In Chile, further improvements in structural policies (particularly in trade and public infrastructure) are not enough to counter the negative growth impact of transitional convergence and larger macroeconomic volatility. Other regional leaders would be Costa Rica (improving slightly its 1990s performance) and Brazil (increasing its growth rate by over 2.5 percentage points). El Salvador, Mexico, and Trinidad and Tobago would also grow at over 3% during the next decade.

Among the large countries, Brazil would have the highest growth increase, due to a strong expansion in education, trade openness, and public infrastructure, as well as the solution of its inflationary process and balance of payments and banking crises. Also among the large countries, Argentina would suffer the largest drop in economic growth; the reason would be that the positive impact of improvements in education, trade openness, and public infrastructure would be far overshadowed by a combination of deterioration in stabilization policies

(particularly regarding systemic banking crisis) and the negative growth effects corresponding to transitional convergence and, especially, the adjustment from the temporary upturn of the 1990s.

According to the projections, the lowest growth rates in the region during the next decade would belong to Venezuela, Haiti, Dominican Republic, and Paraguay. For Haiti, however, the projected growth rate of -0.6% would represent a large improvement with respect to its experience in the 1990s, as educational policies and diminished cyclical volatility begin to render beneficial effects. Venezuela's stagnation would occur in spite of strong gains in education given the concurrent worsening of financial depth and cyclical volatility.

2. Future Growth under Sharp Reform

We now address the question of what the growth potential is for countries in Latin America and the Caribbean. In the previous sub-section, we adopted a "realistic" scenario. In this one, we consider the optimistic scenario of quick and sharp progress in the conditions that drive growth. In practical terms, we consider the possibility that the policy determinants of growth in each country move to the top 25% of their corresponding distribution in LAC and the world. We also assume that these improvements occur at current levels of per capita income. This is clearly an unrealistic assumption, particularly because improvements in education, financial depth, and public infrastructure normally accompany income expansion. However, we perform this exercise because it may be useful in establishing some upper bounds for what can be expected for growth in the region under a strong process of development and economic reforms.

Table III.3 presents the potential growth improvement if each policy explanatory variable jumped to the 75th percentile of its distribution in LAC. Table III.4 presents more ambitious projections, as each explanatory variable is made to jump to the 75th percentile of the corresponding world distribution. In every case, the potential growth contribution from a given variable is larger the more backward the country is with respect to the variable's region and world distribution. A country's overall potential improvement would be given by the sum of contributions from each growth determinant (see Figure III.1 and III.2). Thus, countries that have already achieved substantial progress in the policy determinants of growth –such as Chile and to a lower extent Mexico-- have less to gain from policy reform than relatively backward countries –such as Haiti and Bolivia.

For the average country in LAC, advancing its structural and stabilization policies to the top 25% of the region would represent a gain of nearly 2.5 percentage points in output growth per capita for the next decade with respect to the 1990s, even after discounting the negative impact of transitional convergence and cyclical reversion. Improvements in public infrastructure and education, as well as the avoidance of banking crises would render the largest contribution, each by around 0.5 percentage points to economic growth. Reduction in the burden of government, increased financial depth, expansion of trade openness, and reduction of cyclical volatility would each represent a growth improvement of roughly 0.25 percentage points. Lagging behind with a combined growth contribution of 0.1 percentage points are reductions in inflation and real exchange rate overvaluation.

As expected, advancing to the top 25% of the world would bring about a larger growth improvement, which for the average LAC country would amount to almost 4 percentage points (an additional gain of 1.5 p.p.). The potential growth contribution from all variables (except government burden) increases, and, more interestingly, their relative importance changes somewhat with respect to the previous exercise. Improvements in education and public infrastructure would be the most important sources of growth, providing close to 1 percentage point each. Financial deepening, larger trade openness, and absence of banking crises would provide contributions of somewhat over 0.5 percentage points. Following in the list of potential growth sources would be, in order of importance, reduction in cyclical volatility, government burden, inflation, and real exchange rate overvaluation.

It is interesting to note the contrast regarding financial depth and government burden between the two exercises. The region as a whole is relatively backward in financial depth and, thus, would gain significantly more if it were to advance according to world standards in this respect. On the other hand, the region is relatively well-advanced regarding government burden and, thus, would be better off progressing according to regional standards in this area.

Finally, we should consider a cautionary note. The above description of potential contributions from sharp reform in various areas usually places stabilization policies --such as the control of inflation, cyclical volatility, and real exchange rate overvaluation-- as lagging behind structural policies. This could create the mistaken impression that stabilization policies are not essential for economic growth. As shown in the section II, improvement in stabilization policies policies account for much of the growth expansion in the 1990s, and disregarding their

importance could bring Latin America and the Caribbean down to the disastrous performance of the 1980s.

IV. CONCLUSIONS

The major patterns of growth in the region. For Latin America and the Caribbean as a whole, the 1960s and 70s were decades of solid growth rates. This changed in the 1980s, when the growth rate of output per capita fell to negative values and its volatility increased notably. Indeed for most of Latin America, the 1980s represented a "lost decade", an unfortunate experience shared by many countries in Africa and the Middle East. However, while some of these countries, particularly in Sub-Saharan Africa, continued its downward spiral in the 1990s, Latin America's economic growth became positive again in the 1990s, with truly remarkable turnarounds in Argentina, Costa Rica, El Salvador, Nicaragua, and Peru. Chile was the regional leader in economic growth during the 1980s and remained so through the 1990s. Although during the first half of the 1980s it appeared that Chile would follow the regional downward path, the country found its way to recovery and sustained growth.

Capital accumulation or productivity growth? Contrary to conventional wisdom, in Latin America and the Caribbean --as well as in a worldwide sample of countries-- changes in investment and saving do not help predict future changes in growth. In fact, it is the other way around: dynamic analysis shows that upsurges in growth precede a rise in investment and saving (both national and foreign). Moreover, Solow-style growth-accounting exercises reveal that it is productivity growth and not capital accumulation what lies behind the major shifts in per capita output growth in the last decades in Latin America and the Caribbean. Specifically, the recovery in output growth experienced by the vast majority of countries in the region during the 1990s was driven in most cases by large increases in the growth of total factor productivity. This result suggests what regression analysis later confirms, that is, the growth recovery experienced by most countries in the region during the past decade was largely driven by structural and stabilization reforms that positively affected the economy's overall productivity.

What factors may explain the "lost decade" of the 1980s? Cross-country regression analysis can allow the identification of the individual effects of the sources of growth. We can distinguish five major categories of growth determinants: transitional convergence (due to diminishing returns), cyclical reversion (from temporary recessions or booms), structural policies (including those on education, financial depth, trade openness, government burden, and public infrastructure), stabilization policies (including policies to control inflation, cyclical volatility, real exchange rate overvaluation, and banking crises), and external conditions (that is, terms of trade shocks and prevailing growth conditions in the world). Considering these growth determinants, we can attempt to understand the reasons for the fall in growth rates in the 1980s with respect to the 70s. Generally in the region, there was modest progress in structural policies, which by itself would have encouraged growth. However, this was vastly overshadowed by the deterioration of stabilization policies. For about half of the countries in Latin America and the Caribbean, the combined growth effect of changes in structural and stabilization policies was negative, and just in 4 countries the positive effect went beyond 1 percentage-point increase in the growth rate. The only clear case of policy improvement in the 1980s is Chile, for which the combined contribution of structural and stabilization reforms rendered about 3 percentage points of growth expansion. Apart from bad policies, the drop in growth rates during the 1980s was also caused by diminishing returns and, specially, cyclical reversion. This negative effect was sizable (up to 2.5 percentage points of the growth rate) in countries such as Argentina and Brazil, where the expansion of the late 1970s proved to be a transitory phenomenon. To make matters worse, external factors played strongly against growth in the 1980s with respect to the 70s. The beginning of the 1980s represented a downward break for world growth conditions, and this shows in the large and negative effect that external factors had on growth in all LAC countries (from 1 to 2 percentage-point drop in the growth rate).

Has Latin America's growth performance in the aftermath of the reform process been disappointing? During the last decade, many countries in Latin America --such as Argentina, Bolivia, El Salvador, and Peru-- underwent strong market-oriented reforms. These were partly motivated by the belief that the reforms would generate high economic growth. Consequently, the success of the reforms has been judged by the ensuing growth improvement in reforming economies. Our methodology allows us to assess this question as it gauges what growth improvement could have been expected from policy changes and other developments from the 1980s to the 90s. For all 20 Latin American and Caribbean countries in our sample, the contribution from structural policies to growth was positive in the 1990s with respect to the 1980s. For 15 of them, the contribution from stabilization policies was also positive. For most reforming countries, the estimated growth contribution from improvements in structural and

stabilization policies ranged between 2.5 and 3 percentage points. This gain in growth is considerable but not as large as it was initially expected. At the beginning of the 1990s, many reform advocates envisaged that the market-oriented reforms would generate growth rates in Latin America comparable to those of the East Asian tigers. These expectations proved to be overly optimistic and may have laid the ground for subsequent complaints against the reforms.

Cyclical recovery is also important to explain the higher growth of the 1990s vis-a-vis the 1980s. By the end of the 1980s most countries were experiencing a deep recession, the recovery from which led them to higher growth in the 1990s. This is the case for 15 out of 20 countries in Latin America. In the cases of Argentina and Brazil, the contribution from cyclical recovery explains more than 25% and 50%, respectively, of their increase in the growth rate in the 1990s. External conditions played against growth in the 1990s vis-a-vis the 80s for almost all countries in Latin America and the Caribbean. In most cases, however, the negative effect from external conditions did not surpass half a percentage point of the growth rate.

Now we can come back to the question as to whether Latin America's post-reform growth has been disappointing. In general, the answer is no. For 80% of the countries in Latin America and the Caribbean, the actual growth improvement between the 1980s and 90s was virtually equal or greater than the projected change in the growth rate according to regression analysis. Post-reform growth has not been disappointing because, controlling for non-policy factors, countries that reformed their economies the most experienced a correspondingly larger growth improvement in the 1990s.

What can be realistically expected for growth in the future? The average country in Latin America and the Caribbean grew by close to 1.5% in terms of output per capita during the 1990s. If we assume that recent trends in the determinants of growth continue into the next decade, the average increase in the growth rate for the period 2000-10 would be about ½ of a percentage point, rendering a projected average per capita GDP growth rate of about 2% for the next decade. This small projected increase would occur despite the negative effects of transitional convergence and cyclical reversion, which jointly would decrease the growth rate by about 1/3 percentage points. The major forces supporting an increase in growth in the next ten years would be improvements in structural policies. Developments in education and public infrastructure would each contribute around ¼ percentage points to the growth rate of per capita GDP. Increased trade openness would contribute 0.15 percentage points to the growth rate, and

financial deepening about half that amount. The only structural policy that would diminish growth is a heavier burden of government consumption, with a negative effect of almost 0.2 percentage points.

For the average country in Latin America and the Caribbean, stabilization policies would also play a role in the next decade mainly through the reduction of macroeconomic volatility, which would render a little over 0.2 percentage points of higher growth. The resolution of the banking crises suffered in the 1990s had the potential of raising growth significantly in many countries in the region. However, the financial crises experienced at the start of the current decade indicate that Latin America has yet to learn the lessons on crisis avoidance. The relatively minor role of other stabilization policies for the average country, such as those on inflation and real exchange rate misalignment, does not imply that they are no longer important. Although at this time only small growth gains can be expected from *further* macro reform in these areas, there are potentially big losses if stabilization reforms are abandoned. Finally, given the difficulty in predicting external conditions, our projections take a conservative route by giving them only a small positive effect in the next decade, thus discounting the possibility of a substantial growth recovery in the world.

Blame only the guilty. Growth is a process caused by several factors. It does not only depend on structural and stabilization policies. In assessing whether a country's reforms have been beneficial to economic growth, we need to account for other determinants of growth. This will allow us to put the blame where it belongs in cases of disappointing growth and make the necessary corrections. In some cases poor growth will be due to insufficient structural reforms (e.g., low trade openness), in others to inappropriate stabilization policies (e.g., exchange rate overvaluation), and still in others to negative international conditions (e.g., growth slowdown in industrial countries). It is obvious but still correct to say that identifying the problem is the first step towards the solution.

Chile provides an interesting example of the admonition to blame only the guilty. Chile started its process of structural reforms in the mid 1970s. However, it made two crucial mistakes along the way. The first was related to stabilization policies and consisted of choosing a fixed exchange-rate regime that led to a sharp overvaluation of the peso in the early 1980s. The second one, on structural policies, was to liberalize the financial system without proper banking supervision. This combination proved to be fatal. The ensuing macro adjustment and the related

banking crisis produced a sharp fall in output in 1983-84. Fortunately, the authorities resisted the demands to revert the whole program of structural reforms, which could not be jointly blamed for the recession. Separating the good from the bad, the government proceeded to both modify the exchange-rate regime (to a managed float) and institute proper banking regulation. Since then, Chile started to grow quite strongly and became the region's leading performer in the rest of the 1980s and all through the 1990s. Around 1998, the Chilean economy suffered again a downturn (although of much smaller magnitude than in the 1980s). The authorities correctly identified external conditions and some aspects of monetary and exchange-rate policy as the main causes for the downturn. There was never talk of reverting the structural reforms. There was never serious talk of blaming the whole reform program for the recession. Instead, the discussion focused on how to deal with external shocks and how to deepen market reforms. This is why Chile continues to have the best outlook for growth in the region.

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Table I.1 Literature Review on Economic Growth in Latin America and the Caribbean

(a) Sample and Estimation Technique

Authors	Sample	Estimation Technique
De Gregorio (1992)	12 LAC Countries 1950-85 (6-year period averages)	Panel Data. Generalized Least Squares (GLS) with Random Effects.
Corbo and Rojas (1993)	20 LAC Countries 1960-88 (5 year averages)	Panel Data. Instrumental Variables (IV) with Random Effects.
Easterly, Loayza and Montiel (1997)	70 Countries (16 LAC). 1960-93 (5-year averages, except last one)	GMM-Difference Estimator (Arellano and Bond, 1991).
Campos and Nugent (1998)	19 LAC Countries. 1960-85 (10 year averages)	Panel Data. Fixed and Random Effects Estimators.
De Gregorio and Lee (1999)	81 Countries (21 LAC). 1965-95 (10 year averages)	Panel Data. Seemingly Unrelated Regressions (SUR) and 3SLS.
Fernández-Arias and Montiel (2001)	69 Countries (18 LAC). 1961-95 (5-year averages)	Panel Data. Instrumental Variables (IV) with Random Effects.
Calderón and Schmidt-Hebbel (2003)	56 Developing Countries (18 LAC). 1970-00 (5-year averages)	GMM-IV System Estimator (Arellano and Bover, 1995; Blundell and Bond, 1998).
Calderón and Servén (2003)	121 Countries (21 LAC). 1960-00 (5-year averages)	GMM-IV System Estimator (Arellano and Bover, 1995; Blundell and Bond, 1998).
De Gregorio and Lee (2003)	85 Countries (21 LAC). 1970-00 (5-year averages)	Three-Stage Least Squares (3SLS)
Blyde and Fernández-Arias (2004)	73 Countries (20 LAC). 1970-99 (5-year averages)	Panel Data. Instrumental Variables (IV) with Fixed Effects.

(b) Growth Determinants

Category	Variable	Impact
Transitional Convergence	Initial GDP	[-]: 1,3,4,5,6,7,8,9,10
Structural Policies and Institutions		
Physical Capital	Investment to GDP ratio	[+]: 1,2,3,4,9 [0]: 5
Human Capital	Schooling (years, enrollment) Literacy Fertility	[+]: 2,3,4,5,7,8,10 [0]: 1,6,9 [+]: 1,5,9 [-]: 9
Financial Development	Credit to Private Sector (% GDP) M2/GDP	[+]: 7,8,10 [+]: 3,6
Trade Openness	Exports and Imports (% GDP)	[+]: 3,5,8,9,10 [0]: 1,7
Government Burden	Government Consumption (% GDP)	[-]: 1,2,3,5,6,7,8,9
Income Inequality	Income Shares	[0]: 1
Governance	Civil Liberties, Political Rights Rule of Law	[+]: 1,4,7,8,10 [+]: 5,9
Infrastructure	Telephones per capita Energy per capita Roads per area	[+]: 8 [0/+]: 8 [+]: 8
Stabilization Policies		
Inflation	CPI Inflation Rate Inflation Volatility	[-]: 1,2,3,5,6,7,8,10 [-]: 1
Real Exchange Rate (RER) Overvaluation	Degree of RER Overvaluation Black Market Premium	[-]: 7,8,9 [-]: 3,10 [0]: 2
Balance of Payments (BoP) Crisis	Frequency of BoP Crises Episodes	[0]: 9
External Conditions		
Terms of Trade Shocks	Changes in the terms of trade index	[+]: 2,3,5,6,7,8,9 [0]: 1,10
Capital Flows	Private Capital Flows (% GDP) Foreign Direct Investment (% GDP)	[+]: 1,7 [+]: 7

Notes: [+] indicates a positive and significant relationship with economic growth, [-] indicates a negative and significant relationship with economic growth, and [0] indicates that the variable has no robust association with growth. The references to the results in the empirical growth literature are listed in chronological order: [1] De Gregorio (1992). [2] Corbo and Rojas (1993). [3] Easterly, Loayza and Montiel (1997). [4] Campos and Nugent (1998). [5] De Gregorio and Lee (1999). [6] Fernández-Arias and Montiel (2001). [7] Calderón and Schmidt-Hebbel (2003). [8] Calderón and Servén (2003). [9] De Gregorio and Lee (2003). [10] Blyde and Fernández-Arias (2004).

Table I.2Growth Rates of GDP per Capita, GDP-Weighted Average by Regions, 1961-2000

	No obs.	1961-00	1961-70	1971-80	1981-90	1991-00
Constant Sample Over Time						
All Countries	108	2.76%	4.15%	2.68%	2.29%	1.90%
Industrial Countries	21	2.68%	4.28%	2.50%	2.42%	1.68%
Developing Countries :						
East Asia	14	4.96%	3.58%	4.90%	5.88%	5.53%
Eastern Europe	4	1.78%	5.92%	3.94%	1.73%	-2.11%
Latin America and the Caribbean	25	1.78%	2.63%	3.46%	-0.82%	1.75%
Middle East	9	2.20%	4.11%	4.00%	-0.86%	0.90%
South Asia	5	2.24%	1.72%	0.64%	3.40%	3.34%
Sub-Saharan Africa	30	0.66%	2.68%	1.08%	-1.00%	-0.42%

Source: WDI, and authors' calculations.

Table I.3Growth Rates of GDP per Capita, by Country, 1961-2000

Region / Countries	1961-00	1961-70	1971-80	1981-90	1991-00
A. South Cone:	0.05%	2 210/	1 200/	2 000/	2 100/
Argentina	0.95%	2.31%	1.32%	-2.99%	3.18%
Brazil	2.45%	3.18%	5.75%	-0.42%	1.27%
Chile	2.50%	1.82%	1.22%	2.08%	4.89%
Paraguay	1.62%	1.79%	5.69%	-0.30%	-0.69%
Uruguay	1.13%	0.36%	2.60%	-0.66%	2.24%
B. Andean Community					
Bolivia	0.37%	0.35%	1.67%	-1.95%	1.40%
Colombia	1.82%	2.21%	3.05%	1.26%	0.74%
Ecuador	1.52%	1.24%	5.65%	-0.47%	-0.35%
Peru	0.61%	2.31%	0.84%	-2.99%	2.28%
Venezuela, RB	-0.30%	1.46%	-0.76%	-1.75%	-0.15%
C. Central America:					
Costa Rica	1.87%	1.93%	2.75%	-0.32%	3.13%
El Salvador	0.73%	2.15%	-0.18%	-1.47%	2.40%
Guatemala	1 29%	2.56%	2.87%	-1 62%	1 35%
Honduras	0.79%	1.52%	2.07%	-0.73%	0.31%
Mexico	2 11%	3 37%	3 58%	-0.29%	1.81%
Nicaragua	-0.77%	3 36%	-2.84%	-4.07%	0.46%
Panama	2.02%	4.70%	1.47%	-0.71%	2.62%
D. Caribbean - Continental					
Belize	2.72%	2.27%	5.07%	2.22%	1.32%
Guyana	0.59%	1.26%	0.66%	-3.90%	4.34%
Suriname	0.95%		1.81%	-1.68%	2.90%
E. Caribbean - Large Island					
Bahamas, The	1.36%	3.73%	0.70%	0.90%	0.10%
Barbados	2.55%	6.00%	2.37%	0.82%	1.03%
Dominican Republic	2.74%	2.47%	4.17%	0.31%	4.00%
Haiti	-0.99%	-1.48%	2.53%	-2.31%	-2.70%
Jamaica	0.47%	3.33%	-2.12%	1.24%	-0.56%
Trinidad and Tobago	2.52%	3.79%	5.13%	-1.20%	2.35%
F. Caribbean-Small Island*					
Antigua and Barbuda	4.09%		6.93%	5.43%	1.90%
Dominica	3 08%		0.60%	5 34%	1 56%
Grenada	3 69%		3 97%	5.00%	2 29%
St. Kitts and Nevis	5.05%		7 14%	5 56%	4 40%
St Lucia	3 20%		/.14/0	5 34%	1 24%
St. Vincent and the Grenadines	3.68%		 1 1004	1 05%	2 1 7 0/2
	3.00%		4.47%	4.93%	2.1/%

Source: WDI, and authors' calculations.

* Countries in this group and Suriname are not included in the constant sample used in Tables I.1-I.2. Each country's starting and ending year for the full sample depends on data availability.

Table I.4Growth Rates of Trend GDP per capita, Average by Regions 1961-2000

Constant Sample over Time, GDP-weighted

Regions	Countries	1961-00	1961-70	1971-80	1981-90	1991-00
All Countries	108	2.33%	3.36%	2.92%	1.58%	1.59%
Industrial Countries	21	2.71%	3.85%	2.49%	2.34%	1.80%
Developing Countries						
East Asia	14	5.19%	4.12%	5.05%	5.92%	5.44%
Eastern Europe	4	1.70%	5.47%	4.07%	1.26%	-1.74%
Latin America and the Caribbean	25	1.75%	2.38%	2.96%	-0.07%	1.54%
Middle East	9	2.14%	4.01%	3.67%	-0.52%	0.93%
South Asia	5	2.28%	1.29%	1.08%	3.06%	3.43%
Sub-Saharan Africa	30	0.58%	2.41%	1.09%	-0.95%	-0.28%

Notes: Trend GDP per capita is obtained using the Baxter and King (1999) band-pass filter.

Source: WDI and Authors' calculations
Table I.5Growth Rates of Trend GDP per capita by Country, 1961-2000

Region / Countries	1961-00	1961-70	1971-80	1981-90	1991-00
A. South Cone					
Argentina	1 04%	2.24%	0.75%	-1 37%	2 39%
Brazil	2.49%	3 33%	4 94%	0.43%	1.15%
Chile	2.53%	1 96%	0.52%	2.83%	4 76%
Paraguay	1 73%	1.90%	5.04%	0.17%	-0.45%
Uruguay	1.21%	0.14%	2.25%	0.17%	2.12%
B. Andean Community					
Bolivia	0.37%	0.71%	1.24%	-1.90%	1.44%
Colombia	1.92%	2.21%	2.86%	1.40%	0.97%
Ecuador	1.66%	1.56%	5.17%	-0.22%	-0.19%
Peru	0.61%	2.26%	0.87%	-2.36%	1.66%
Venezuela, RB	-0.24%	1.23%	-0.43%	-1.45%	-0.46%
C. Central America					
Costa Rica	1.83%	2.00%	2.31%	0.08%	3.04%
El Salvador	0.72%	2.27%	-0.26%	-1.43%	2.29%
Guatemala	1.30%	2.59%	2.52%	-1.28%	1.33%
Honduras	0.83%	1.63%	1.86%	-0.48%	0.22%
Mexico	2.06%	3.34%	3.34%	-0.07%	1.75%
Nicaragua	-0.88%	3.38%	-2.20%	-4.68%	0.20%
Panama	2.04%	4.74%	1.68%	-0.69%	2.36%
D. Caribbean - Continental					
Belize	2.73%	2.35%	4.29%	2.56%	1.68%
Guyana	0.57%	1.06%	0.57%	-3.02%	3.70%
Suriname	0.82%		2.16%	-2.12%	2.41%
E. Caribbean - Large Island					
Bahamas, The	1.31%	3.93%	-0.51%	1.72%	0.18%
Barbados	2.57%	5.64%	2.16%	1.24%	1.20%
Dominican Republic	2.63%	2.28%	4.25%	0.76%	3.44%
Haiti	-1.02%	-1.18%	1.59%	-1.82%	-2.61%
Jamaica	0.51%	3.15%	-1.55%	0.57%	-0.22%
Trinidad and Tobago	2.44%	3.77%	5.02%	-1.06%	2.18%
F. Caribbean - Small Island					
Antigua and Barbuda	4.31%		5.46%	5.67%	2.60%
Dominica	3.03%		1.81%	4.82%	1.60%
Grenada	3.69%		3.86%	4.75%	2.58%
St. Kitts and Nevis	4.91%		5.47%	6.12%	3.53%
St. Lucia	3.28%			4.89%	1.66%
St. Vincent and the Grenadines	4.49%	0.58%	11.33%	4.65%	1.39%

Table I.6Volatility of GDP per capita, Average by Regions 1961-2000

Constant Sample over Time, GDP-weighted

Regions	Countries	1961-00	1961-70	1971-80	1981-90	1991-00
All Countries	108	0.0241	0.0233	0.0248	0.0218	0.0186
Industrial Countries	21	0.0133	0.0114	0.0175	0.0126	0.0096
Developing Countries						
East Asia	14	0.0267	0.0310	0.0220	0.0216	0.0245
Eastern Europe	4	0.0244	0.0137	0.0133	0.0201	0.0340
Latin America and the Caribbean	25	0.0257	0.0210	0.0246	0.0323	0.0210
Middle East	9	0.0300	0.0350	0.0343	0.0251	0.0147
South Asia	5	0.0195	0.0241	0.0263	0.0129	0.0110
Sub-Saharan Africa	30	0.0289	0.0267	0.0355	0.0283	0.0155

Notes: Volatility of the GDP per capita is computed as the standard deviation of the cyclical component of the GDP

per capita. The cyclical component is obtained using the Baxter and King (1999) band-pass filter.

Region / Countries	1961-00	1961-70	1971-80	1981-90	1991-00
A South Cone					
Argentina	0.0366	0.0350	0.0319	0.0475	0.0306
Brazil	0.0226	0.0550	0.0244	0.0283	0.0300
Chile	0.0324	0.0161	0.0244	0.0203	0.0102
Paraguay	0.0204	0.0109	0.0215	0.0324	0.0118
Uruguay	0.0291	0.0190	0.0213	0.0465	0.0226
B. Andean Community					
Bolivia	0.0217	0.0384	0.0127	0.0147	0.0102
Colombia	0.0129	0.0076	0.0137	0.0092	0.0189
Ecuador	0.0262	0.0159	0.0366	0.0280	0.0230
Peru	0.0356	0.0151	0.0185	0.0635	0.0290
Venezuela, RB	0.0262	0.0205	0.0200	0.0344	0.0278
C. Central America					
Costa Rica	0.0205	0.0114	0.0209	0.0244	0.0209
El Salvador	0.0242	0.0127	0.0330	0.0237	0.0114
Guatemala	0.0129	0.0123	0.0159	0.0149	0.0044
Honduras	0.0200	0.0136	0.0300	0.0167	0.0187
Mexico	0.0213	0.0158	0.0174	0.0288	0.0240
Nicaragua	0.0438	0.0211	0.0828	0.0281	0.0137
Panama	0.0278	0.0084	0.0207	0.0516	0.0121
D. Caribbean - Continental					
Belize	0.0232	0.0063	0.0349	0.0288	0.0143
Guyana	0.0351	0.0454	0.0311	0.0423	0.0199
Suriname	0.0466		0.0318	0.0569	0.0547
E. Caribbean - Large Island					
Bahamas, The	0.0475	0.0272	0.0888	0.0306	0.0096
Barbados	0.0275	0.0299	0.0313	0.0304	0.0185
Dominican Republic	0.0319	0.0550	0.0131	0.0271	0.0176
Haiti	0.0262	0.0255	0.0276	0.0108	0.0372
Jamaica	0.0253	0.0200	0.0390	0.0256	0.0086
Trinidad and Tobago	0.0222	0.0170	0.0264	0.0293	0.0154
F. Caribbean - Small Island					
Antigua and Barbuda	0.0211		0.0231	0.0231	0.0204
Dominica	0.0387		0.0961	0.0200	0.0124
Grenada	0.0223		0.0174	0.0177	0.0290
St. Kitts and Nevis	0.0263		0.0282	0.0331	0.0178
St. Lucia	0.0455			0.0635	0.0150
St. Vincent and the Grenadines	0.0929	0.0384	0.1867	0.0195	0.0258

Table I.7Volatility of GDP per capita by Country, 1961-2000

Notes: See footnote in Table I.6

Table I.8Simple Growth Accounting, 1961-2000

Variable of interest: Annual GDP growth rates and contributions from production inputs and TFP

Country Grow	th Components		Period		
·	•	1961-1970	1971-1980	1981-1990	1991-2000
Argentina GDP		3.88	2.95	-1.50	4.57
Labo	r	0.91	0.80	0.89	1.08
Capi	tal	2.00	1.91	0.03	0.44
TFP1		0.96	0.24	-2.43	3.05
Bolivia GDP		2.68	4.15	0.10	3.83
Labo	r	1.57	1.61	1.59	1.72
Capi	tal	1.63	1.93	-0.26	0.46
TFP1		-0.52	0.61	-1.23	1.66
		(12)	9.46	1.55	0.71
BIAZII GDP	-	0.13	0.40	1.55	2.71
Labo	Г 1	1.98	1.98	1.0/	1.42
	tai	2.27	3.37	1.51	0.88
IFPI		1.88	5.11	-1.45	0.41
Chile GDP		4.11	2.86	3.77	6.60
Labo	r	1.30	0.97	0.96	0.90
Capit	tal	1.57	0.80	1.19	2.89
TFP1		1.24	1.09	1.62	2.81
Colombia GDP		5.26	5 51	3 38	2.68
Labo	r	2.07	2.10	1.83	1.53
Capi	tal	1.42	1.73	1.53	1.33
TFP1		1.77	1.68	0.02	-0.29
		6.05	5 - 5 4	2.41	5.05
Costa Rica GDP		6.05	5.64	2.41	5.25
Labo	r . 1	3.33	2.95	2.31	1.80
Capit	tai	1.86	2.37	1.02	1.48
TFPI		0.87	0.33	-0.92	1.98
Dominican Republic GDP		5.77	6.93	2.55	5.91
Labo	r	2.10	2.26	2.01	1.55
Capit	tal	2.00	3.83	1.95	1.45
TFP1		1.67	0.84	-1.40	2.91
Ecuador GDP		4.29	8.90	2.09	1.76
Labo	r	1.90	2.12	2.13	1.87
Capi	tal	1.69	2.57	1.07	0.75
TFP1		0.70	4.21	-1.11	-0.87
El Caluadar CDD		5.64	2.27	0.20	1.50
El Salvadol GDP		3.04	2.27	-0.39	4.50
Labo	I tol	2.02	1.40	1.15	1.04
Capit	lai	2.77	3.02	0.75	2.05
IFPI	L	0.85	-2.21	-2.24	0.88
Guatemala GDP		5.50	5.65	0.87	4.06
Labo	r	1.85	1.70	1.61	2.10
Capit	tal	1.90	2.22	0.70	1.32
TFP1		1.75	1.73	-1.43	0.64

Table I.8 (cont.)Simple Growth Accounting, 1961-2000

Variable of interest: Annual GDP growth rates and contributions from production inputs and TFP

Country	Growth Components		Period		
5	1	1961-1970	1971-1980	1981-1990	1991-2000
Honduras	GDP	4.76	5.39	2.43	3.21
	Labor	1.83	2.20	2.30	2.27
	Capital	1.95	2.16	1.10	1.83
	TFP1	0.97	1.04	-0.98	-0.89
Jamaica	GDP	4.82	-0.79	2.46	0.31
	Labor	0.20	1.31	1.30	0.97
	Capital	2.05	0.89	0.10	1.90
	TFP1	2.57	-3.00	1.06	-2.56
Mexico	GDP	6.73	6.68	1.81	3.50
	Labor	1.75	1.95	1.96	1.52
	Capital	3.32	3.48	1.69	1.57
	TFP1	1.66	1.25	-1.84	0.42
Nicaragua	GDP	6.77	0.35	-1.36	3.28
-	Labor	2.16	2.16	2.00	2.24
	Capital	2.85	1.77	0.84	0.69
	TFP1	1.76	-3.59	-4.20	0.35
Panama	GDP	7.90	4.13	1.37	4.46
	Labor	2.00	2.37	2.13	1.68
	Capital	2.68	2.25	0.67	1.67
	TFP1	3.22	-0.48	-1.43	1.12
Paraguay	GDP	4.31	8.87	2.77	1.97
	Labor	1.42	2.12	1.94	1.82
	Capital	2.06	4.65	2.94	1.67
	TFP1	1.90	5.27	-0.50	-1.12
Peru	GDP	5.28	3.63	-0.80	4.10
	Labor	1.62	1.85	1.66	1.45
	Capital	1.95	1.74	0.96	1.09
	TFP1	1.72	0.04	-3.42	1.55
Trinidad and Tobago	GDP	5.34	6.41	-0.04	3.08
	Labor	1.13	1.50	1.00	1.34
	Capital	1.40	2.60	1.13	1.51
	TFP1	2.81	2.31	-2.16	0.24
Uruguay	GDP	1.38	3.01	-0.03	3.01
	Labor	0.44	0.21	0.37	0.43
	Capital	0.15	1.06	0.14	0.72
	TFP1	0.79	1.75	-0.54	1.85
Venezuela	GDP	5.05	2.70	0.82	2.02
	Labor	1.91	2.41	1.63	1.51
	Capital	1.18	2.93	0.76	0.69
	TFP1	1.97	-2.64	-1.58	-0.18

Notes: See Appendix A for sources and details of calculations.

Table I.9

Growth Accounting Adjusting for Human Capital, 1961-2000 Variable of interest: Annual GDP growth rates and contributions from production inputs and TFP

Country	Growth Components		Period		
···· 2	- · · · · · · · · · · · · · · · · · · ·	1961-1970	1971-1980	1981-1990	1991-2000
Argentina	GDP	3.88	2.95	-1.50	4.57
	Labor	1.66	1.51	1.78	1.64
	Capital	2.00	1.91	0.03	0.44
	TFP2	0.21	-0.46	-3.31	2.49
Bolivia	GDP	2.68	4.15	0.10	3.83
	Labor	1.03	1.53	1.81	2.14
	Capital	1.63	1.93	-0.26	0.46
	TFP2	0.02	0.69	-1.45	1.23
Brazil	GDP	6.13	8.46	1.55	2.71
	Labor	2.46	1.77	2.39	2.08
	Capital	2.27	3.37	1.31	0.88
	TFP2	1.40	3.31	-2.15	-0.25
Chile	GDP	4.11	2.86	3.77	6.60
	Labor	1.65	1.58	1.26	1.32
	Capital	1.57	0.80	1.19	2.89
	TFP2	0.90	0.48	1.32	2.39
Colombia	CDR	5.26	5 5 1	2.20	2.69
Cololibla	GDP Labor	5.20 1.94	3.31	5.50 2.21	2.08
	Capital	1.04	1.72	2.21	2.12
	TFP2	2.00	0.14	-0.36	-0.87
		< 0 5		2.41	5.05
Costa Rica	GDP	6.05	5.64	2.41	5.25
	Labor	3.25	4.53	2.91	2.41
	Capital	1.86	2.37	1.02	1.48
	TFP2	0.95	-1.26	-1.52	1.37
Dominican Republic	GDP	5.77	6.93	2.55	5.91
	Labor	3.23	2.82	2.86	2.02
	Capital	2.00	3.83	1.95	1.45
	TFP2	0.54	0.28	-2.26	2.44
Ecuador	GDP	4.29	8.90	2.09	1.76
	Labor	2.24	4.64	2.22	2.31
	Capital	1.69	2.57	1.07	0.75
	TFP2	0.36	1.69	-1.20	-1.31
El Salvador	GDP	5.64	2.27	-0.39	4.56
	Labor	2.88	1.82	1.90	2.27
	Capital	2.77	3.02	0.73	2.03
	TFP2	-0.01	-2.57	-3.01	0.25
Guatemala	GDP	5 50	5 65	0.87	4.06
Guatomaia	Labor	2.13	3.05	2.08	2.63
	Capital	1 90	2.05	0.70	1 32
	TFP2	1.90	0.39	-1.90	0.11

Table I.9 (cont.)

Growth Accounting Adjusting for Human Capital, 1961-2000

Variable of interest: Annual GDP growth rates and contributions from production inputs and TFP

Country	Growth Components		Period		
		1961-1970	1971-1980	1981-1990	1991-2000
Honduras	GDP	4.76	5.39	2.43	3.21
	Labor	2.29	2.93	3.91	2.86
	Capital	1.95	2.16	1.10	1.83
	TFP2	0.52	0.30	-2.59	-1.49
Jamaica	GDP	4.82	-0.79	2.46	0.31
	Labor	0.93	2.23	1.92	1.40
	Capital	2.05	0.89	0.10	1.90
	TFP2	1.84	-3.91	0.44	-3.00
Mexico	GDP	6.73	6.68	1.81	3.50
	Labor	2.72	3.06	3.50	1.87
	Capital	3.32	3.48	1.69	1.57
	TFP2	0.68	0.15	-3.39	0.06
Nicaragua	GDP	6.77	0.35	-1.36	3.28
	Labor	3.03	2.52	2.44	3.20
	Capital	2.85	1.77	0.84	0.69
	TFP2	0.90	-3.95	-4.64	-0.62
Panama	GDP	7 90	4 13	1.37	4 46
	Labor	2.34	4.15	3 39	2.04
	Capital	2.68	2 25	0.67	1.67
	TFP2	2.88	-2.26	-2.70	0.75
Paraguay	GDP	4.31	8.87	2.77	1.97
	Labor	2.01	2.93	2.91	1.88
	Capital	2.06	4.65	2.94	1.67
	TFP2	0.91	3.91	-2.17	-1.22
Peru	GDP	5.28	3.63	-0.80	4.10
	Labor	2.92	3.22	1.76	2.52
	Capital	1.95	1.74	0.96	1.09
	TFP2	0.41	-1.33	-3.52	0.48
Trividad and Tabaaa	CDB	5.24	6 41	0.04	2.09
Trinidad and Tobago	GDP Labor	5.54 1.72	0.41	-0.04	5.08
	Labor	1.72	3.03	1.02	1.79
	тера	1.40	2.00	1.13	0.21
	1772	2.25	0.76	-2.18	-0.21
Uruguay	GDP	1.38	3.01	-0.03	3.01
	Labor	0.70	0.57	1.05	0.83
	Capital	0.15	1.06	0.14	0.72
	TFP2	0.52	1.38	-1.22	1.45
Venezuela	GDP	5.05	2 70	0.82	2.02
, chozuciu	Labor	5.05 7.24	2.70 1 36	1 20	2.02
	Canital	1 1 2	7.02	0.76	0.60
	TEP1	1.10	2.93 4 50	1.24	1 /4
	1112	1.34	-4.59	-1.24	-1.40

Notes: See Appendix A for sources and details of calculations.

Table I.10 **Growth Accounting Adjusting for Human Capital and Input Utilization, 1961-2000** Variable of interest: Annual GDP growth rates and contributions from production inputs and TFP

Country	Growth Components	I	Period	
		1971-1980	1981-1990	1991-2000
Argentina	GDP	2.95	-1.50	4.57
	Labor	1.41	1.08	0.80
	Capital	2.02	-0.18	0.09
	TFP3	-0.47	-2.40	3.69
Bolivia	GDP	4.15	0.10	3.83
	Labor		1.41	1.76
	Capital		-0.31	0.45
	TFP3		-1.00	1.62
Brazil	GDP	8.46	1.55	2.71
	Labor	1.80	2.70	1.67
	Capital	3.12	1 38	0.77
	TFP3	3.53	-2.53	0.26
Chile	CDD	2.96	2 77	6.60
Chile	GDP	2.80	3.77	0.00
	Labor	2.07	2.19	1.19
	Capital	0.65	1.27	2.73
	TFP3	0.15	0.30	2.67
Colombia	GDP	5.51	3.38	2.68
	Labor	4.68	4.03	1.09
	Capital	1.84	1.51	1.09
	TFP3	-1.01	-2.15	0.50
Costa Rica	GDP	5.64	2.41	5.25
	Labor		3.19	2.55
	Capital		1.06	1.46
	TFP3		-1.84	1.24
Dominican Republic	GDP	6.93	2.55	5.91
	Labor			2.28
	Capital			1.74
	TFP3			1.90
Feuador	CDP	8 00	2.00	1 76
Leuador	Labor	0.90	2.07	1.70
	Capital		2.07	0.43
	TFP3		-1.64	-0.46
		2.27	0.20	1.56
El Salvador	GDP	2.27	-0.39	4.56
	Labor		2.26	2.81
	Capital		0.87	2.20
	TFP3		-3.51	-0.45
Guatemala	GDP	5.65	0.87	4.06
	Labor		0.79	1.73
	Capital		0.55	1.41
	TFP3		-0.46	0.92

Table I.10 (cont.) Growth Accounting Adjusting for Human Capital and Input Utilization, 1961-2000

Variable of interest: Annual GDP growth rates and contributions from production inputs and TFP

Country	Growth Components	Р	Period	
	1	1971-1980	1981-1990	1991-2000
Honduras	GDP	5.39	2.43	3.21
	Labor	2.05	2.98	5.30
	Capital	2.12	1.14	1.87
	TFP3	1.22	-1.70	-3.95
Jamaica	GDP	-0.79	2.46	0.31
	Labor	1.27	2.26	1.03
	Capital	0.38	0.70	1.91
	TFP3	-2.44	-0.50	-2.63
Mexico	GDP	6.68	1.81	3.50
	Labor		3.30	1.79
	Capital		1.77	1.59
	TFP3		-3.27	0.11
Nicaragua	GDP	0.35	-1.36	3.28
6	Labor	1.51	4.10	3.54
	Capital	1.72	0.75	0.61
	TFP3	-2.87	-6.19	-0.87
Panama	GDP	4.13	1.37	4.46
	Labor	2.42	4.08	2.53
	Capital	2.16	0.47	1.79
	TFP3	-0.45	-3.18	0.14
Paraguay	GDP	8.87	2.77	1.97
	Labor		2.66	1.26
	Capital		2.82	1.48
	TFP3		-1.73	-0.17
Daru	CDP	3 63	0.80	4 10
i ciu	Labor	2 38	-0.80	3.48
	Capital	1.85	0.91	1 11
	TFP3	-0.60	-5.62	-0.50
Trinidad and Tobago	CDP	6.41	0.04	3.08
Tillidad and Tobago	Labor	2.49	-0.04	2 38
	Capital	2.49	-0.20	1.70
	TFP3	1.22	-0.59	-1.09
T	CDD	2.01	0.02	2.01
Oruguay	GDP	5.01	-0.03	3.01
	Labor	0.32	2.62	2.01
	TFP3	1.62	-2.70	-0.11
¥71-	CDD	0.70	0.02	2.02
venezuela	GDP Labor	2.70	0.82	2.02
	Labor	4.80	1.14	3.08
	Сарнаі тер2	2.93	0.70	1.09
	1663	-5.03	-1.08	-1./5

Notes: See Appendix A for sources and details of calculations.

Table I.11

SAVING, GROWTH AND INVESTMENT: Bivariate Causality Analysis Selected Sample of Countries Across the World, Annual Data 1960-2000 Bi-variate VARs, 4 lags, Fixed Effects

		Growth, Inve	stment	Growth, Natio	nal Saving	Growth, Foreig	zn Saving
		To:	To:	To:	To:	To:	To:
		Growth	Investment	Growth	National Saving	Growth	Foreign Saving
I. All Countries (136)							
- From Growth:	Sum Coeff	0 1458	0.1608	0 1460	0.1130	0 1627	0.0577
- I Iolii Growin.	(n-value)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.05)
	Causality (n-value)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)
- From Investment	Sum Coeff	(0.0329)	0.7575	(0.00)	(0.00)	(0.00)	(0.01)
r tom myestnent.	(n-value)	(0.032)	(0.00)				
	Causality (p-value)	(0.00)	(0.00)				
- From National Saving:	Sum Coeff.	(0.00)	(0100)	-0.0271	0.7540		
riom ranonar buring.	(p-value)			(0.02)	(0.00)		
	Causality (p-value)			(0.00)	(0.00)		
- From Foreign Saving:	Sum Coeff.			((****)	0.0042	0.7040
	(n-value)					(0.74)	(0.00)
	Causality (p-value)					(0.56)	(0.00)
Number of Observations) († ·)	3919	3919	3796	3796	3796	3796
II. Industrial Countries (23)							
- From Growth:	Sum Coeff.	0.5399	0.4730	0.3475	0.0905	0.3833	0.2164
	(p-value)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)
	Causality (p-value)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)
- From Investment:	Sum Coeff.	-0.0784	0.7367				
	(p-value)	(0.03)	(0.00)				
	Causality (p-value)	(0.00)	(0.00)				
- From National Saving:	Sum Coeff.			0.0318	0.8051		
6	(p-value)			(0.39)	(0.00)		
	Causality (p-value)			(0.65)	(0.00)		
- From Foreign Saving:	Sum Coeff.					-0.1107	0.7122
0 0	(p-value)					(0.01)	(0.00)
	Causality (p-value)					(0.01)	(0.00)
Number of Observations	• • •	618	618	566	566	566	566
III. Developing Countries (1	113)						
- From Growth:	Sum Coeff.	0.1337	0.1491	0.1350	0.1111	0.1524	0.0489
	(p-value)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.13)
	Causality (p-value)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.03)
- From Investment:	Sum Coeff.	-0.0328	0.7565				
	(p-value)	(0.05)	(0.00)				
	Causality (p-value)	(0.00)	(0.00)				
 From National Saving: 	Sum Coeff.			-0.0304	0.7528		
	(p-value)			(0.02)	(0.00)		
	Causality (p-value)			(0.00)	(0.00)		
- From Foreign Saving:	Sum Coeff.					0.0074	0.7040
	(p-value)					(0.59)	(0.00)
Number of Observations	Causality (p-value)	 3301	 3301	 3230	 3230	(0.64) 3230	(0.00) 3230
IV Latin America (32)							
111 Datin Finerica (52)							
- From Growth:	Sum Coeff.	0.2976	0.1943	0.2576	0.1590	0.2878	0.0075
	(p-value)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.91)
	Causality (p-value)	(0.00)	(0.00)	(0.00)	(0.05)	(0.00)	(0.38)
- From Investment:	Sum Coeff.	-0.0732	0.7231				
	(p-value)	(0.24)	(0.00)				
	Causality (p-value)	(0.03)	(0.00)				
- From National Saving:	Sum Coeff.			-0.0107	0.6898		
	(p-value)			(0.64)	(0.00)		
	Causality (p-value)			(0.01)	(0.00)		
- From Foreign Saving:	Sum Coeff.					-0.0232	0.6706
	(p-value)					(0.32)	(0.00)
	Causality (p-value)					(0.05)	(0.00)
Number of Observations		995	995	989	989	989	989

Table II.1 Descriptive Statistics of Economic Growth and Its Determinants

	78	Data in 5-Year Countries, 350 (Periods Dbservations			Data in 10-Ye 65 Countries, 175	ar Periods Observations	
	Mean	Std. Dev.	Min.	Max.	Mean	Std. Dev.	Min.	Мах.
Growth rate of GDP per capita	0.0148	0.0263	-0.1073	0.0857	0.0142	0.0224	-0.0784	0.0749
Initial GDP per capita (in logs)	8.1553	0.9871	5.9225	9.8279	8.1058	0.9431	6.1592	9.7251
Initial output gap (in logs)	-0.0007	0.0247	-0.1246	0.0668	-0.0034	0.0297	-0.1650	0.0528
Secondary enrollment (in logs)	3.9255	0.6734	1.2042	5.0294	3.9076	0.6753	1.0869	4.9289
Private domestic credit/GDP (in logs)	-1.1631	0.9104	-5.6893	0.7345	-1.1528	0.8454	-4.1289	0.7090
Structure-adjusted trade volume/GDP (in logs)	0.0369	0.4455	-1.6896	1.3629	0.0278	0.4472	-1.5450	1.2887
Government consumption /GDP (in logs)	-1.9355	0.3703	-3.1305	-0.9681	-1.9374	0.3708	-3.1781	-0.9722
Main telephone lines per capita (in logs)	3.8887	1.8291	-0.1576	6.5271	3.8287	1.8167	-0.2070	6.5244
1st principal component of ICRG indicators	0.5529	1.8510	-3.2562	3.4684	0.5201	1.8291	-3.2562	3.4684
Inflation (in log [100+inf. rate])	4.7905	0.4047	4.5749	8.7974	4.8142	0.4218	4.6151	7.8395
Std. Dev. of output gap	0.0196	0.0140	0.0023	0.0674	0.0222	0.0121	0.0038	0.0682
Index of real exchange rate overvaluation (in logs)	4.6400	0.4049	3.4627	7.2101	4.6563	0.3783	3.5838	6.6124
Frequency of years under banking crisis	0.1289	0.2772	0.0000	1.0000	0.1185	0.2144	0.0000	1.0000
Growth rate of terms of trade	-0.0068	0.0434	-0.1955	0.1876	-0.0049	0.0286	-0.0835	0.1351

(A) Univariate

(B) Bivariate Correlations Lower triangle for data in 5-year periods. Upper triangle (triangle) for data in 10-year periods

				Private	Structure-		Government	Telephone	1st p.c. of					
	Growth rate of I	nitial GDP per	Secondary	domestic	adjusted trade		consumption	lines per	ICRG	Initial	Std. Dev. of	RER over-	Frequency of	Growth rate
	GDP per capita	capita	enrollment	credit/GDP	volume/GDP	Inflation rate	/GDP	capita	indicators	output gap	output gap	valuation	banking crisis	of TOT
Growth rate of GDP per capita	1	0.26	0.37	0.35	0.08	-0.35	0.05	0.34	0.33	-0.05	-0.23	-0.25	-0.29	0.24
Initial GDP per capita (in logs)	0.24	1	0.81	0.7	-0.2	-0.09	0.42	0.95	0.8	0.17	-0.33	-0.03	-0.13	0.03
Secondary enrollment (in logs)	0.26	0.83	1	0.58	-0.11	-0.04	0.32	0.85	0.59	0.18	-0.39	1.0-	-0.02	-0.01
Private domestic credit/GDP (in logs)	0.31	0.71	0.58	1	0.03	-0.29	0.38	0.72	0.71	0.21	-0.37	-0.07	-0.13	0.05
Structure-adjusted trade volume/GDP (in logs)	0.05	-0.16	-0.07	0.02	1	-0.28	0.27	-0.2	0.01	0.03	-0.08	-0.09	0.02	0.09
Inflation (in log [100+inf. rate])	-0.35	-0.17	-0.08	-0.4	-0.17	-	-0.12	-0.1	-0.23	-0.26	0.2	0.3	0.24	-0.08
Government consumption /GDP (in logs)	0.01	0.46	0.35	0.35	0.2	-0.04	1	0.4	0.5	-0.03	-0.21	0.26	-0.21	-0.03
Main telephone lines per capita (in logs)	0.27	0.95	0.85	0.71	-0.16	-0.16	0.44	1	0.78	0.22	-0.39	-0.06	-0.14	0.04
1st principal component of ICRG indicators	0.27	0.8	0.61	0.69	0.01	-0.22	0.54	0.79	1	0.17	-0.4	-0.02	-0.17	0.02
Initial output gap (in logs)	-0.23	0.16	0.18	0.13	0.05	0.03	0.07	0.18	0.13	1	-0.25	-0.3	0.11	-0.07
Std. Dev. of output gap	-0.26	-0.23	-0.28	-0.22	-0.06	0.21	-0.16	-0.27	-0.31	-0.14	-	0.12	0.09	-0.01
Index of real exchange rate overvaluation (in logs)	-0.2	0.02	-0.02	0	-0.09	0.19	0.26	0.02	0.03	-0.01	0.08	-	0.05	-0.12
Frequency of years under banking crisis	-0.33	-0.18	-0.07	-0.15	0.06	0.27	-0.13	-0.19	-0.19	0	0.11	0.05	1	-0.18
Growth rate of terms of trade	0.2	0.08	0.04	0.11	0.05	-0.11	-0.05	0.08	0.06	0.08	-0.03	-0.14	-0.12	1

Table II.2

Economic Growth Regressions: Various Estimation Methods

Dependent Variable: Growth Rate of GDP per capita (t-Statistics are presented below the corresponding coefficient)

Regression Period:			196	6-99	
Type of Model: Estimation Technique:		Pooled OLS	Within OLS	Levels - IV GMM	System - IV GMM
Instruments:		-	-	Lagged Levels	Lagged Levels/Difference
		[1]	[2]	[5]	[7]
Transitional Convergence:					
Initial GDP Per Capita		-0.0139	-0.0516	-0.0169	-0.0176
(in logs)		-3.49	-7.51	-5.37	-3.80
Cyclical Reversion:					
Initial Output Gap		-0.2834	-0.1614	-0.2528	-0.2371
(log[actual GDP/potential GDP])		-6.13	-4.33	-7.90	-8.52
Structural Policies and Institutions:					
Education		0.0085	0.0036	0.0043	0.0172
(secondary enrollment, in logs)		2.52	0.63	1.42	6.70
Financial Donth		0.0021	0.0050	0.0025	0.0066
(private domestic credit/GDP, in logs)		1.57	1.69	1.91	4.28
(**************************************					
Trade Openness		0.0083	0.0215	0.0115	0.0096
(structure-adjusted trade volume/GDP, in logs)		2.67	4.16	3.45	3.14
Government Burden		-0.0125	-0.0210	-0.0077	-0.0154
(government consumption/GDP, in logs)		-3.16	-3.37	-2.33	-3.18
Public Infrastructure		0.0073	0.0067	0.0151	0.0071
(Main telephone lines per capita, in logs)		3.08	1.60	5.65	2.71
Governance		0.0012	0.0017	-0.0052	-0.0012
(1st principal component of ICRG indicators)		1.02	0.93	-3.27	-0.68
Carbilizzation Delizion					
Lack of Price Stability		-0.0085	-0.0083	-0.0097	-0.0048
(inflation rate, in log [100+inf. rate])		-2.61	-2.64	-2.88	-1.89
• • • •					
Cyclical Volatility		-0.3069	-0.1904	-0.5290	-0.2771
(Std. Dev. of output gap)		-3.58	-2.46	-4.55	-3.76
Real Exchange Rate Overvaluation		-0.0080	-0.0070	-0.0076	-0.0061
(in logs; index is proportional, overvaluation if > 100)		-2.71	-2.01	-2.82	-3.90
Systemic Banking Crises (frequency of years under crisis: 0, 1)		-0.0171	-0.0201	-0.0142	-0.0289
(nequency of years under crisis, 0-1)		-3.90	-4.93	-2.73	-7.42
External Conditions:					
Terms of Trade Shocks		0.0619	0.0498	0.0533	0.0720
(growth rate of TOT)		2.34	2.27	4.26	4.98
Period Shifts					
(benchmark for Cols. 1 and 3: 1971-75;	71-75:				-0.0090 **
benchmark for Cols. 4: 1966-70;	76-80:	0.0017	0.0010	-0.0008	-0.0092 **
benchmark for Col. 2: average 1971-99)	81-85:	-0.0147 **	0.0072 *	-0.0188 **	-0.0238 **
	86-90:	-0.0110 **	-0.0031	-0.0160 **	-0.0194 **
	91-95. 96-99:	-0.0158 **	0.0038	-0.0228 **	-0.0238 ***
		0.0100	0.0002	0.0222	010270
Intercept		0.1418	0.0007	0.1756	0.1216
		4.12	0.15	4.91	2.79
No. Countries / No. Observations		78 / 350	78 / 350	78 / 350	78 / 350
SPECIFICATION TESTS (P-Values)				0.274	0.002
(a) Sargan 1051. (b) Serial Correlation :				0.574	0.990
First-Order		0.000	0.000	0.000	0.000
Second-Order		0.021	0.617	0.002	0.461

Notes: For period shifts: ** means significant at 5% and * means significant at 10%

Source: Authors' estimations

Table II.3

Economic Growth Regressions: Various Time Horizons Dependent Variable: Growth Rate of GDP per capita (t-Statistics are presented below the corresponding coefficient)

	1011100 100100		10.11.1000		101100
Regression Period:	1966/70 - 1996/99	10	1961-1999		1966-99
Time Horizon:	30-year period	10	-year periods		5-year periods
Type of Model:	Cross-Section		System - IV		System - IV
Estimation Technique:	OLS	Loggod	GMM Lavals/Differences	Loggo	GMM d Lavals/Differences
Instruments:		Lagged	[2]	Lagge	[3]
-					
Convergence Factors:					
Initial GDP Per Capita	-0.0240		-0.0332		-0.0176
(in logs)	-6.34		-4.88		-3.80
Cyclical Reversion:					
Initial Output Gap			-0.1673		-0.2371
(log[actual GDP/potential GDP])			-5.57		-8.52
Structural Policies and Institutions:					
Education	0.0082		0.0059		0.0172
(secondary enrollment, in logs)	2.14		0.73		6.70
P'a an e al Dearth	0.0045		0.0057		0.0000
Financial Depth	0.0045		0.0056		0.0066
(private domestic credit/GDP, in logs)	1.56		1.92		4.28
Trade Openness	0.0048		0.0247		0.0096
(structure-adjusted trade volume/GDP, in logs)	1.24		5.02		3.14
Covernment Burden	0.0145		0.0167		0.0154
(government consumption/GDP in logs)	-0.0143		-0.0107		-0.0134
(government consumption GD1, in 10g3)	2.02		2.11		5.10
Public Infrastructure	0.0116		0.0243		0.0071
(Main telephone lines per capita, in logs)	4.46		5.28		2.71
Governance	0.0018		-0.0056		-0.0012
(1st principal component of ICRG indicators)	1.15		-2.27		-0.68
Stabilization Policies:					
Lack of Price Stability	-0.0060		-0.0207		-0.0048
(inflation rate, in log [100+inf. rate])	-2.11		-5.36		-1.89
Cyclical Volatility			-0.5079		-0.2771
(Std. Dev. of output gap)			-3.48		-3.76
Real Exchange Rate Overvaluation			-0.0007		-0.0061
(in logs; index is proportional, overvaluation if > 100)			-0.17		-3.90
Systemic Banking Crises			-0.0057		-0.0289
(frequency of years under crisis: 0-1)			-0.60		-7.42
External Conditions:			0.0000		0.0720
(growth rate of TOT)			2.40		4.98
Period Shifts		70s:	-0.0091 **	71-75:	-0.0090 **
(benchmark for Col. 2: 1960s		80s:	-0.0257 **	76-80:	-0.0092 **
benchmark for Col. 3: 1966-70)		90s:	-0.0398 **	81-85:	-0.0238 **
				86-90:	-0.0194 **
				91-95:	-0.0258 **
				96-99:	-0.0270 **
Intercept	0.2150		0.2816		0 1216
r-	6.09		4.33		2.79
No. Countries / No. Observations	70 / 70		65 / 175		78 / 350
SPECIFICATION TESTS (P-Values)					
(a) Sargan Test			0.9		0.996
(b) Serial Correlation :					
First-Order			0.002		0.000
Second-Order			0.93		0.461

Notes: For period shifts: ** means significant at 5% and * means significant at 10%

Source: Authors' estimation

Table II.4

Explaining Changes in Growth Between Decades Variable of interest: Change in the growth rate of GDP per capita

	Actual	Projected	Transitional	Cyclical	Structural	Stabilization	External
Countries	Change	Change	Convergence	Reversion	Reforms	Policies	Conditions
Argentina	6.71	4.45	0.15	1.70	1.07	1.71	-0.17
Bolivia	3.49	2.54	0.11	-0.02	1.34	1.70	-0.59
Brazil	1.49	1.00	-0.03	0.89	0.88	-0.53	-0.21
Chile	2.91	2.59	-0.66	0.65	1.67	1.33	-0.40
Colombia	-0.55	2.11	-0.32	0.15	1.15	1.47	-0.34
Costa Rica	3.80	1.13	-0.19	0.36	1.11	0.15	-0.31
Dominican Republic	3.44	2.42	-0.14	0.46	1.28	0.48	0.34
Ecuador	0.04	0.73	0.01	0.20	0.83	0.03	-0.35
El Salvador	4.14	2.09	-0.05	-0.10	2.21	0.41	-0.38
Haiti	-0.59	2.34	0.49	0.54	2.24	-0.56	-0.37
Honduras	0.84	0.82	0.04	0.25	0.71	0.16	-0.35
Jamaica	-1.86	-1.73	-0.30	-0.88	1.45	-1.30	-0.70
Mexico	1.72	1.80	0.05	0.19	1.51	0.24	-0.19
Nicaragua	4.40	1.84	0.67	-0.97	2.56	0.18	-0.60
Panama	3.51	1.87	0.04	-0.24	0.83	1.66	-0.43
Paraguay	-0.30	0.73	-0.02	0.47	1.79	-0.86	-0.65
Peru	5.32	3.84	0.30	0.28	1.29	2.42	-0.46
Trinidad and Tobago	3.28	0.68	0.21	0.01	0.91	0.37	-0.82
Uruguay	3.36	3.03	-0.20	0.76	1.05	1.78	-0.35
Venezuela	1.45	-0.39	0.11	0.20	0.67	-0.94	-0.44

(A) 1990s vs. 80s

(B) 1980s vs. 70s

	Actual	Projected	Transitional	Cyclical	Structural	Stabilization	External
Countries	Change	Change	Convergence	Reversion	Reforms	Policies	Conditions
Argentina	-4.31	-3.27	0.01	-0.78	0.60	-1.59	-1.50
Bolivia	-3.62	-2.77	0.02	-0.56	0.38	-1.53	-1.09
Brazil	-6.17	-3.11	-0.64	-1.21	0.74	-0.73	-1.28
Chile	0.87	0.64	-0.32	-1.10	2.43	0.51	-0.88
Colombia	-1.78	-2.92	-0.40	-0.29	0.66	-1.39	-1.49
Costa Rica	-3.07	-1.69	-0.22	-0.60	0.32	0.05	-1.25
Dominican Republic	-3.87	-1.42	-0.47	-0.05	1.07	-0.26	-1.71
Ecuador	-6.12	-2.56	-0.63	-0.89	0.94	-0.39	-1.60
El Salvador	-1.29	-1.45	0.27	-0.28	0.30	-0.46	-1.28
Haiti	-4.84		-0.27	-1.21		0.43	-1.18
Honduras	-2.78	-0.36	-0.27	-0.34	1.30	0.27	-1.31
Jamaica	3.36	1.03	0.45	0.43	0.81	0.39	-1.05
Mexico	-3.87	-2.61	-0.49	-0.39	1.08	-0.98	-1.84
Nicaragua	-1.23	-3.62	0.68	-0.29	-1.18	-1.97	-0.86
Panama	-2.18		-0.23	0.19	-0.07	-1.24	
Paraguay	-5.99	-2.24	-0.77	-0.99	1.07	-0.22	-1.34
Peru	-3.83	-4.05	0.03	-0.01	0.74	-3.36	-1.47
Trinidad and Tobago	-6.33	-1.92	-0.77	-0.38	1.54	-0.05	-2.26
Uruguay	-3.26	-1.69	-0.20	-0.48	1.43	-1.50	-0.93
Venezuela	-0.99	-1.79	0.26	0.33	-0.05	-0.31	-2.03

Table II.5 **Explaining Changes in Growth Between Five-Year Periods** Variable of interest: Change in the growth rate of GDP per capita

	Actual	Projected	Transitional	Cyclical	Structural	Stabilization	External
Countries	Change	Change	Convergence	Reversion	Reforms	Policies	Conditions
Argentina	-2.91	-0.87	-0.44	-1.77	0.89	0.87	-0.41
Bolivia	-0.17	0.53	-0.14	0.03	0.60	-0.07	0.12
Brazil	-1.21	1.91	-0.14	-0.80	1.29	1.69	-0.12
Chile	-3.84	-1.76	-0.59	-0.95	0.74	-0.17	-0.79
Colombia	-3.97	-1.43	-0.22	-0.37	-0.08	-0.43	-0.33
Costa Rica	0.44	-0.83	-0.29	-0.52	0.55	-0.29	-0.28
Dominican Republic	3.50	-1.01	-0.19	-0.44	0.11	0.31	-0.81
Ecuador	-3.64	-3.94	-0.10	-0.33	0.25	-3.66	-0.10
El Salvador	-2.80	-0.01	-0.35	-0.81	1.48	0.25	-0.57
Haiti	5.59	2.17	0.47	0.15	0.84	0.94	-0.24
Honduras	-0.93	-0.32	-0.05	-0.20	0.41	-0.06	-0.43
Jamaica	-2.26	-1.93	-0.03	0.28	0.30	-1.81	-0.66
Mexico	3.88	2.29	0.03	1.23	0.66	0.31	0.06
Nicaragua	3.99	3.00	0.13	0.02	0.82	3.04	-1.00
Panama	-1.57	-0.30	-0.31	-0.60	0.43	0.17	0.01
Paraguay	-2.45	-2.46	-0.04	-0.19	0.58	-2.32	-0.48
Peru	-2.85	-1.11	-0.32	-2.49	1.05	0.95	-0.31
Trinidad and Tobago	3.28	1.73	-0.05	-0.01	0.42	0.30	1.08
Uruguay	-1.03	-0.09	-0.28	-0.18	0.47	0.13	-0.23
Venezuela	-3.20	0.66	-0.10	-1.05	0.35	1.27	0.19

(A) 1996-99 vs. 1991-95

(B) 1991-95 vs. 1986-90

	Actual	Projected	Transitional	Cyclical	Structural	Stabilization	External
Countries	Change	Change	Convergence	Reversion	Reforms	Policies	Conditions
Argentina	6.90	2.99	0.17	0.73	0.50	1.84	-0.25
Bolivia	1.60	0.95	0.00	-0.16	0.78	1.47	-1.15
Brazil	1.41	-0.76	-0.02	0.36	0.48	-1.24	-0.35
Chile	1.86	0.07	-0.43	0.35	0.90	-0.16	-0.60
Colombia	0.03	0.72	-0.22	-0.52	1.04	0.85	-0.43
Costa Rica	1.30	0.19	-0.17	-0.29	0.86	0.15	-0.37
Dominican Republic	1.58	1.81	-0.05	0.03	0.73	0.44	0.66
Ecuador	1.57	1.31	0.03	0.47	0.54	0.78	-0.51
El Salvador	3.26	1.14	-0.06	0.28	1.34	0.27	-0.68
Haiti	-3.58	-0.30	0.16	-0.25	1.39	-1.05	-0.55
Honduras	0.51	0.46	0.00	0.51	0.43	0.17	-0.66
Jamaica	-3.60	-2.52	-0.35	-1.86	0.84	-0.51	-0.63
Mexico	0.00	-0.17	0.03	0.45	1.02	-1.11	-0.56
Nicaragua	4.26	5.14	0.50	-0.40	2.86	1.42	0.76
Panama	6.19	3.52	0.24	0.70	0.70	2.53	-0.64
Paraguay	-0.20	-0.10	-0.06	-0.05	1.35	-0.30	-1.04
Peru	7.53	4.32	0.35	0.02	0.90	3.75	-0.70
Trinidad and Tobago	3.51	-1.44	0.25	0.24	0.00	-0.09	-1.84
Uruguay	-0.01	-1.23	-0.28	-0.73	0.61	-0.19	-0.64
Venezuela	1.15	-1.61	0.00	-0.04	0.03	-1.20	-0.39

Table II.5 (cont.) Explaining Changes in Growth Between Five-Year Periods Variable of interest: Change in the growth rate of GDP per capita

	Actual	Projected	Transitional	Cyclical	Structural	Stabilization	External
Countries	Change	Change	Convergence	Reversion	Reforms	Policies	Conditions
Argentina	2.20	2.86	0.36	2.67	0.35	-1.03	0.52
Bolivia	3.93	2.47	0.35	0.12	0.61	0.52	0.88
Brazil	1.23	1.46	0.09	1.43	-0.36	-0.09	0.40
Chile	5.51	6.12	0.06	0.94	0.88	3.14	1.10
Colombia	2.37	3.20	-0.01	0.81	0.29	1.62	0.48
Costa Rica	4.61	1.87	0.23	1.01	0.01	0.24	0.37
Dominican Republic	0.60	1.76	0.00	0.89	1.00	-0.21	0.09
Ecuador	0.18	2.52	0.05	-0.07	0.37	1.76	0.41
El Salvador	4.26	1.46	0.32	-0.47	0.44	0.06	1.11
Haiti	1.00	3.23	0.25	1.33	0.95	0.15	0.56
Honduras	1.49	1.34	0.13	-0.01	0.20	0.03	1.00
Jamaica	5.49	1.68	0.13	0.10	0.95	0.05	0.45
Mexico	-0.01	3.45	0.03	-0.07	0.40	2.44	0.67
Nicaragua	-3.28	-9.67	0.21	-1.53	-1.32	-5.20	-1.83
Panama	-3.97	-2.87	-0.11	-1.19	-0.11	-1.88	0.42
Paraguay	1.99	3.62	0.11	0.99	0.37	0.94	1.21
Peru	-1.91	-2.17	0.18	0.55	-0.15	-3.50	0.76
Trinidad and Tobago	-3.38	2.92	-0.04	-0.22	1.45	0.66	1.08
Uruguay	7.66	7.70	0.40	2.24	0.45	3.82	0.78
Venezuela	3.45	0.87	0.31	0.45	0.98	-0.61	-0.26

(C) 1986-90 vs. 1981-85

(D) 1981-85 vs. 1976-80

	Actual	Projected	Transitional	Cyclical	Structural	Stabilization	External
Countries	Change	Change	Convergence	Reversion	Reforms	Policies	Conditions
Argentina	-5.34	-3.50	-0.11	-1.47	0.09	-0.17	-1.85
Bolivia	-4.04	-3.40	-0.01	-0.07	0.05	-1.80	-1.57
Brazil	-5.14	-3.57	-0.36	-1.79	0.51	-0.51	-1.42
Chile	-6.17	-5.88	-0.48	-3.40	1.23	-1.14	-2.08
Colombia	-2.87	-5.02	-0.26	-0.69	-0.10	-2.06	-1.92
Costa Rica	-4.76	-3.20	-0.19	-1.33	0.00	0.01	-1.70
Dominican Republic	-2.34	-2.17	-0.21	-0.29	-0.09	-0.15	-1.44
Ecuador	-4.02	-4.56	-0.30	-0.59	0.46	-1.74	-2.38
El Salvador	-1.43	-2.54	0.19	-0.51	-0.05	-0.04	-2.12
Haiti	-6.67		-0.34	-2.39		0.53	-1.74
Honduras	-5.03	-3.00	-0.31	-1.60	0.83	0.15	-2.06
Jamaica	2.91	0.96	0.39	1.16	0.43	0.06	-1.09
Mexico	-4.48	-4.67	-0.37	-0.58	0.68	-2.05	-2.36
Nicaragua	4.96	0.82	0.65	-0.47	-0.69	1.30	0.03
Panama	0.23		-0.09	0.54	-0.31	-0.11	
Paraguay	-8.64	-4.63	-0.65	-1.83	0.39	-0.24	-2.30
Peru	-1.63	-3.01	0.04	0.49	0.55	-1.69	-2.40
Trinidad and Tobago	-6.21	-4.25	-0.59	-1.16	0.41	-0.55	-2.37
Uruguay	-8.35	-5.85	-0.34	-1.18	0.65	-3.50	-1.48
Venezuela	-2.50	-2.84	0.09	-0.41	-0.68	0.04	-1.89

Table II.6Explaining Differences in Growth Rates with Comparator Countries in the 1990sVariable of interest: Difference in the growth rate of GDP per capita in the 1990s between a comparator country and a given LAC country

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	Actual	Projected	Transitional	Cyclical	Structural	Stabilization	External	Country-Specific
Countries	Difference	Difference	Convergence	Reversion	Policies	Policies	Conditions	Effect
Argentina	1.28	1.37	0.10	-0.92	2.02	1.18	-0.14	-0.87
Bolivia	3.46	2.82	-1.82	0.18	2.83	-0.01	0.11	1.53
Brazil	3.93	2.62	-0.35	-0.03	2.94	1.82	-0.07	-1.69
Colombia	4.28	1.99	-0.65	0.22	1.80	-0.17	-0.04	0.83
Costa Rica	1.51	1.70	-0.54	0.12	2.13	0.0	-0.13	0.02
Dominican Republic	1.25	0.60	-1.42	-0.19	0.95	-0.11	-0.41	1.78
Ecuador	5.43	3.12	-0.98	0.11	1.83	1.22	0.23	0.71
El Salvador	2.32	2.40	-1.60	0.06	2.67	0.34	-0.08	1.01
Haiti	7.90	5.01	-3.41	0.31	4.80	0.56	-0.09	2.83
Honduras	4.88	3.08	-2.28	-0.03	3.00	0.21	-0.12	2.30
Jamaica	5.61	4.75	-1.11	0.54	0.95	1.74	0.02	2.62
Mexico	3.57	1.83	0.12	0.22	0.85	0.75	0.01	-0.12
Nicaragua	4.67	6:39	-2.41	0.27	3.02	2.84	0.05	2.63
Panama	2.20	1.61	-0.77	0.02	0.98	-0.18	-0.11	1.67
Paraguay	5.60	2.64	-1.51	0.28	2.17	1.44	0.00	0.28
Peru	2.67	2.54	-1.43	-0.28	2.34	1.14	0.14	0.63
Trinidad and Tobago	2.92	1.78	0.89	0.18	0.64	-0.12	0.39	-0.20
Uruguay	2.30	1.26	-0.05	-0.10	1.09	0.42	-0.17	0.08
Venezuela	5.30	5.75	0.38	-0.23	2.34	1.33	0.03	1.90
Benchmark values in levels (Chile):	Actual growth rate: Overall constant:	5.00	-15.05	0.15	14.24	-5.45	-2.66	0.35

Variable	Procedure
Education	Projected for 2001-2010 using OLS regression models incorporating (linear or quadratic) trends and a convergence effect. The inclusion criterion was (i) to increase the fit of equation and (ii) to generate plausible values for the projected variable.
Financial Depth	Projected for 2001-2010 using OLS regression models incorporating (linear or quadratic) trends, a convergence effect, and ARMA terms. The inclusion criterion was (i) to increase the fit of equation and (ii) to generate plausible values for the projected variable.
Trade Openness	Projected for 2001-2010 using OLS regression models incorporating (linear or quadratic) trends, a convergence effect, and ARMA terms. The inclusion criterion was (i) to increase the fit of equation and (ii) to generate plausible values for the projected variable.
Inflation	For countries with inflation targets, central bank targets were used as the projections for the 2006-2010, private forecasts from <i>Consensus Forecasts</i> for the 2004-2005 period, and actual values for the 2000-2003 period. Projected for 2006-2010 (2005-2010) for countries with available <i>Consensus Forecasts</i> or IMF forecasts for 2004-2005 (2004) using OLS regression models incorporating (linear or quadratic) trends, a convergence term to annual inflation of 3%, and ARMA terms. The inclusion criterion was (i) to increase the fit of equation and (ii) to generate plausible values for the projected variable.
Government Burden	Projected for 2000-2010 using OLS regression models incorporating (linear or quadratic) trends and ARMA terms. The inclusion criterion was (i) to increase the fit of equation and (ii) to generate plausible values for the projected variable.
Public Infrastructure	Projected for 2003-2010 using OLS regression models incorporating (linear or quadratic) trends, a convergence effect, and ARMA terms. The inclusion criterion was (i) to increase the fit of equation and (ii) to generate plausible values for the projected variable.

Table III.1 Procedures to compute projections for the "continuing-trend" scenario

Initial per capita GDP	Ratio of total GDP to total population in 2000 from the <i>World Development Indicators</i> . For 2005, projected value using the estimated growth rate during 2001-2005 and the initial per capita GDP in 2000. Estimated growth rates come from the projections of growth determinants for 2001-2005 and the panel data models previously presented.
Initial Output Gap and Cyclical Volatility	Initial output gap computed using the Baxter-King filter. Cyclical volatility computed from actual values and forecasts of output gap estimates for 2001-2005. Output gap for the 2003-2005 period projected using <i>Consensus</i> <i>Forecasts</i> or IMF forecasts for GDP growth and applying the Baxter-King filter to those forecasts. For 2006-2010 projected using a panel data estimation considering the first lag of the variable and fixed effects for each country.
Real Exchange Rate Overvaluation	Projected for 2000-2010 using OLS regression models incorporating (linear or quadratic) trends, the lagged difference between the index and the equilibrium level, and ARMA terms. The inclusion criterion was (i) to increase the fit of equation and (ii) to generate plausible values for the projected variable.
Systemic Banking Crises	Computed for 2000-2003 using the criterion defined in Caprio and Klingebiel (1999), and Kaminsky and Reinhart (1998). For 2004-2010 projected using a panel data model including the level of real exchange rate overvaluation and lagged presence of crisis as explanatory variables. The inclusion criterion was (i) to increase the fit of equation and (ii) to generate plausible values for the projected variable.
Terms of trade shocks	Computed using the projected of the level of terms of trade for 2000-2010 using OLS regression models incorporating ARMA terms. The inclusion criterion was (i) to increase the fit of equation and (ii) to generate plausible values for the projected variable.

Table III.2 Growth Forecasts under a "Continuous Trend" Scenario

								Contributions	to Projected Ch	ange in Growth	Rate, from 1991-	99 to 2000-10				
				Transitional	Cyclical		S	tructural Policie	25			Stabilizati	on Policies		External C	onditions
				Convergence	Recovery											
		Projected	Projected	Initial GDP per	Initial Output	Education	Financial	Trade	Government	Public	Inflation	Cyclical	Real Exchange	Systemic	Terms of Trade	Period Shift
	Growth Rate	Change	Growth Rate	Capita	Gap		Depth	Openness	Burden	Infrastructure		Volatility	Rate	Banking Crises	Shocks	
Countries	1991-99	2000-10	2000-10										Overvaluation			
Argentina	3.72%	-2.20%	1.52%	-0.42%	-1.40%	0.18%	-0.10%	0.14%	0.20%	0.20%	-0.03%	-0.17%	0.38%	-0.97%	-0.20%	0.00%
Bolivia	1.53%	0.05%	1.58%	-0.28%	0.19%	0.19%	0.20%	-0.09%	0.05%	0.30%	-0.01%	-0.06%	-0.13%	-0.55%	0.22%	0.00%
Brazil	1.07%	2.65%	3.72%	-0.33%	-0.23%	0.39%	0.09%	0.29%	-0.08%	0.32%	0.31%	0.23%	0.30%	1.51%	-0.14%	0.00%
Chile	5.00%	-1.00%	4.00%	-0.78%	-0.12%	0.11%	0.06%	0.20%	-0.24%	0.40%	0.02%	-0.24%	-0.13%	-0.06%	-0.22%	0.00%
Colombia	0.72%	1.01%	1.73%	-0.14%	0.29%	0.01%	-0.05%	0.12%	0.21%	0.33%	0.05%	0.36%	-0.05%	-0.19%	0.08%	0.00%
Costa Rica	3.48%	0.57%	4.05%	-0.56%	-0.09%	0.29%	0.30%	0.31%	-0.14%	0.24%	0.03%	0.34%	-0.15%	0.00%	0.00%	0.00%
Dominican Republic	3.75%	-3.20%	0.54%	-0.53%	-0.59%	0.27%	0.22%	-0.01%	-1.19%	0.36%	-0.04%	0.09%	-0.06%	-1.73%	0.03%	0.00%
Ecuador	-0.43%	2.56%	2.13%	0.00%	0.44%	0.61%	0.22%	-0.01%	-0.29%	0.45%	0.10%	0.59%	0.30%	0.01%	0.15%	0.00%
El Salvador	2.67%	0.64%	3.31%	-0.39%	0.02%	0.13%	0.02%	0.55%	-0.20%	0.44%	0.01%	0.24%	-0.19%	0.00%	-0.03%	0.00%
Haiti	-2.91%	2.32%	-0.59%	0.27%	0.11%	0.47%	0.06%	-0.15%	-0.26%	0.29%	-0.02%	0.91%	0.26%	-0.01%	0.39%	0.00%
Honduras	0.12%	0.82%	0.93%	-0.09%	0.02%	0.01%	0.19%	0.32%	-0.29%	0.28%	0.02%	0.48%	-0.19%	0.00%	0.08%	0.00%
Jamaica	-0.62%	2.73%	2.11%	0.01%	0.37%	0.24%	0.05%	0.05%	-0.23%	0.27%	0.05%	0.15%	-0.16%	1.74%	0.20%	0.00%
Mexico	1.42%	1.63%	3.05%	-0.34%	-0.25%	0.22%	-0.29%	0.60%	-0.12%	0.25%	0.05%	0.53%	-0.04%	1.11%	-0.10%	0.00%
Nicaragua	0.33%	2.52%	2.84%	-0.25%	-0.14%	0.25%	0.02%	0.42%	-0.07%	0.41%	0.46%	0.38%	-0.02%	1.25%	-0.19%	0.00%
Panama	2.80%	-0.46%	2.33%	-0.43%	-0.38%	-0.04%	0.29%	0.02%	-0.14%	0.14%	0.00%	0.12%	-0.04%	0.00%	0.00%	0.00%
Paraguay	-0.60%	1.40%	0.80%	0.02%	0.39%	0.12%	-0.08%	-0.42%	-0.17%	0.22%	-0.01%	0.10%	0.02%	1.24%	-0.04%	0.00%
Peru	2.32%	-0.11%	2.21%	-0.36%	-0.61%	0.12%	0.15%	0.05%	-0.19%	0.10%	0.06%	0.51%	0.08%	-0.27%	0.26%	0.00%
Trinidad and Tobago	2.08%	0.98%	3.06%	0.25%	-0.23%	0.01%	0.02%	0.23%	-0.08%	0.22%	0.00%	0.34%	-0.01%	0.00%	0.23%	0.00%
Uruguay	2.70%	-1.24%	1.46%	-0.33%	-0.31%	0.00%	0.49%	0.28%	-0.12%	0.20%	0.05%	-0.20%	0.20%	-1.35%	-0.13%	0.00%
Venezuela, RB	-0.30%	-0.52%	-0.82%	0.01%	-0.59%	0.54%	-0.28%	0.09%	-0.17%	0.04%	0.02%	-0.36%	-0.02%	0.30%	-0.12%	0.00%
Average	1.44%	0.56%	2.00%	-0.23%	-0.15%	0.21%	0.08%	0.15%	-0.18%	0.27%	0.06%	0.22%	0.02%	0.10%	0.02%	0.00%
Median	1.48%	0.73%	2.12%	-0.30%	-0.13%	0.19%	0.06%	0.13%	-0.15%	0.27%	0.02%	0.24%	-0.03%	0.00%	0.00%	0.00%

Notes: Forecasts for changes in determinants of growth are obtained using univariate regressions for most variables. Explanatory variables include linear/quadratic trends, and autorregresive terms. Projections for 2004-2005 of Consensus Forecasts or World Economic Outlook complement ouput-gap and inflation. Source: Authors' calculations

			Transitional Convergence	Cyclical Recovery											
		_					Contril	butions to Poten	tial Improvemen	t in the Growth	Rate				
		_				Str	uctural Policies				Stabilizati	on Policies		External C_{c}	nditions
		_	Initial GDP per	Initial Output Gap	Education	Financial	Trade	Government	Public	Inflation	Cyclical	Real Exchange	Systemic	Terms of Trade	Period Shift
	Growth Rate	Potential	Capita			Depth	Openness	Burden	Infrastructure		Volatility	Rate	Banking Crises	Shocks	
Countries	6661-1661	Change										Overvaluation			
Argentina	3.72%	0.20%	-0.53%	-1.40%	0.00%	0.38%	0.69%	0.23%	0.00%	0.00%	0.46%	0.29%	0.29%	-0.20%	0.00%
Bolivia	1.53%	3.98%	-0.45%	0.19%	0.52%	0.00%	0.20%	0.56%	0.72%	0.00%	0.00%	-0.01%	2.02%	0.22%	0.00%
Brazil	1.07%	3.64%	-0.37%	-0.23%	0.31%	0.08%	0.62%	1.03%	0.11%	0.30%	0.11%	0.09%	1.73%	-0.14%	0.00%
Chile	5.00%	-0.73%	-0.77%	-0.12%	0.00%	0.00%	0.01%	0.14%	0.00%	0.00%	0.20%	0.02%	0.00%	-0.22%	0.00%
Colombia	0.72%	1.67%	-0.18%	0.29%	0.11%	0.06%	0.37%	0.83%	0.00%	0.04%	0.18%	-0.11%	0.00%	0.08%	0.00%
Costa Rica	3.48%	1.46%	-0.62%	-0.09%	0.64%	0.59%	0.02%	0.51%	0.00%	0.03%	0.26%	0.10%	0.00%	0.00%	0.00%
Dominican Republic	3.75%	-0.16%	-0.66%	-0.59%	0.49%	0.25%	0.18%	0.00%	0.00%	0.00%	0.13%	0.02%	0.00%	0.03%	0.00%
Ecuador	-0.43%	4.39%	-0.15%	0.44%	0.45%	0.13%	0.21%	0.12%	1.03%	0.11%	0.43%	0.03%	1.45%	0.15%	0.00%
El Salvador	2.67%	1.86%	-0.47%	0.02%	1.08%	0.02%	0.44%	0.00%	0.84%	0.00%	0.00%	-0.04%	0.00%	-0.03%	0.00%
Haiti	-2.91%	6.02%	0.10%	0.11%	1.67%	0.57%	0.73%	0.00%	1.77%	0.04%	0.69%	-0.07%	0.00%	0.39%	0.00%
Honduras	0.12%	3.06%	-0.19%	0.02%	1.32%	0.12%	0.00%	0.17%	1.35%	0.03%	0.21%	-0.06%	0.00%	0.08%	0.00%
Jamaica	-0.62%	5.67%	-0.11%	0.37%	0.00%	0.19%	0.00%	0.53%	2.16%	0.05%	0.00%	0.26%	2.02%	0.20%	0.00%
Mexico	1.42%	2.23%	-0.38%	-0.25%	0.17%	0.27%	0.00%	0.15%	0.43%	0.03%	0.36%	0.09%	1.45%	-0.10%	0.00%
Nicaragua	0.33%	5.06%	-0.35%	-0.14%	0.60%	0.00%	0.00%	0.97%	1.84%	0.46%	0.26%	-0.13%	1.73%	-0.19%	0.00%
Panama	2.80%	0.31%	-0.44%	-0.38%	0.08%	0.00%	0.14%	0.66%	0.20%	0.00%	0.00%	0.05%	0.00%	0.00%	0.00%
Paraguay	-0.60%	3.46%	-0.05%	0.39%	0.81%	0.26%	0.00%	0.00%	0.74%	0.01%	0.00%	-0.12%	1.45%	-0.04%	0.00%
Peru	2.32%	0.68%	-0.41%	-0.61%	0.01%	0.46%	0.58%	0.01%	0.18%	0.06%	0.00%	0.14%	0.00%	0.26%	0.00%
Trinidad and Tobago	2.08%	2.72%	0.14%	-0.23%	0.00%	0.00%	0.81%	0.35%	1.44%	0.00%	0.10%	-0.12%	0.00%	0.23%	0.00%
Uruguay	2.70%	1.13%	-0.44%	-0.31%	0.00%	0.11%	0.68%	0.41%	0.33%	0.08%	0.29%	0.11%	0.00%	-0.13%	0.00%
Venezuela, RB	-0.30%	2.32%	-0.08%	-0.59%	0.83%	0.64%	0.41%	0.00%	0.00%	0.11%	0.42%	0.12%	0.58%	-0.12%	0.00%
Average	1.44%	2.45%	-0.32%	-0.15%	0.46%	0.21%	0.31%	0.33%	0.66%	0.07%	0.21%	0.03%	0.64%	0.02%	0.00%
Median	1.48%	2.28%	-0.37%	-0.13%	0.38%	0.12%	0.21%	0.20%	0.38%	0.03%	0.19%	0.03%	0.00%	0.00%	0.00%
Notes: The total potential change Source: Authors' calculations	corresponds to the si	um of the effects o	of each variable if it wer	to advance to the 75th	1 percentile of Lati	a America and the	Caribbean.								

Table III.3 Growth Forecasts under a "Sharp Progress" Scenario -- To Top 25% of Latin American and the Caribbean

Table III.4 Growth Forecasts under a "Sharp Progress" Scenario -- To Top 25% of the World

			Transitional	Cyclical Recovery											
			Convergence				Contr	ibutions to Pote	ntial Improveme	nt in the Growt	h Rate				
						S	tructural Polici	?S			Stabilizat	tion Policies		External C	Conditions
			Initial GDP	Initial Output Gap	Education	Financial	Trade	Government	Public	Inflation	Cyclical	Real Exchange	Systemic	Terms of Trade	Period Shift
	Growth Rate	Potential	per Capita			Depth	Openness	Burden	Infrastructure		Volatility	Rate	Banking Crises	Shocks	
Countries	1991-1999	Change										Overvaluation			
Argentina	3.72%	1.29%	-0.63%	-1.40%	0.18%	0.77%	0.93%	0.01%	0.39%	0.03%	0.65%	0.29%	0.29%	-0.20%	0.00%
Bolivia	1.53%	5.31%	-0.50%	0.19%	0.90%	0.18%	0.45%	0.34%	1.32%	0.03%	0.16%	0.00%	2.02%	0.22%	0.00%
Brazil	1.07%	5.18%	-0.43%	-0.23%	0.69%	0.47%	0.86%	0.80%	0.71%	0.33%	0.29%	0.09%	1.73%	-0.14%	0.00%
Chile	5.00%	0.36%	-0.82%	-0.12%	0.36%	0.00%	0.26%	0.00%	0.44%	0.03%	0.39%	0.02%	0.00%	-0.22%	0.00%
Colombia	0.72%	3.32%	-0.25%	0.29%	0.50%	0.45%	0.61%	0.60%	0.60%	0.07%	0.36%	0.00%	0.00%	0.08%	0.00%
Costa Rica	3.48%	2.80%	-0.67%	-0.09%	1.03%	0.98%	0.26%	0.28%	0.40%	0.05%	0.45%	0.10%	0.00%	0.00%	0.00%
Dominican Republic	3.75%	1.57%	-0.75%	-0.59%	0.88%	0.64%	0.42%	0.00%	0.59%	0.02%	0.31%	0.02%	0.00%	0.03%	0.00%
Ecuador	-0.43%	6.03%	-0.22%	0.44%	0.83%	0.52%	0.45%	0.00%	1.63%	0.14%	0.62%	0.03%	1.45%	0.15%	0.00%
El Salvador	2.67%	3.65%	-0.53%	0.02%	1.46%	0.41%	0.69%	0.00%	1.44%	0.02%	0.17%	0.00%	0.00%	-0.03%	0.00%
Haiti	-2.91%	7.84%	0.03%	0.11%	2.05%	0.96%	0.98%	0.00%	2.37%	0.07%	0.88%	0.00%	0.00%	0.39%	0.00%
Honduras	0.12%	4.54%	-0.24%	0.02%	1.71%	0.51%	0.07%	0.00%	1.95%	0.06%	0.40%	0.00%	0.00%	0.08%	0.00%
Jamaica	-0.62%	7.04%	-0.17%	0.37%	0.35%	0.58%	0.20%	0.30%	2.76%	0.08%	0.10%	0.26%	2.02%	0.20%	0.00%
Mexico	1.42%	3.61%	-0.43%	-0.25%	0.56%	0.66%	0.00%	0.00%	1.04%	0.06%	0.54%	0.09%	1.45%	-0.10%	0.00%
Nicaragua	0.33%	6.45%	-0.40%	-0.14%	0.99%	0.35%	0.00%	0.75%	2.44%	0.48%	0.44%	0.00%	1.73%	-0.19%	0.00%
Panama	2.80%	1.44%	-0.49%	-0.38%	0.46%	0.00%	0.38%	0.43%	0.80%	0.00%	0.17%	0.05%	0.00%	0.00%	0.00%
Paraguay	-0.60%	5.19%	-0.12%	0.39%	1.20%	0.65%	0.09%	0.00%	1.34%	0.04%	0.19%	0.00%	1.45%	-0.04%	0.00%
Peru	2.32%	2.23%	-0.50%	-0.61%	0.39%	0.85%	0.82%	0.00%	0.78%	0.08%	0.00%	0.14%	0.00%	0.26%	0.00%
Trinidad and Tobago	2.08%	3.28%	-0.53%	-0.23%	0.22%	0.07%	1.06%	0.13%	2.04%	0.01%	0.28%	0.00%	0.00%	0.23%	0.00%
Uruguay	2.70%	2.30%	-0.53%	-0.31%	0.03%	0.50%	0.92%	0.19%	0.94%	0.10%	0.47%	0.11%	0.00%	-0.13%	0.00%
Venezuela, RB	-0.30%	4.08%	-0.14%	-0.59%	1.21%	1.03%	0.65%	0.00%	0.60%	0.13%	0.61%	0.12%	0.58%	-0.12%	0.00%
Average	1.44%	3.87%	-0.42%	-0.15%	0.80%	0.53%	0.50%	0.19%	1.23%	0.09%	0.37%	0.07%	0.64%	0.02%	0.00%
Median	1.48%	3.63%	-0.46%	-0.13%	0.76%	0.51%	0.45%	0.00%	0.99%	0.06%	0.37%	0.03%	0.00%	0.00%	0.00%

Notes: The total potential change corresponds to the sum of the effects of each variable if it were to advance to the 75th percentile of the world.



























Notes: The median country for 1961-70 is Peru, for 71-80 is Honduras, for 81-90 is Brazil and for 91-2000 is Mexico. Source: Authors' calculations



Source: Authors' calculations















Appendix A Solow Growth Accounting

Table A.1 Argentina

			Physical	Total Factor Productivity
	Output	Labor	Capital	TFP1 TFP2 TFF
A Growth Ass	ounting: Traditic	nal Solow Pasi	hual	
A. Ulowul Acc	ounding. Traditio	Juai-3010w Kesi	iuai	
A.I Annual Gre	win Kules			
1961-1970	3.88%	1.52%	5.01%	
1971-1980	2.95%	1 34%	4 77%	
1981-1990	-1.50%	1.49%	0.07%	
1991-2000	4.57%	1.80%	1.10%	
A.2 Contributio	on to Output Gro	with $(TFP1 = Set)$	olow Residual)	
1961-1970	3.88%	0.91%	2.00%	0.96%
1971-1980	2.95%	0.80%	1.91%	0.24%
1981-1990	-1.50%	0.89%	0.03%	-2.42%
1991-2000	4.57%	1.08%	0.44%	3.05%
B. Growth Acc	ounting 2: Includ	ling Adjustment	s for Human Capital	
B.1 Annual Gre	owth Rates			
1961-1970	3 88%	2 76%	5.01%	
1971 1980	2 95%	2.51%	1 77%	
081 1000	1.50%	2.51%	4.77%	
1981-1990	-1.50%	2.90%	0.07%	
1991-2000	4.57%	2.74%	1.10%	
B.2 Contributio	on to Output Gro	owth (TFP2 = South)	olow Residual after Cont	rolling for Human Capital)
1961-1970	3.88%	1.66%	2.00%	0.22%
1971-1980	2.95%	1.51%	1.91%	-0.46%
1981-1990	-1 50%	1 78%	0.03%	-3 30%
1991-2000	4 57%	1.70%	0.44%	2 49%
1991 2000	4.5770	1.0470	0.4470	2.4770
C. Growth Acc	ounting 3: Includ	ling Adjustment	s for Inputs Utilization ar	nd Human Capital
C.1 Annual Gro	owth Rates			
1961-1970	3.88%			
1971-1980	2.95%	2.35%	5.04%	
1981-1990	-1 50%	1.80%	-0.45%	
1991-2000	4 57%	1 33%	0.22%	
1771-2000	4.5770	1.5570	0.22/0	
C.2 Contributio	on to Output Gre	owth (TFP3 = South)	olow Residual after Cont	rolling for Inputs Utilization and Human Capital)
1961-1970	3.88%			
1971-1980	2.95%	1.41%	2.02%	-0.48%
1981-1990	-1.50%	1.08%	-0.18%	-2.40%
1991-2000	4.57%	0.80%	0.09%	3.68%
Memor				
	[Grow	h Rates	Change

Co

	Capital	Human Capital	Employment	Worked Hours	Unemployment
	Utilization	Stock			Rate
1961-1970		1.24%			
1971-1980	0.26%	1.17%	1.60%	-0.43%	-2.50%
1981-1990	-0.52%	1.47%	0.94%	-0.61%	5.00%
1991-2000	-0.86%	0.94%	1.18%	-0.79%	7.70%

Selected Calculations:

1. Human Capital Stock (H): Weighted average of educational attainment by shares of the adult population with different educational levels.

The social returns to education are obtained from Psacharopoulos (1994). The categories and their respective returns are: No Education The social returns to calculation are obtained from Fsacharopoulos (1994). The categories and their respective returns are: No Education (benchmark) = 1, Incomplete Primary Education = 1.68, Complete Primary Education = 2.69, Incomplete Secondary Education = 3.91, Complete Secondary Education = 5.53, Incomplete College Education = 5.87, Complete College Education = 8.80.
Labor Adjusted for Human Capital (HL) = Labor * H.
Labor Adjusted for Human Capital and Employment = HL * (1- Unemployment rate) * Participation Rate * Worked Hours.
Physical Capital Adjusted for Utilization = Physical Capital * (1-Unemployment Rate).

Sources:

GDP	Authors' construction using Summers and Heston (1991) and The World Bank (2002).
Working-Age Population	WDI
Capital	Authors' construction using Nehru and Dareshwar (1993) and The World Bank (2002).
Human Capital	Authors' calculations using data from Barro and Lee (2000) and Psacharopoulos (1994)
Unemployment Rate	ILO
Employment	Splicing using series from ILO and Central Bank of Argentina
Worked Hours	Splicing using series from Maddison (1995) and ILO
Capital Share	Kydland and Zarazaga (2001)

Table A.2 Bolivia

			Physical	Total Fact	or Productivity
	Output	Labor	Capital	TFP1	TFP2 TFP3
A. Growth Acc	counting: Traditi	onal-Solow Res	idual		
A.I Annual Gr	owth Rates				
1961-1970	2.68%	2 35%	4 93%		
1971-1980	4 15%	2.35%	5.85%		
1081-1000	0.10%	2.40%	-0.80%		
1991-2000	3.83%	2.57%	1 39%		
1991 2000	5.6570	2.5670	1.5770		
A.2 Contribution	on to Output Gre	owth (TFP1 = S	olow Residual)		
1961-1970	2 68%	1 57%	1.63%	-0.52%	
1971-1980	4 15%	1.61%	1.03%	0.61%	
1981-1990	0.10%	1.59%	-0.26%	-1 22%	
1991-2000	3 83%	1.72%	0.46%	1.66%	
1991 2000	5.6576	1.7270	0.4070	1.0070	
P. Crowth Acc	counting 2: Inclu	ding Adjustman	te for Human Canital		
B. Annual Gr	with Pates	ung Aujustinen	ts for Human Capitan		
D.1 Annual Or	owin Rules				
1961-1970	2.68%	1.54%	4.93%		
1971-1980	4.15%	2.28%	5.85%		
1981-1990	0.10%	2.70%	-0.80%		
1991-2000	3.83%	3.20%	1.39%		
B.2 Contributio	on to Output Gre	pwth (TFP2 = S	olow Residual after Con	trolling for Human Capital)	
1061 1070	2 690/	1.020/	1.620/	0.0	20/
1071 1080	2.0870	1.03%	1.03%	0.6	12.70 SO04
1081 1000	4.15%	1.93%	0.26%	1.	15%
1991-2000	3 83%	2 1 4 %	-0.20%	-1	13%
1991-2000	5.6570	2.1470	0.4070	1.2	.570
C. Growth Acc	counting 3: Inclu	ding Adjustmen	ts for Inputs Utilization :	and Human Capital	
C.1 Annual Gr	owth Rates	• •	X	*	
1961-1970	2.68%				
1971-1980	4.15%				
1981-1990	0.10%	2.11%	-0.95%		
1991-2000	3.83%	2.62%	1.37%		
C.2 Contribution	on to Output Gre	owth (TFP3 = S	olow Residual after Con	trolling for Inputs Utilization an	d Human Capital)
1961-1970	2.68%				
1971-1980	4.15%				
1981-1990	0.10%	1.41%	-0.31%		-1.00%
1991-2000	3.83%	1.76%	0.45%		1.62%

Mem

emo:					
		Growth	Rates		Change
	Capital	Human Capital	Employment	Worked Hours	Unemployment
	Utilization	Stock			Rate
1961-1970		-0.81%			
1971-1980		-0.12%			
1981-1990	-0.15%	0.33%	2.22%	0.21%	1.43%
1991-2000	-0.02%	0.64%	2.54%	-0.57%	0.20%

Selected Calculations:

- 1. Human Capital Stock (H): Weighted average of educational attainment by shares of the adult population with different educational levels. The social returns to education are obtained from Psacharopoulos (1994). The categories and their respective returns are: No Education (benchmark) = 1, Incomplete Primary Education = 1.68, Complete Primary Education = 2.69, Incomplete Secondary Education = 3.91, Complete Secondary Education = 5.53, Incomplete College Education = 5.87, Complete College Education = 8.80.
- Clabor Adjusted for Human Capital (HL) = Labor * H.
 Labor Adjusted for Human Capital (HL) = Labor * H.
 Labor Adjusted for Human Capital and Employment = HL * (1- Unemployment rate) * Participation Rate * Worked Hours.
- 4. Physical Capital Adjusted for Utilization = Physical Capital * (1-Unemployment Rate).

Sources:	
GDP	Authors' construction using Summers and Heston (1991) and The World Bank (2002).
Working-Age Population	WDI
Capital	Authors' construction using Nehru and Dareshwar (1993) and The World Bank (2002).
Human Capital	Authors' calculations using data from Barro and Lee (2000) and Psacharopoulos (1994)
Unemployment Rate	Splicing using series from Antelo (2000) and ECLAC
Employment	Splicing using series from WDI and ECLAC
Worked Hours	Splicing using series from ILO and authors' estimations using information on unemploment rate and per-capita GDP
Capital Share	Bernanke and Gurkaynak (2001)

Table A.3 Brazil

			Physical	Total Fact	or Productivity
	Output	Labor	Capital	TFP1	TFP2 TFP3
A. Growth Acc	counting: Traditi	onal-Solow Res	idual		
A.1 Annual Gr	owth Rates				
1061 1070	6 120/	2.05%	6 400/		
1071 1020	0.15%	2.04%	0.49%		
19/1-1980	8.40%	3.04%	9.04%		
1981-1990	1.55%	2.57%	3.74%		
1991-2000	2.71%	2.18%	2.51%		
A.2 Contribution	on to Output Gre	owth (TFP1 = S	olow Residual)		
1061-1070	6 13%	1 08%	2 27%	1 88%	
1071-1080	8.46%	1.98%	3 37%	3 11%	
1081-1000	1 55%	1.53%	1 31%	-1 / 3%	
1001 2000	2 71%	1.42%	0.88%	0.41%	
1991-2000	2.71%	1.42%	0.88%	0.41%	
B. Growth Acc	ounting 2: Inclu	ding Adjustmen	ts for Human Capital		
B.1 Annual Gr	owth Rates				
1961-1970	6.13%	3.78%	6.49%		
1971-1980	8.46%	2.73%	9.64%		
1981-1990	1.55%	3.68%	3.74%		
1991-2000	2.71%	3.20%	2.51%		
B.2 Contributio	on to Output Gre	owth (TFP2 = S	olow Residual after Con	trolling for Human Capital)	
1961-1970	6.13%	2.46%	2.27%	1.4	40%
1971-1980	8.46%	1.77%	3.37%	3.3	31%
1981-1990	1.55%	2.39%	1.31%	-2.	15%
1991-2000	2.71%	2.08%	0.88%	-0.1	25%
C. Growth Acc	counting 3: Inclu	ding Adjustmen	te for Inpute Utilization	und Human Canital	
C.1 Annual Gr	owth Rates	ung Aujustinen	is for inputs of inzation a	ald Human Capital	
1961-1970	6.13%				
1971-1980	8.46%	2.77%	8.92%		
1981-1990	1.55%	4.15%	3.95%		
1991-2000	2.71%	2 57%	2.20%		
1991 2000	2.7170	2.5776	2.2070		
C.2 Contribution	on to Output Gr	owth (TFP3 = S	olow Residual after Con	trolling for Inputs Utilization an	d Human Capital)
1961-1970	6.13%				
1971-1980	8.46%	1.80%	3.12%		3.54%
1981-1990	1.55%	2.70%	1.38%		-2.53%
1991-2000	2.71%	1.67%	0.77%		0.27%

Memo:

		Growth	Rates		Change
	Capital	Human Capital	Employment	Worked Hours	Unemployment
	Utilization	Stock			Rate
1961-1970		0.73%			
1971-1980	0.43%	-0.31%	3.70%	-0.63%	-3.90%
1981-1990	0.21%	1.11%	3.42%	-0.44%	-2.00%
1991-2000	-0.30%	1.02%	1.70%	-0.06%	2.80%

Selected Calculations:

1. Human Capital Stock (H): Weighted average of educational attainment by shares of the adult population with different educational levels. Fundan Capital Stock (H). Wegined average of educational attainment of shares of the adult population with unretent educational reverses the social returns to education are obtained from Psacharopoulos (1994). The categories and their respective returns are: No Education (benchmark) = 1, Incomplete Primary Education = 1.68, Complete Primary Education = 2.69, Incomplete Secondary Education = 3.91, Complete Secondary Education = 5.53, Incomplete College Education = 5.87, Complete College Education = 8.80.
 Labor Adjusted for Human Capital (HL) = Labor * H.

3. Labor Adjusted for Human Capital and Employment = HL * (1- Unemployment rate) * Participation Rate * Worked Hours.

4. Physical Capital Adjusted for Utilization = Physical Capital * (1-Unemployment Rate).

Authors' construction using Summers and Heston (1991) and The World Bank (2002).
WDI
Authors' construction using Nehru and Dareshwar (1993) and The World Bank (2002).
Authors' calculations using data from Barro and Lee (2000) and Psacharopoulos (1994)
ECLAC
Splicing using series from WDI and ILO
Splicing using series from Maddison (1995) and Barros and Corseuil (2001)
Authors' assumption

Table A.4 Chile

OutputLaborCapitalTFP1TFP2TFPA. Growth Accounting: Traditional-Solow Residual A I Annual Growth Rates1961-19704.11%2.21%3.84%1971-19802.86%1.64%1.95%1981-19903.77%1.62%2.91%1991-20006.60%1.53%7.04%A.2 Contribution to Output Growth (TFP1 = Solow Residual)1961-19704.11%1.30%1.57%1971-19802.86%0.97%0.80%1971-19802.86%0.97%0.80%1981-19903.77%0.96%1.19%1981-19903.77%0.96%1.19%1991-20006.60%0.90%2.89%2.81%B. Growth Accounting 2: Including Adjustments for Human Capital B.1 Annual Growth Rates1961-19704.11%2.79%3.84%1971-19802.86%2.68%1.95%1981-19903.77%2.13%2.91%1981-19903.77%2.13%2.91%1991-20006.60%1.52%0.80%1991-19004.11%1.65%1.57%1981-19903.77%1.26%1.19%1981-19903.77%1.26%1.19%1981-20006.60%1.32%2.89%22.39%2.39%2.39%C. Growth Accounting 3: Including Adjustments for Imputs Utilization and Human Capital C.1 Annual Growth Rates1961-19704.11%191-19802.86%3.50%132%2.89% <t< th=""><th></th><th></th><th colspan="2">Physical</th><th colspan="3">Total Factor Productivity</th></t<>			Physical		Total Factor Productivity		
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B.2 Contribution to Output Growth (TFP2 = Solow Residual after Controlling for Human Capital) 1961-1970 4.11% 1.65% 1.57% 0.89% 1971-1980 2.86% 1.58% 0.80% 0.48% 1981-1990 3.77% 1.26% 1.19% 1.32% 1991-2000 6.60% 1.32% 2.89% 2.39% C. Growth Accounting 3: Including Adjustments for Inputs Utilization and Human Capital C.1 Annual Growth Rates 1961-1970 4.11% 1971-1980 2.86% 3.50% 1.58% 1981-1990 3.77% 3.72% 3.09% 1991-2000 6.60% 2.02% 6.67%							
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1981-1990 3.77% 1.26% 1.19% 1.32% 1991-2000 6.60% 1.32% 2.89% 2.39% C. Growth Accounting 3: Including Adjustments for Inputs Utilization and Human Capital C.1 Annual Growth Rates 1961-1970 4.11% 1971-1980 2.86% 3.50% 1.58% 1981-1990 3.77% 3.72% 3.09% 1991-2000 6.60% 2.02% 6.67%	1971-1980	2.86%	1.58%	0.80%	0.	.48%	
1991-2000 6.60% 1.32% 2.89% 2.39% C. Growth Accounting 3: Including Adjustments for Inputs Utilization and Human Capital C.1 Annual Growth Rates	1981-1990	3.77%	1.26%	1.19%	1.	.32%	
C. Growth Accounting 3: Including Adjustments for Inputs Utilization and Human Capital C.1 Annual Growth Rates 1961-1970 4.11% 1971-1980 2.86% 3.50% 1.58% 1981-1990 3.77% 3.72% 3.09% 1991-2000 6.60% 2.02% 6.67%	1991-2000	6.60%	1.32%	2.89%	2.	.39%	
C. Growth Accounting 3: Including Adjustments for Inputs Utilization and Human Capital C.1 Annual Growth Rates 1961-1970 4.11% 1971-1980 2.86% 3.50% 1.58% 1981-1990 3.77% 3.72% 1991-2000 6.60% 2.02%							
C. Growth Accounting 3: Including Adjustments for Inputs Utilization and Human Capital C.1 Annual Growth Rates 1961-1970 4.11% 1971-1980 2.86% 3.50% 1.58% 1981-1990 3.77% 3.72% 3.09% 1991-2000 6.60% 2.02% 6.67%							
1961-1970 4.11% 1971-1980 2.86% 3.50% 1.58% 1981-1990 3.77% 3.72% 3.09% 1991-2000 6.60% 2.02% 6.67%	C. Growth Acco	ounting 3: Inclu	ding Adjustmen	ts for Inputs Utilization a	nd Human Capital		
1961-1970 4.11% 1971-1980 2.86% 3.50% 1.58% 1981-1990 3.77% 3.72% 3.09% 1991-2000 6.60% 2.02% 6.67%	C.1 Annual Gro	wth Rates					
1971-1980 2.86% 3.50% 1.58% 1981-1990 3.77% 3.72% 3.09% 1991-2000 6.60% 2.02% 6.67%	1961-1970	4 11%					
1911-1900 2.80.8 1.50.8 1981-1990 3.77% 3.72% 3.09% 1991-2000 6.60% 2.02% 6.67%	1971-1980	2.86%	3 50%	1 58%			
1941-1990 5.77% 5.72% 5.09% 1991-2000 6.60% 2.02% 6.67%	1971-1980	2.80%	2.70%	2.000/			
1991-2000 6.60% 2.02% 6.67%	1981-1990	3.77%	3.72%	5.09%			
	1991-2000	6.60%	2.02%	6.67%			
C.2 Contribution to Output Growth (TFP3 = Solow Residual after Controlling for Inputs Utilization and Human Capital)	C.2 Contribution	n to Output Gr	owth (TFP3 = S	olow Residual after Con	trolling for Inputs Utilization a	nd Human Capital)	
1961-1970 4.11%	1961-1970	4.11%					
1971-1980 2.86% 2.07% 0.65% 0.15%	1971-1980	2.86%	2.07%	0.65%		0.15%	
1981-1990 3.77% 2.19% 1.27% 0.31%	1981-1990	3.77%	2.19%	1.27%		0.31%	
1991-2000 6.60% 1.19% 2.73% 2.67%	1991-2000	6.60%	1.19%	2.73%		2.67%	

Memo:

		Change			
	Capital	Human Capital	Employment	Worked Hours	Unemployment
	Utilization	Stock			Rate
1961-1970		0.58%			
1971-1980	-0.37%	1.04%	1.65%	0.77%	3.36%
1981-1990	0.18%	0.51%	2.95%	0.24%	-1.60%
1991-2000	-0.35%	0.71%	1.80%	-0.49%	3.15%

Selected Calculations:

1. Human Capital Stock (H): Weighted average of educational attainment by shares of the adult population with different educational levels. Human Capital Stock (H). Wegined average of educational attainment by shares of the adult population with uniferent educational reverses. The social returns to education are obtained from Psacharopoulos (1994). The categories and their respective returns are: No Education (benchmark) = 1, Incomplete Primary Education = 1.68, Complete Primary Education = 2.69, Incomplete Secondary Education = 3.91, Complete Secondary Education = 5.53, Incomplete College Education = 5.87, Complete College Education = 8.80.
 Labor Adjusted for Human Capital (HL) = Labor * H.
 Labor Adjusted for Human Capital and Employment = HL * (1- Unemployment rate) * Participation Rate * Worked Hours.

4. Physical Capital Adjusted for Utilization = Physical Capital * (1-Unemployment Rate).

Sources:	
GDP	Authors' construction using Summers and Heston (1991) and The World Bank (2002).
Working-Age Population	WDI
Capital	Gallego nad Loayza (2002)
Human Capital	Authors' calculations using data from Barro and Lee (2000) and Psacharopoulos (1994)
Unemployment Rate	Gallego and Loayza (2002)
Employment	Gallego and Loayza (2002)
Worked Hours	Gallego and Loayza (2002)
Capital Share	Bernanke and Gurkaynak (2001)
Table A.5 Colombia

		Physical Total Factor Product		or Productivity	
	Output	Labor	Capital	TFP1	TFP2 TFP3
A. Growth Acc	ounting: Traditi	onal-Solow Res	idual		
A.1 Annual Gre	owth Rates				
1961-1970	5.26%	3.19%	4.06%		
1971-1980	5.51%	3.23%	4.94%		
1981-1990	3.38%	2.82%	4.36%		
1991-2000	2.68%	2.36%	4.09%		
A.2 Contributio	on to Output Gre	owth (TFP1 = S	olow Residual)		
1961-1970	5.26%	2.07%	1.42%	1.77%	
1971-1980	5.51%	2.10%	1.73%	1.68%	
1981-1990	3.38%	1.83%	1.53%	0.02%	
1991-2000	2.68%	1.53%	1.43%	-0.29%	
B. Growth Acc	ounting 2: Inclu	iding Adjustmen	ts for Human Capital		
B.1 Annual Gro	owth Rates				
1961-1970	5 26%	2 83%	4.06%		
1071-1080	5.51%	5.60%	4.00%		
1981-1990	3 38%	3.40%	4.36%		
1991-2000	2.68%	3.46%	4.09%		
1991 2000	2.0070	5.2070	4.07/0		
B.2 Contributio	on to Output Gre	owth (TFP2 = S	olow Residual after Con	trolling for Human Capital)	
1961-1970	5.26%	1.84%	1.42%	2.0	0%
1971-1980	5.51%	3.64%	1.73%	0.1	4%
1981-1990	3.38%	2.21%	1.53%	-0.3	6%
1991-2000	2.68%	2.12%	1.43%	-0.8	7%
C Growth Acc	ounting 2. Inch	ding Adjustmon	to for Inputs Litilization	and Human Capital	
C LAnnual Gr	with Ratas	ung Aujustmen	is for inputs offization.	and Human Capitan	
C.I Annual Or	Jwin Rules				
1961-1970	5.26%				
1971-1980	5.51%	7.20%	5.25%		
1981-1990	3 38%	6.20%	4 31%		
1991-2000	2.68%	1.67%	3 11%		
1991 2000	2.0070	1.0770	5.11%		
C.2 Contributio	on to Output Gro	owth (TFP3 = S	olow Residual after Cor	ntrolling for Inputs Utilization and	l Human Capital)
1961-1970	5.26%				
1971-1980	5.51%	4.68%	1.84%		-1.01%
1981-1990	3.38%	4.03%	1.51%		-2.16%
1991-2000	2.68%	1.09%	1.09%		0.51%

Memo:

		Change			
	Capital Human Capital Employment Worked Hours				Unemployment
	Utilization	Stock			Rate
1961-1970	0.04%	-0.36%			-0.38%
1971-1980	0.30%	2.37%	5.14%	-0.40%	-2.69%
1981-1990	-0.05%	0.58%	6.14%	-0.52%	0.50%
1991-2000	-0.94%	0.90%	2.00%	-0.31%	8.30%

Selected Calculations:

1. Human Capital Stock (H): Weighted average of educational attainment by shares of the adult population with different educational levels. The social returns to education are obtained from Psacharopoulos (1994). The categories and their respective returns are: No Education (benchmark) = 1, Incomplete Primary Education = 1.68, Complete Primary Education = 2.69, Incomplete Secondary Education = 3.91, Complete Secondary Education = 5.53, Incomplete College Education = 5.87, Complete College Education = 8.80.

Clabor Adjusted for Human Capital (HL) = Labor * H.
 Labor Adjusted for Human Capital (HL) = Labor * H.
 Labor Adjusted for Human Capital and Employment = HL * (1- Unemployment rate) * Participation Rate * Worked Hours.

Sources:	
GDP	Authors' construction using Summers and Heston (1991) and The World Bank (2002).
Working-Age Population	WDI
Capital	Authors' construction using Nehru and Dareshwar (1993) and The World Bank (2002).
Human Capital	Authors' calculations using data from Barro and Lee (2000) and Psacharopoulos (1994)
Unemployment Rate	Central Bank of Colombia
Employment	Splicing using series from University of Los Andes, Central Bank of Colombia, and ILO
Worked Hours	Splicing using series from Maddison (1995) and ILO
Capital Share	Bernanke and Gurkaynak (2001)

Table A.6 Costa Rica

			Physical	Total Facto	r Productivity
	Output	Labor	Capital	TFP1	TFP2 TFP3
A. Growth Acc	ounting: Traditi	onal-Solow Res	idual		
A.1 Annual Gro	owth Rates				
1011 1050			1 0001		
1961-1970	6.05%	4.56%	6.90%		
1971-1980	5.64%	4.04%	8.76%		
1981-1990	2.41%	3.16%	3.78%		
1991-2000	5.25%	2.46%	5.47%		
A.2 Contributio	on to Output Gre	owth $(TFP1 = S)$	olow Residual)		
1961-1970	6.05%	3.33%	1.86%	0.86%	
1971-1980	5.64%	2.95%	2.37%	0.33%	
1981-1990	2.41%	2.31%	1.02%	-0.92%	
1991-2000	5.25%	1.80%	1.48%	1.98%	
D. Counth Ass		Las A Lastan	for Herrice Constant		
B. Growth Acc	ounting 2: Inclu	aing Aajustmen	is for Human Capital		
B.1 Annual Gro	owth Rates				
1961-1970	6.05%	4 45%	6 90%		
1971-1980	5 64%	6.21%	8 76%		
1981-1990	2.41%	3 99%	3 78%		
1991-2000	5 25%	3 30%	5.47%		
1991 2000	012070	5.5070	5.1770		
B.2 Contributio	on to Output Gre	owth (TFP2 = S	olow Residual after Con	trolling for Human Capital)	
10/1 1070	6.05%	2.25%	1.040/		10/
1961-1970	6.05%	3.25%	1.86%	0.94	F%
19/1-1980	5.64%	4.53%	2.37%	-1.20	5%
1981-1990	2.41%	2.91%	1.02%	-1.5	2%
1991-2000	5.25%	2.41%	1.48%	1.36	5%
C Growth Acc	ounting 3. Inclu	ding Adjustmen	ts for Inputs Utilization	and Human Canital	
C.1 Annual Gre	owth Rates	ung rujustnen	is for inputs of inzation	and Human Capitan	
0.1 111111111 011	som runes				
1961-1970	6.05%				
1971-1980	5.64%				
1981-1990	2.41%	4.37%	3.92%		
1991-2000	5.25%	3.49%	5.40%		
	012070	5 , , , ,	511070		
C.2 Contributio	on to Output Gr	owth (TFP3 = S	olow Residual after Con	ntrolling for Inputs Utilization and	Human Capital)
1961-1970	6.05%				
1071-1970	5.64%				
1081-1000	2.0470 2.41%	3 10%	1.06%		-1 8/104
1001 2000	2.4170 5.250/	3.1770	1.0070		-1.0470
1991-2000	5.23%	2.33%	1.40%		1.24%

Memo:

		Change			
	Capital Human Capital Employment Worked Hours				Unemployment
	Unitzation	STOCK			Kate
1961-1970		-0.11%			
1971-1980		2.17%			
1981-1990	0.14%	0.83%	3.45%	0.06%	-1.30%
991-2000	-0.06%	0.84%	2.63%	-0.43%	0.60%

Selected Calculations:

Selected Calculations:
 Human Capital Stock (H): Weighted average of educational attainment by shares of the adult population with different educational levels. The social returns to education are obtained from Psacharopoulos (1994). The categories and their respective returns are: No Education (benchmark) = 1, Incomplete Primary Education = 1.68, Complete Primary Education = 2.69, Incomplete Secondary Education = 3.91, Complete Secondary Education = 5.53, Incomplete College Education = 5.87, Complete College Education = 8.80.
 Labor Adjusted for Human Capital (HL) = Labor * H.
 Labor Adjusted for Human Capital and Employment = HL * (1- Unemployment rate) * Participation Rate * Worked Hours.

Sources:	
GDP	Authors' construction using Summers and Heston (1991) and The World Bank (2002).
Working-Age Population	WDI
Capital	Authors' construction using Nehru and Dareshwar (1993) and The World Bank (2002).
Human Capital	Authors' calculations using data from Barro and Lee (2000) and Psacharopoulos (1994)
Unemployment Rate	ILO
Employment	ILO
Worked Hours	Splicing using series from ILO and authors' estimations using information on unemploment rate and per-capita GDP
Capital Share	Bernanke and Gurkaynak (2001)

Table A.7 Dominican Republic

			Physical	Total Factor Productivity		ivity
	Output	Labor	Capital	TFP1	TFP2	TFP3
A. Growth Acc	ounting: Traditi	onal-Solow Res	bidual			
A.1 Annual Gro	owth Rates					
10/1 1070	5 770	2.220	5 700			
1961-1970	5.77%	3.23%	5.72%			
19/1-1980	6.93%	3.48%	10.94%			
1981-1990	2.55%	3.09%	5.57%			
1991-2000	5.91%	2.38%	4.15%			
120 111						
A.2 Contributio	on to Output Gre	owth (IFPI = S	olow Resiaual)			
1961-1970	5 77%	2 10%	2.00%	1.67%		
1071-1080	6.03%	2.16%	3.83%	0.84%		
1081-1000	2.55%	2.20%	1.05%	-1.41%		
1001 2000	5.01%	1 55%	1.75%	2 01%		
1991-2000	5.91%	1.55%	1.4.370	2.9170		
B. Growth Acc	ounting 2: Inclu	ding Adjustmen	ts for Human Capital			
B. I Annual Gra	owth Rates					
1961-1970	5.77%	4.97%	5.72%			
1971-1980	6.93%	4.34%	10.94%			
1981-1990	2.55%	4.40%	5.57%			
1991-2000	5.91%	3.10%	4.15%			
B.2 Contributio	on to Output Gre	owth (TFP2 = S	olow Residual after Con	trolling for Human Capital)		
1961-1970	5.77%	3.23%	2.00%		0.54%	
1971-1980	6.93%	2.82%	3.83%		0.28%	
1981-1990	2.55%	2.86%	1.95%		-2.26%	
1991-2000	5.91%	2.02%	1.45%		2.44%	
C. Growth Acc	ounting 3: Inclu	ding Adjustmen	ts for Inputs Utilization a	and Human Capital		
C.I Annual Gro	owth Rates					
1961-1970	5 77%					
1071 1080	6.02%					
19/1-1980	0.55%	•••				
1981-1990	2.55%					
1991-2000	5.91%	3.51%	4.96%			
C.2 Contributio	on to Output Gr	owth (TFP3 = S	olow Residual after Con	ntrolling for Inputs Utilizatio	on and Human C	'apital)
				<i>37</i> 1		
1961-1970	5.77%					
1971-1980	6.93%					
1981-1990	2.55%					

Memo:

1991-2000

		Change			
	Capital Human Capital Employment Worked Hours				Unemployment
	Utilization	Stock			Rate
1961-1970		1.74%			
1971-1980		0.86%			
1981-1990		1.31%			
1992-1997	0.46%	0.72%	2.76%	1.53%	-3.80%

1.74%

1.89%

Selected Calculations:

1. Human Capital Stock (H): Weighted average of educational attainment by shares of the adult population with different educational levels. The social returns to education are obtained from Psacharopoulos (1994). The categories and their respective returns are: No Education (benchmark) = 1, Incomplete Primary Education = 1.68, Complete Primary Education = 2.69, Incomplete Secondary Education = 3.91, Complete Secondary Education = 5.53, Incomplete College Education = 5.87, Complete College Education = 8.80.

5.91%

Cabor Adjusted for Human Capital (III) = Labor * H.
 Labor Adjusted for Human Capital (III) = Labor * H.
 Labor Adjusted for Human Capital and Employment = HL * (1- Unemployment rate) * Participation Rate * Worked Hours.

4. Physical Capital Adjusted for Utilization = Physical Capital * (1-Unemployment Rate).

2.28%

Authors' construction using Summers and Heston (1991) and The World Bank (2002).
WDI
Authors' construction using Nehru and Dareshwar (1993) and The World Bank (2002).
Authors' calculations using data from Barro and Lee (2000) and Psacharopoulos (1994)
Splicing using series from ECLAC and ILO
Splicing using series from WDI and ILO
ILO
Authors' assumption

Table A.8 Ecuador

			Physical	Total Fact	or Productivity
	Output	Labor	Capital	TFP1	TFP2 TFP3
A. Growth Acc	ounting: Traditi	onal-Solow Res	dual		
A.1 Annual Gro	owth Rates				
10/1 1070	1.000/	2.02%	1.020/		
1961-1970	4.29%	2.93%	4.82%		
19/1-1980	8.90%	3.26%	7.34%		
1981-1990	2.09%	3.28%	3.06%		
1991-2000	1.76%	2.88%	2.14%		
A.2 Contributio	on to Output Gre	owth (TFP1 = South)	olow Residual)		
1961-1970	4 29%	1.90%	1 69%	0.70%	
1971-1980	8.90%	2 12%	2 57%	4 21%	
1981-1990	2.09%	2.12%	1.07%	-1 11%	
1991-2000	1.76%	1.87%	0.75%	0.86%	
1771-2000	1.70%	1.0770	0.7570	-0.80%	
B. Growth Acc B.1 Annual Gro	counting 2: Inclu owth Rates	ding Adjustmen	s for Human Capital		
1961-1970	4.29%	3.45%	4.82%		
1971-1980	8.90%	7.14%	7.34%		
1981-1990	2.09%	3.41%	3.06%		
1991-2000	1.76%	3.56%	2.14%		
B.2 Contributio	on to Output Gre	owth (TFP2 = South)	olow Residual after Co	ntrolling for Human Capital)	
1961-1970	4.29%	2.24%	1.69%	0.3	6%
1971-1980	8.90%	4.64%	2.57%	1.6	9%
1981-1990	2.09%	2.22%	1.07%	-1.3	20%
1991-2000	1.76%	2.31%	0.75%	-1.3	30%
C. Growth Acc	ounting 3: Inclu	ding Adjustmen	s for Inputs Utilization	and Human Capital	
C.I Annual Gr	owth Rates				
1961-1970	4 29%				
1071-1080	9.20%		•••		
1981-1990	2.00%	4 11%	3 02%		
1981-1990	2.09%	4.1170	1 24%		
1991-2000	1.70%	2.7370	1.2470		
C.2 Contributio	on to Output Gre	owth (TFP3 = S	olow Residual after Co	ntrolling for Inputs Utilization and	d Human Capital)
1961-1970	4.29%				
1971-1980	8.90%				
1981-1990	2.09%	2.67%	1.06%		-1.64%
1991-2000	1 76%	1 79%	0.43%		-0.46%

Memo:

		Change			
	Capital	Unemployment			
	Utilization	Stock			Rate
1961-1970		0.52%			
1971-1980		3.88%			
1981-1990	-0.04%	0.13%	3.45%	0.50%	0.40%
1991-2000	-0.89%	0.68%	2.06%	0.07%	8.00%

Selected Calculations:

Selected Calculations:
 Human Capital Stock (H): Weighted average of educational attainment by shares of the adult population with different educational levels. The social returns to education are obtained from Psacharopoulos (1994). The categories and their respective returns are: No Education (benchmark) = 1, Incomplete Primary Education = 1.68, Complete Primary Education = 2.69, Incomplete Secondary Education = 3.91, Complete Secondary Education = 5.53, Incomplete College Education = 5.87, Complete College Education = 8.80.
 Labor Adjusted for Human Capital (HL) = Labor * H.
 Labor Adjusted for Human Capital and Employment = HL * (1- Unemployment rate) * Participation Rate * Worked Hours.

Sources:	
GDP	Authors' construction using Summers and Heston (1991) and The World Bank (2002).
Working-Age Population	WDI
Capital	Authors' construction using Nehru and Dareshwar (1993) and The World Bank (2002).
Human Capital	Authors' calculations using data from Barro and Lee (2000) and Psacharopoulos (1994)
Unemployment Rate	ILO
Employment	ILO
Worked Hours	Authors' estimations using information on unemploment rate and per-capita GDP
Capital Share	Authors' assumption

Table A.9 El Salvador

			Physical	Total Factor Productiv	
	Output	Labor	Capital	TFP1	TFP2 TFP3
A. Growth Acc	ounting: Tradition	onal-Solow Res	idual		
A.1 Annual Gro	owth Rates				
1011 1080					
1961-1970	5.64%	3.49%	6.60%		
1971-1980	2.27%	2.51%	7.19%		
1981-1990	-0.39%	1.94%	1.73%		
1991-2000	4.56%	2.83%	4.84%		
A.2 Contributio	on to Output Gre	owth (TFP1 = S	olow Residual)		
1061 1070	5 640/	2.020/	2 770/	0.940/	
1901-1970	3.04%	2.02%	2.77%	0.84%	
19/1-1980	2.27%	1.40%	3.02%	-2.21%	
1981-1990	-0.39%	1.15%	0.73%	-2.24%	
1991-2000	4.56%	1.64%	2.03%	0.89%	
B. Growth Acc	ounting 2: Inclu	ding Adjustmen	ts for Human Capital		
B.1 Annual Gro	owth Rates				
1961-1970	5.64%	4.97%	6.60%		
1971-1980	2.27%	3.13%	7.19%		
1981-1990	-0.39%	3.27%	1.73%		
1991-2000	4.56%	3.92%	4.84%		
			1 0 1 1 6 6		
B.2 Contributio	n to Output Gre	owin (IFF2 = 3)	olow Kesiauai ajier Col	ntrouing for Human Capital)	
1961-1970	5 64%	2.88%	2.77%	-0.0	1%
1971-1980	2.27%	1.82%	3.02%	-2.5	7%
1981-1990	-0.39%	1.90%	0.73%	-3.0	1%
1991-2000	4 56%	2 27%	2.03%	0.2	5%
1991 2000	4.50%	2.2770	2.0370	0.2.	570
C. Growth Acce	ounting 3: Inclue	ding Adjustmen	ts for Inputs Utilization	and Human Capital	
C.1 Annual Gre	owth Rates				
1961-1970	5 64%				
1071 1080	2.27%	•••			
19/1-1980	2.27%	2.000/	2.07%		
1981-1990	-0.39%	3.89%	2.07%		
1991-2000	4.56%	4.84%	5.24%		
C.2 Contributio	on to Output Gre	owth (TFP3 = S	olow Residual after Co	ntrolling for Inputs Utilization and	l Human Capital)
1061 1070	5 640/				
1071 1080	2.04%				
19/1-1980	2.2/70	2.26%	0.87%		2 520/
1701-1990	-0.39%	2.20%	0.8/70		-3.32%
1991-2000	4.56%	2.81%	2.20%		-0.45%

Memo:

		Change			
	Capital Human Capital Employment Worked Hours				Unemployment
	Utilization	Stock			Rate
961-1970		1.48%			
971-1980		0.62%		-0.73%	
981-1990	0.33%	1.33%	2.55%	-0.03%	-2.94%
991-2000	0.38%	1.09%	4.01%	-0.28%	-3.46%

Selected Calculations:

Selected Calculations:
 Human Capital Stock (H): Weighted average of educational attainment by shares of the adult population with different educational levels. The social returns to education are obtained from Psacharopoulos (1994). The categories and their respective returns are: No Education (benchmark) = 1, Incomplete Primary Education = 1.68, Complete Primary Education = 2.69, Incomplete Secondary Education = 3.91, Complete Secondary Education = 5.53, Incomplete College Education = 5.87, Complete College Education = 8.80.
 Labor Adjusted for Human Capital (HL) = Labor * H.
 Labor Adjusted for Human Capital and Employment = HL * (1- Unemployment rate) * Participation Rate * Worked Hours.

Sources	
GDP	Authors' construction using Summers and Heston (1991) and The World Bank (2002).
Working-Age Population	WDI
Capital	Authors' construction using Nehru and Dareshwar (1993) and The World Bank (2002).
Human Capital	Authors' calculations using data from Barro and Lee (2000) and Psacharopoulos (1994)
Unemployment Rate	Splicing using series from ECLAC and ILO
Employment	Splicing using series from ECLAC, WDI, and ILO
Worked Hours	Splicing using series from ILO and authors' estimations using information on unemploment rate and per-capita GDP
Capital Share	Bernanke and Gurkaynak (2001)

Table A.10 Guatemala

			Physical	Total Facto	Total Factor Productivity		
	Output	Labor	Capital	TFP1	TFP2 TFP3		
A. Growth Acc	ounting: Traditi	onal-Solow Res	idual				
A.1 Annual Gro	owth Rates						
10/1 1070	5 500/	2.0.4%	5 1201				
1961-1970	5.50%	2.84%	5.43%				
19/1-1980	5.65%	2.62%	6.33%				
1981-1990	0.87%	2.47%	1.99%				
1991-2000	4.06%	3.23%	3.76%				
A.2 Contributio	on to Output Gre	owth (TFP1 = South)	olow Residual)				
1061 1070	5 500/	1.950/	1.000/	1 750/			
1901-1970	5.50%	1.85%	1.90%	1.75%			
1971-1980	5.65%	1.70%	2.22%	1.75%			
1981-1990	0.87%	1.01%	0.70%	-1.45%			
1991-2000	4.06%	2.10%	1.32%	0.64%			
B. Growth Acc B.1 Annual Gro	ounting 2: Inclu owth Rates	ding Adjustment	ts for Human Capital				
1961-1970	5.50%	3.28%	5.43%				
1971-1980	5.65%	4.69%	6.33%				
1981-1990	0.87%	3.20%	1.99%				
1991-2000	4.06%	4.05%	3.76%				
B.2 Contributio	on to Output Gre	owth (TFP2 = South)	olow Residual after Co	ntrolling for Human Capital)			
1061 1070	5 500/	2 120/	1.000/	1.4	70/		
1901-1970	5.50%	2.15%	1.90%	1.4	/ %0		
1971-1980	5.05%	3.03%	2.22%	0.5	770 10/		
1981-1990	0.87%	2.08%	0.70%	-1.9	1%		
1991-2000	4.00%	2.03%	1.32%	0.1	1 70		
C. Growth Acc C.1 Annual Gro	ounting 3: Inclusowth Rates	ding Adjustmen	ts for Inputs Utilization	and Human Capital			
1961-1970	5.50%						
1971-1980	5.65%						
1981-1990	0.87%	1 21%	1 56%				
1991-2000	4.06%	2.66%	4.03%				
1))1-2000	4.00%	2.00%	4.05%				
C.2 Contributio	on to Output Gre	owth (TFP3 = S)	olow Residual after Co	ntrolling for Inputs Utilization and	! Human Capital)		
1961-1970	5.50%						
1971-1980	5.65%						
1981-1990	0.87%	0.79%	0.55%		-0.46%		
1991-2000	4.06%	1.73%	1.41%		0.92%		

Memo:

		Change			
	Capital Human Capital Employment Worked Hours Utilization Stock				Unemployment Rate
1961-1970		0.44%			
1971-1980		2.07%			
1981-1990	-0.43%	0.73%	0.39%	0.09%	4.10%
991-2000	0.26%	0.82%	2.11%	-0.27%	-2.50%

Selected Calculations:

1. Human Capital Stock (H): Weighted average of educational attainment by shares of the adult population with different educational levels. Fundan Capital Stock (H). Wegined average of educational attainment of shares of the adult population with unretent educational reverses the social returns to education are obtained from Psacharopoulos (1994). The categories and their respective returns are: No Education (benchmark) = 1, Incomplete Primary Education = 1.68, Complete Primary Education = 2.69, Incomplete Secondary Education = 3.91, Complete Secondary Education = 5.53, Incomplete College Education = 5.87, Complete College Education = 8.80.
 Labor Adjusted for Human Capital (HL) = Labor * H.

3. Labor Adjusted for Human Capital and Employment = HL * (1- Unemployment rate) * Participation Rate * Worked Hours.

Sources:	
GDP	Authors' construction using Summers and Heston (1991) and The World Bank (2002).
Working-Age Population	WDI
Capital	Authors' construction using Nehru and Dareshwar (1993) and The World Bank (2002).
Human Capital	Authors' calculations using data from Barro and Lee (2000) and Psacharopoulos (1994)
Unemployment Rate	ILO
Employment	ILO
Worked Hours	Authors' estimations using information on unemploment rate and per-capita GDP
Capital Share	Authors' assumption

Table A.11 Honduras

			Physical	Total Factor Productivity		
	Output	Labor	Capital	TFP1	TFP2	TFP3
A Growth Ag	ounting: Traditi	onal Solow Poo	idual			
A. LAnnual Cr	outling. Traditi	onal-Solow Res	luuai			
A.I Annual Gr	owin Rules					
1961-1970	4.76%	2.82%	5.58%			
1971-1980	5.39%	3.38%	6.17%			
1981-1990	2.43%	3.54%	3.15%			
1991-2000	3.21%	3.49%	5.22%			
A.2 Contribution	on to Output Gre	owth (TFP1 = S	olow Residual)			
1061 1070	1.7.6%	1.020/	1.05%	0.070/		
1961-1970	4.76%	1.83%	1.95%	0.97%		
1971-1980	5.39%	2.20%	2.16%	1.03%		
1981-1990	2.43%	2.30%	1.10%	-0.97%		
1991-2000	3.21%	2.27%	1.83%	-0.89%		
D. Counth Ass		Las A Passasa	te for Harris Conital			
B. Glowin Acc	ounting 2: Inclu	ang Aajustinen	is for Human Capital			
B.I Annual Gr	owin Rales					
1961-1970	4.76%	3.53%	5.58%			
1971-1980	5.39%	4.51%	6.17%			
1981-1990	2.43%	6.01%	3.15%			
1991-2000	3.21%	4.40%	5.22%			
B.2 Contribution	on to Output Gre	owth (TFP2 = S	olow Residual after Con	trolling for Human Capital)		
1061 1070	4 76%	2 20%	1.05%	() 510/	
1901-1970	4.70% 5.20%	2.29%	2 16%	() 2004	
19/1-1980	2.39%	2.93%	2.10%		2.50%	
1981-1990	2.45%	3.91%	1.10%		2.38%	
1991-2000	5.21%	2.80%	1.83%	-	1.40%	
C Growth Acc	counting 3. Inclu	ding Adjustmen	ts for Inputs Utilization :	and Human Capital		
C.1 Annual Gr	owth Rates	ung rujustnen	to for inputs of inzation i	and Human Capital		
1961-1970	4.76%					
1971-1980	5.39%	3.16%	6.06%			
1981-1990	2.43%	4.59%	3.26%			
1991-2000	3.21%	8.15%	5.33%			
C.2 Contributi	on to Output Gr	owth (TFP3 = S	olow Residual after Con	trolling for Inputs Utilization a	and Human Caj	vital)
1961-1970	4 76%					
1071-1080	5 30%	2.05%	2 12%			1 22%
1081-1000	2 / 3%	2.05%	1 1/1%			-1 60%
1001-2000	3 21%	5 30%	1.14/0			-3.05%
1771-2000	J.2170	5.5070	1.0/70			-3.7370

Memo:

		Change			
	Capital Human Capital Employment Worked Hours				Unemployment
	Utilization	Stock			Rate
1961-1970		0.71%			
1971-1980	-0.11%	1.13%	2.51%	-0.49%	
1981-1990	0.11%	2.47%	1.99%	0.07%	-1.00%
1991-2000	0.10%	0.91%	6.94%	0.21%	-1.00%

Selected Calculations:

1. Human Capital Stock (H): Weighted average of educational attainment by shares of the adult population with different educational levels. Human Capital Stock (H). Wegined average of educational attainment by shares of the adult population with uniferent educational reverses. The social returns to education are obtained from Psacharopoulos (1994). The categories and their respective returns are: No Education (benchmark) = 1, Incomplete Primary Education = 1.68, Complete Primary Education = 2.69, Incomplete Secondary Education = 3.91, Complete Secondary Education = 5.53, Incomplete College Education = 5.87, Complete College Education = 8.80.
 Labor Adjusted for Human Capital (HL) = Labor * H.
 Labor Adjusted for Human Capital and Employment = HL * (1- Unemployment rate) * Participation Rate * Worked Hours.

Sources:	
GDP	Authors' construction using Summers and Heston (1991) and The World Bank (2002).
Working-Age Population	WDI
Capital	Authors' construction using Nehru and Dareshwar (1993) and The World Bank (2002).
Human Capital	Authors' calculations using data from Barro and Lee (2000) and Psacharopoulos (1994)
Unemployment Rate	ILO
Employment	ILO
Worked Hours	Authors' estimations using information on unemploment rate and per-capita GDP
Capital Share	Authors' assumption

Table A.12 Jamaica

	Physical		Physical	Total Factor Productivity		
	Output	Labor	Capital	TFP1	TFP2 TFP3	
A. Growth Acc	ounting: Traditi	onal-Solow Res	idual			
A.1 Annual Gro	owth Rates					
10/1 1070	1.000	0.220	5 100/			
1961-1970	4.82%	0.33%	5.13%			
19/1-1980	-0.79%	2.19%	2.22%			
1981-1990	2.46%	2.16%	0.26%			
1991-2000	0.31%	1.61%	4.74%			
A.2 Contributio	on to Output Gre	pwth (TFP1 = S	olow Residual)			
10(1 1070	4.930/	0.20%	2.05%	2.57%		
1901-1970	4.82%	0.20%	2.03%	2.00%		
19/1-1980	-0.79%	1.31%	0.89%	-2.99%		
1981-1990	2.46%	1.30%	0.10%	1.06%		
1991-2000	0.31%	0.97%	1.90%	-2.55%		
B. Growth Acc	ounting 2: Inclu	ding Adjustmen	ts for Human Capital			
B.1 Annual Gro	owth Rates					
1961-1970	4 82%	1 55%	5 13%			
1971-1980	-0.79%	3 71%	2 22%			
1981-1990	2.46%	3 20%	0.26%			
1991-2000	0.31%	2 34%	4 74%			
1))1 2000	0.5170	2.5470	4.7470			
B.2 Contributio	on to Output Gre	owth (TFP2 = S	olow Residual after Co	ntrolling for Human Capital)		
1961-1970	4.82%	0.93%	2.05%	1.8	4%	
1971-1980	-0.79%	2.23%	0.89%	-3.9	90%	
1981-1990	2.46%	1.92%	0.10%	0.4	4%	
1991-2000	0.31%	1.40%	1.90%	-2.9	99%	
C. Growth Acc	ounting 3: Inclu	ding Adjustmen	ts for Inputs Utilization	and Human Capital		
C.1 Annual Gr	owth Rates					
1061 1070	4 8294					
1901-1970	4.82%	2 110/	0.05%			
1971-1980	-0.79%	2.11%	0.95%			
1981-1990	2.46%	3.77%	1.75%			
1991-2000	0.31%	1.72%	4.77%			
C.2 Contributio	on to Output Gre	owth (TFP3 = S	olow Residual after Co	ntrolling for Inputs Utilization and	l Human Capital)	
1961-1970	4.82%					
1971-1980	-0.79%	1.27%	0.38%		-2.44%	
1981-1990	2.46%	2.26%	0.70%		-0.50%	
1991-2000	0.31%	1.03%	1.91%		-2.63%	

Memo:

		Change			
	Capital Human Capital Employment Worked Hours				Unemployment
	Utilization	Stock			Rate
1961-1970		1.22%			
1971-1980	-1.24%	1.52%	1.24%	-0.65%	9.65%
1981-1990	1.48%	1.04%	2.52%	0.18%	-11.55%
1991-2000	0.02%	0.73%	0.92%	0.06%	-0.20%

Selected Calculations:

1. Human Capital Stock (H): Weighted average of educational attainment by shares of the adult population with different educational levels. Human Capital Stock (H). Wegined average of educational attainment by shares of the adult population with uniferent educational reverses. The social returns to education are obtained from Psacharopoulos (1994). The categories and their respective returns are: No Education (benchmark) = 1, Incomplete Primary Education = 1.68, Complete Primary Education = 2.69, Incomplete Secondary Education = 3.91, Complete Secondary Education = 5.53, Incomplete College Education = 5.87, Complete College Education = 8.80.
 Labor Adjusted for Human Capital (HL) = Labor * H.
 Labor Adjusted for Human Capital and Employment = HL * (1- Unemployment rate) * Participation Rate * Worked Hours.

Sources:	
GDP	Authors' construction using Summers and Heston (1991) and The World Bank (2002).
Working-Age Population	WDI
Capital	Authors' construction using Nehru and Dareshwar (1993) and The World Bank (2002).
Human Capital	Authors' calculations using data from Barro and Lee (2000) and Psacharopoulos (1994)
Unemployment Rate	ILO and ECLAC
Employment	ILO and ECLAC
Worked Hours	ECLAC
Capital Share	Bernanke and Gurkaynak (2001)

Table A.13 Mexico

		Physical Tot		Total Fact	or Productivity
	Output	Labor	Capital	TFP1	TFP2 TFP3
A. Growth Acc	ounting: Traditi	onal-Solow Res	idual		
A.1 Annual Gro	owth Rates				
10(1 1070	6 720/	2.06%	8 100/		
1901-1970	6./5%	2.96%	8.10%		
19/1-1980	6.68%	3.31%	8.48%		
1981-1990	1.81%	3.32%	4.12%		
1991-2000	3.50%	2.57%	3.83%		
A.2 Contributio	on to Output Gre	owth (TFP1 = South)	olow Residual)		
1061 1070	6 72%	1 75%	2 220/	1 66%	
1071 1080	6.68%	1.75%	2 48%	1.00%	
19/1-1980	1.00%	1.93%	3.46%	1.23%	
1981-1990	1.81%	1.90%	1.09%	-1.84%	
1991-2000	3.50%	1.52%	1.57%	0.41%	
B. Growth Acc B.1 Annual Gro	ounting 2: Inclu owth Rates	ding Adjustmen	ts for Human Capital		
1961-1970	6.73%	4.61%	8.10%		
1971-1980	6.68%	5.18%	8.48%		
1981-1990	1.81%	5.94%	4.12%		
1991-2000	3.50%	3.17%	3.83%		
B.2 Contributio	on to Output Gre	pwth (TFP2 = Starter)	olow Residual after Cor	ntrolling for Human Capital)	
1061 1070	6720/	2 720/	2 220/	0.4	(O0/
1901-1970	6.75%	2.72%	2 490/	0.0	19%) 50/
19/1-1980	0.08%	3.00%	3.46%	0.1	370
1981-1990	1.81%	3.50%	1.09%	-3	38%) X60/
1991-2000	3.50%	1.8/%	1.57%	0.0	10%
C. Growth Acc C.1 Annual Gro	ounting 3: Inclu owth Rates	ding Adjustmen	ts for Inputs Utilization	and Human Capital	
1961-1970	6.73%				
1971-1980	6.68%				
1981-1990	1.81%	5.60%	4.32%		
1991-2000	3.50%	3.04%	3.88%		
C.2 Contributio	on to Output Gr	powth (TFP3 = S)	olow Residual after Co	ntrolling for Inputs Utilization an	d Human Capital)
				G J	,
1961-1970	6.73%				
1971-1980	6.68%				
1981-1990	1.81%	3.30%	1.77%		-3.27%
1991-2000	3.50%	1.79%	1.59%		0.12%

Memo:

		Change			
	Capital	Unemployment			
	Utilization	Stock			Rate
1961-1970		1.65%			
1971-1980		1.87%			
1981-1990	0.19%	2.62%	3.47%	-0.56%	-1.80%
1991-2000	0.05%	0.60%	2.50%	-0.07%	-0.50%

Selected Calculations:

1. Human Capital Stock (H): Weighted average of educational attainment by shares of the adult population with different educational levels. Human Capital Stock (H). Wegined average of educational attainment by shares of the adult population with uniferent educational reverses. The social returns to education are obtained from Psacharopoulos (1994). The categories and their respective returns are: No Education (benchmark) = 1, Incomplete Primary Education = 1.68, Complete Primary Education = 2.69, Incomplete Secondary Education = 3.91, Complete Secondary Education = 5.53, Incomplete College Education = 5.87, Complete College Education = 8.80.
 Labor Adjusted for Human Capital (HL) = Labor * H.
 Labor Adjusted for Human Capital and Employment = HL * (1- Unemployment rate) * Participation Rate * Worked Hours.

Sources:	
GDP	Authors' construction using Summers and Heston (1991) and The World Bank (2002).
Working-Age Population	WDI
Capital	Authors' construction using Nehru and Dareshwar (1993) and The World Bank (2002).
Human Capital	Authors' calculations using data from Barro and Lee (2000) and Psacharopoulos (1994)
Unemployment Rate	ILO and ECLAC
Employment	ILO
Worked Hours	ILO
Capital Share	Bernanke and Gurkaynak (2001)

Table A.14 Nicaragua

			Physical	Total Facto	or Productivity
	Output	Labor	Capital	TFP1	TFP2 TFP3
A. Growth Acc	ounting: Traditi	onal-Solow Res	dual		
A.1 Annual Gro	owth Rates				
1061 1070	6 770/	2 220/	9 120/		
1901-1970	0.77%	2.22%	6.13% 5.07%		
19/1-1980	0.35%	3.32%	5.07%		
1981-1990	-1.36%	3.07%	2.41%		
1991-2000	3.28%	3.44%	1.98%		
A.2 Contributio	on to Output Gre	owth (TFP1 = South)	olow Residual)		
1061 1070	6 77%	2 16%	2 8504	1 76%	
1071 1080	0.77%	2.10%	2.03%	2.580/	
19/1-1980	0.55%	2.10%	1.77%	-5.38%	
1981-1990	-1.30%	2.00%	0.84%	-4.20%	
1991-2000	3.28%	2.24%	0.69%	0.35%	
B. Growth Acc	ounting 2: Inclu	ding Adjustmen	s for Human Capital		
B.1 Annual Gro	owth Rates				
1061 1070	6 77%	4 66%	9 120/		
1071 1080	0.77%	2 9704	5.07%		
1971-1980	1 26%	3.8770	2.41%		
1001 2000	-1.30%	3.70%	2.4170		
1991-2000	3.28%	4.93%	1.90%		
B.2 Contributio	on to Output Gre	owth (TFP2 = Set)	olow Residual after Con	trolling for Human Capital)	
1961-1970	6 77%	3.03%	2.85%	0.9	0%
1971-1980	0.35%	2 52%	1 77%	-3 9	04%
1981-1990	-1.36%	2 44%	0.84%	-4 6	5%
1991-2000	3.28%	3.20%	0.69%	-0.6	2%
1771 2000	512070	5.2070	0.0778	0.0	.270
C. Crowth Ass	ovatino 2. Inchi	ding A disatusan	o for Insuto I Milization	and Human Conital	
<u>C. Giowin Acc</u>	ounting 5: Inclu	ang Adjustmen	is for inputs offiziation a	and Human Capital	
C.1 Annual Gr	owin Rules				
1961-1970	6.77%				
1971-1980	0.35%	2.32%	4.90%		
1981-1990	-1.36%	6 30%	2.13%		
1991-2000	3 28%	5 44%	1 74%		
1991-2000	5.2070	5.4470	1.7470		
C.2 Contributio	on to Output Gre	owth (TFP3 = S)	olow Residual after Con	trolling for Inputs Utilization and	l Human Capital)
1961-1970	6.77%				
1971-1980	0.35%	1.51%	1.72%		-2.87%
1981-1990	-1.36%	4.10%	0.75%		-6.20%
1991-2000	3.28%	3.54%	0.61%		-0.87%

Memo:

		Change			
	Capital	Unemployment			
	Utilization	Stock			Rate
961-1970		1.33%			
971-1980		0.55%		0.28%	
981-1990	-0.28%	0.69%	4.82%	0.72%	2.60%
991-2000	-0.24%	1.49%	3.95%	-0.05%	2.20%

Selected Calculations:

1. Human Capital Stock (H): Weighted average of educational attainment by shares of the adult population with different educational levels. Human Capital Stock (H). Wegined average of educational attainment by shares of the adult population with uniferent educational reverses. The social returns to education are obtained from Psacharopoulos (1994). The categories and their respective returns are: No Education (benchmark) = 1, Incomplete Primary Education = 1.68, Complete Primary Education = 2.69, Incomplete Secondary Education = 3.91, Complete Secondary Education = 5.53, Incomplete College Education = 5.87, Complete College Education = 8.80.
 Labor Adjusted for Human Capital (HL) = Labor * H.
 Labor Adjusted for Human Capital and Employment = HL * (1- Unemployment rate) * Participation Rate * Worked Hours.

Sources:	
GDP	Authors' construction using Summers and Heston (1991) and The World Bank (2002).
Working-Age Population	WDI
Capital	Authors' construction using Nehru and Dareshwar (1993) and The World Bank (2002).
Human Capital	Authors' calculations using data from Barro and Lee (2000) and Psacharopoulos (1994)
Unemployment Rate	Central Bank of Nicaragua
Employment	Central Bank of Nicaragua
Worked Hours	Splicing using series from ILO and authors' estimations using information on unemploment rate and per-capita GDP
Capital Share	World Bank (2002)

Table A.15 Panama

			Physical	Total Factor Productivity	
	Output	Labor	Capital	TFP1	TFP2 TFP3
A. Growth Acco	ounting: Traditi	onal-Solow Res	idual		
A.1 Annual Gro	wth Rates				
10(1 1070	7.00%	2 7 4 9/	0.04%		
1961-1970	7.90%	2.74%	9.94%		
19/1-1980	4.13%	3.25%	8.32%		
1981-1990	1.37%	2.92%	2.47%		
1991-2000	4.46%	2.30%	6.19%		
A.2 Contribution	n to Output Gre	owth (TFP1 = S	olow Residual)		
1061 1070	7 00%	2 00%	2 68%	2 2204	
1071 1080	1 1 204	2.00%	2.08%	0.40%	
1971-1980	4.1370	2.3770	2.2370	-0.49%	
1001 2000	1.3770	2.1370	1.67%	-1.4370	
1991-2000	4.46%	1.08%	1.07%	1.11%	
B. Growth Acco	unting 2: Inclu	ding Adjustmen	ts for Human Capital		
B Annual Gra	wth Rates	ang rajasanon	to for Human Cuphan		
1961-1970	7.90%	3.21%	9.94%		
1971-1980	4.13%	5.69%	8.32%		
1981-1990	1.37%	4.65%	2.47%		
1991-2000	4.46%	2.80%	6.19%		
B.2 Contribution	n to Output Gre	owth (TFP2 = S	olow Residual after Con	ntrolling for Human Capital)	
1961-1970	7.90%	2.34%	2.68%	2.	.87%
1971-1980	4.13%	4.15%	2.25%	-2	27%
1981-1990	1.37%	3.39%	0.67%	-2	69%
1991-2000	4.46%	2.04%	1.67%	0.	.74%
C. Growth Acco	unting 3: Inclu	ding Adjustmen	ts for Inputs Utilization	and Human Capital	
C.1 Annual Gro	wth Rates				
1061 1070	7 00%				
1071 1080	1 1 204	2 2204	7 00%		
1971-1980	4.13%	5.5270	1.720/		
1981-1990	1.37%	5.59%	1.73%		
1991-2000	4.46%	3.47%	6.64%		
C.2 Contribution	n to Output Gro	owth (TFP3 = S	olow Residual after Cor	ntrolling for Inputs Utilization a	nd Human Capital)
1961-1970	7.90%				
1971-1980	4.13%	2.42%	2.16%		-0.45%
1981-1990	1.37%	4.08%	0.47%		-3.18%
1991-2000	4.46%	2.53%	1.79%		0.13%

Memo:

		Change			
	Capital	Unemployment			
	Utilization	Stock			Rate
1961-1970		0.47%			
1971-1980	-0.31%	2.44%	1.22%	-0.35%	2.80%
1981-1990	-0.72%	1.73%	3.64%	0.15%	6.30%
1991-2000	0.42%	0.50%	3.28%	-0.31%	-3.60%

Selected Calculations:

1. Human Capital Stock (H): Weighted average of educational attainment by shares of the adult population with different educational levels. Fundan Capital Stock (H). Wegined average of educational attainment of shares of the adult population with unretent educational reverses the social returns to education are obtained from Psacharopoulos (1994). The categories and their respective returns are: No Education (benchmark) = 1, Incomplete Primary Education = 1.68, Complete Primary Education = 2.69, Incomplete Secondary Education = 3.91, Complete Secondary Education = 5.53, Incomplete College Education = 5.87, Complete College Education = 8.80.
 Labor Adjusted for Human Capital (HL) = Labor * H.

3. Labor Adjusted for Human Capital and Employment = HL * (1- Unemployment rate) * Participation Rate * Worked Hours.

Authors' construction using Summers and Heston (1991) and The World Bank (2002).
WDI
Authors' construction using Nehru and Dareshwar (1993) and The World Bank (2002).
Authors' calculations using data from Barro and Lee (2000) and Psacharopoulos (1994)
Splicing using series from ILO and ECLAC
Splicing using series from ILO and ECLAC
Authors' estimations using information on unemploment rate and per-capita GDP
Bernanke and Gurkaynak (2001)

Table A.16 Paraguay

			Physical Total Factor Productivity		r Productivity
	Output	Labor	Capital	TFP1	TFP2 TFP3
A. Growth Acc	ounting: Traditi	onal-Solow Res	idual		
A.1 Annual Gro	owth Rates				
10/1 1070	1.010/	0.418/	5.020		
1961-1970	4.31%	2.41%	5.02%		
19/1-1980	8.87%	3.60%	11.33%		
1981-1990	2.77%	3.28%	7.16%		
1991-2000	1.97%	3.09%	4.07%		
A.2 Contributio	on to Output Gre	owth (TFP1 = Science)	olow Residual)		
10/1 1070	1.010/	1 4204	2.04%	0.020/	
1961-1970	4.31%	1.42%	2.06%	0.83%	
19/1-1980	8.87%	2.12%	4.65%	2.10%	
1981-1990	2.77%	1.94%	2.94%	-2.10%	
1991-2000	1.97%	1.82%	1.67%	-1.52%	
P. Growth Acc	ounting 2: Inclu	ding Adjustman	to for Humon Conital		
<u>B. Olowin Acc</u>	with Patar	ang Aajasanen	is for Human Capital		
D.1 Annual Gro	win Kules				
1961-1970	4.31%	3.40%	5.02%		
1971-1980	8.87%	4.97%	11.33%		
1981-1990	2.77%	4.94%	7.16%		
1991-2000	1.97%	3.19%	4.07%		
B.2 Contributio	on to Output Gre	owth (TFP2 = Set)	olow Residual after Co	ntrolling for Human Capital)	
1961-1970	4.31%	2.01%	2.06%	0.25	5%
1971-1980	8.87%	2.93%	4.65%	1.29	}%
1981-1990	2.77%	2.91%	2.94%	-3.0	8%
1991-2000	1.97%	1.88%	1.67%	-1.5	8%
C. Counth Ass		In A Production	e e Tanto Itella di a	and Hammer Consider	
C. Growth Acc	ounting 5: Inclu	aing Adjustmen	is for inputs Utilization	and Human Capital	
C.I Annual Gro	owin Kales				
1961-1970	4.31%				
1971-1980	8 87%				
1981-1990	2 77%	4 50%	6 88%		
1991-2000	1.07%	2 14%	3.61%		
1771-2000	1.9770	2.1470	5.0170		
C.2 Contributio	on to Output Gre	owth (TFP3 = S)	olow Residual after Co	ntrolling for Inputs Utilization and	Human Capital)
10(1 1070	4.210/				
1901-1970	4.31%				
19/1-1980	8.8/%				2.716/
1981-1990	2.77%	2.66%	2.82%		-2./1%
1991-2000	1.97%	1.26%	1.48%		-0.77%

Memo:

		Change			
	Capital	Unemployment			
	Utilization	Stock			Rate
1961-1970		0.99%			
971-1980		1.37%			
1981-1990	-0.26%	1.66%	2.53%	0.26%	2.50%
991-2000	-0.45%	0.10%	2.83%	-0.77%	4.10%

Selected Calculations:

Human Capital Stock (H): Weighted average of educational attainment by shares of the adult population with different educational levels. The social returns to education are obtained from Psacharopoulos (1994). The categories and their respective returns are: No Education (benchmark) = 1, Incomplete Primary Education = 1.68, Complete Primary Education = 2.69, Incomplete Secondary Education = 3.91, Complete Secondary Education = 5.53, Incomplete College Education = 5.87, Complete College Education = 8.80.
 Labor Adjusted for Human Capital (HL) = Labor * H.

3. Labor Adjusted for Human Capital and Employment = HL * (1- Unemployment rate) * Participation Rate * Worked Hours.

Authors' construction using Summers and Heston (1991) and The World Bank (2002).
WDI
Authors' construction using Nehru and Dareshwar (1993) and The World Bank (2002).
Authors' calculations using data from Barro and Lee (2000) and Psacharopoulos (1994)
ECLAC
Splicing using series from WDI and ECLAC
Authors' estimations using information on unemploment rate and per-capita GDP
Bernanke and Gurkaynak (2001)

Table A.17 Peru

			Physical	Total Fa	ctor Productiv	ity
	Output	Labor	Capital	TFP1	TFP2	TFP3
A. Growth Acc	ounting: Tradition	onal-Solow Res	idual			
A.1 Annual Gro	owth Rates					
1961-1970	5.28%	2.74%	4.75%			
1971-1980	3.63%	3.13%	4.24%			
1981-1990	-0.80%	2.82%	2.34%			
1991-2000	4.10%	2.46%	2.66%			
A.2 Contributio	on to Output Gre	owth (TFP1 = State)	olow Residual)			
1961-1970	5.28%	1.62%	1.95%	1.72%		
1971-1980	3.63%	1.85%	1.74%	0.04%		
1981-1990	-0.80%	1.66%	0.96%	-3.42%		
1991-2000	4.10%	1.45%	1.09%	1.56%		
B. Growth Acc	ounting 2: Inclu	ding Adjustmen	s for Human Capital			
B.1 Annual Gro	owth Rates					
1061 1070	5 290/	1.05%	4 750/			
1961-1970	5.28%	4.95%	4.75%			
19/1-1980	5.05%	3.40%	4.24%			
1981-1990	-0.80%	2.98%	2.54%			
1991-2000	4.10%	4.27%	2.00%			
R 2 Contributio	n to Output Gr	outh (TEP) = S	nlow Residual after Co	ntrolling for Human Capital)		
B.2 Contributio	n io Ompui Ori	min(1112 - 5)	now Residual after Co.	nironing jor Human Capital)		
1961-1970	5.28%	2.92%	1.95%	(0.41%	
1971-1980	3.63%	3.22%	1.74%	-	1.33%	
1981-1990	-0.80%	1.76%	0.96%		3.52%	
1991-2000	4.10%	2.52%	1.09%	(0.49%	
C. Growth Acc	ounting 3: Inclue	ding Adjustmen	s for Inputs Utilization	and Human Capital		
C.1 Annual Gre	owth Rates		-	-		
1961-1970	5.28%					
1971-1980	3.63%	4.03%	4.51%			
1981-1990	-0.80%	6.64%	2.21%			
1991-2000	4.10%	5.90%	2.71%			
C.2 Contributio	on to Output Gre	owth (TFP3 = S	olow Residual after Co	ntrolling for Inputs Utilization d	and Human Ca	pital)
1961-1970	5.28%					
1971-1980	3.63%	2.38%	1.85%			-0.60%
1981-1990	-0.80%	3.92%	0.91%			-5.62%
1991-2000	4.10%	3.48%	1.11%			-0.49%

Memo:

		Change			
	Capital	Human Capital	Employment	Worked Hours	Unemployment
	Utilization	Stock			Rate
1961-1970		2.21%			
1971-1980	0.26%	2.33%	1.99%	-0.33%	-2.40%
1981-1990	-0.13%	0.16%	6.04%	0.41%	1.20%
1991-2000	0.04%	1.81%	3.95%	0.07%	-0.40%

Selected Calculations:

1. Human Capital Stock (H): Weighted average of educational attainment by shares of the adult population with different educational levels. Human Capital Stock (H). Wegined average of educational attainment by shares of the adult population with uniferent educational reverses. The social returns to education are obtained from Psacharopoulos (1994). The categories and their respective returns are: No Education (benchmark) = 1, Incomplete Primary Education = 1.68, Complete Primary Education = 2.69, Incomplete Secondary Education = 3.91, Complete Secondary Education = 5.53, Incomplete College Education = 5.87, Complete College Education = 8.80.
 Labor Adjusted for Human Capital (HL) = Labor * H.
 Labor Adjusted for Human Capital and Employment = HL * (1- Unemployment rate) * Participation Rate * Worked Hours.

Sources	
GDP	Authors' construction using Summers and Heston (1991) and The World Bank (2002).
Working-Age Population	WDI
Capital	Authors' construction using Nehru and Dareshwar (1993) and The World Bank (2002).
Human Capital	Authors' calculations using data from Barro and Lee (2000) and Psacharopoulos (1994)
Unemployment Rate	Central Bank of Peru
Employment	Central Bank of Peru
Worked Hours	Splicing using series from Maddison (1995) and ILO
Capital Share	Bernanke and Gurkaynak (2001)

Table A.18 Trinidad and Tobago

			Physical	Total Fact	or Productivity
	Output	Labor	Capital	TFP1	TFP2 TFP3
A. Growth Acco	ounting: Traditio	onal-Solow Resi	dual		
A.1 Annual Gro	wth Rates				
1061 1070	5 240/	1 620/	4 650/		
1901-1970	5.54%	2 1494	4.03%		
1971-1980	0.41%	2.1470	2.75%		
1981-1990	-0.04%	1.45%	5.75%		
1991-2000	5.08%	1.91%	3.02%		
A.2 Contribution	n to Output Gre	owth (TFP1 = Set	olow Residual)		
10(1 1070	5.240/	1 120/	1 400/	2.910/	
1961-1970	5.54%	1.13%	1.40%	2.81%	
19/1-1980	0.41%	1.50%	2.00%	2.31%	
1981-1990	-0.04%	1.00%	1.15%	-2.17%	
1991-2000	3.08%	1.34%	1.51%	0.24%	
B. Growth Acco	ounting 2: Inclu	ding Adjustment	s for Human Capital		
B. I Annual Gro	wth Rates	ang rajasinen	s for Human Cupital		
Dif finning Gro	in in iteres				
1961-1970	5.34%	2.45%	4.65%		
1971-1980	6.41%	4.36%	8.68%		
1981-1990	-0.04%	1.46%	3.75%		
1991-2000	3.08%	2.55%	5.02%		
B.2 Contribution	n to Output Gra	owth (TFP2 = Set	olow Residual after Co	ntrolling for Human Capital)	
1961-1970	5.34%	1.72%	1.40%	2.3	23%
1971-1980	6.41%	3.05%	2.60%	0.7	75%
1981-1990	-0.04%	1.02%	1.13%	-2.	19%
1991-2000	3.08%	1.79%	1.51%	-0.	21%
C. Growth Acor	unting 2. Inchu	ding Adjustment	e for Inpute Utilization	and Human Capital	
<u>C 1 Annual Gro</u>	with Rates	ang Aujustinen	s for inputs Offization	and Human Capital	
C.1 / Inniada 010	win Rules				
1961-1970	5.34%				
1971-1980	6.41%	3 55%	9.02%		
1981-1990	-0.04%	-0.29%	2.54%		
1991-2000	3.08%	3 40%	5.97%		
1771-2000	5.00%	5.4070	5.9770		
C.2 Contributio	n to Output Gra	with $(TFP3 = Set)$	olow Residual after Co	ntrolling for Inputs Utilization an	ıd Human Capital)
				0 <i>jT</i>	······
1961-1970	5.34%				
1971-1980	6.41%	2.49%	2.71%		1.22%
1981-1990	-0.04%	-0.20%	0.76%		-0.60%
1991-2000	3.08%	2.38%	1.79%		-1.09%

Memo:

		Change			
	Capital	Human Capital	Employment	Worked Hours	Unemployment
	Utilization	Stock			Rate
1961-1970		0.83%			
1971-1980	0.32%	2.22%	2.03%	-0.72%	-2.80%
1981-1990	-1.17%	0.03%	-0.36%	0.04%	10.00%
1991-2000	0.90%	0.64%	3.02%	-0.27%	-7.50%

Selected Calculations:

1. Human Capital Stock (H): Weighted average of educational attainment by shares of the adult population with different educational levels. Human Capital Stock (H). Wegined average of educational attainment by shares of the adult population with uniferent educational reverses. The social returns to education are obtained from Psacharopoulos (1994). The categories and their respective returns are: No Education (benchmark) = 1, Incomplete Primary Education = 1.68, Complete Primary Education = 2.69, Incomplete Secondary Education = 3.91, Complete Secondary Education = 5.53, Incomplete College Education = 5.87, Complete College Education = 8.80.
 Labor Adjusted for Human Capital (HL) = Labor * H.
 Labor Adjusted for Human Capital and Employment = HL * (1- Unemployment rate) * Participation Rate * Worked Hours.

Sources	
GDP	Authors' construction using Summers and Heston (1991) and The World Bank (2002).
Working-Age Population	WDI
Capital	Authors' construction using Nehru and Dareshwar (1993) and The World Bank (2002).
Human Capital	Authors' calculations using data from Barro and Lee (2000) and Psacharopoulos (1994)
Unemployment Rate	Splicing using series from ECLAC and ILO
Employment	Splicing using series from ECLAC, WDI, and ILO
Worked Hours	Authors' estimations using information on unemploment rate and per-capita GDP
Capital Share	Bernanke and Gurkaynak (2001)

Table A.19 Uruguay

Output Labor A. Growth Accounting: Traditional-Solow Residu A.1 Annual Growth Rates 1961-1970 1.38% 0.74% 1971-1980 3.01% 0.35% 1981-1990 -0.03% 0.62% 1991-2000 3.01% 0.73% A.2 Contribution to Output Growth (TFP1 = Solo 1961-1970 1.38% 0.44% 1971-1980 3.01% 0.21% 1981-1990 -0.03% 0.37% 1991-2000 3.01% 0.43%	Capital 0.36% 2.59% 0.35% 1.76% w Residual) 0.15% 1.06% 0.14%	0.80%	TFP2 TFP
A. Growth Accounting: Traditional-Solow Residu A.1 Annual Growth Rates 1961-1970 1.38% 0.74% 1971-1980 3.01% 0.35% 1981-1990 -0.03% 0.62% 1991-2000 3.01% 0.73% A.2 Contribution to Output Growth (TFP1 = Solo 1961-1970 1.38% 0.44% 1971-1980 3.01% 0.21% 1981-1990 -0.03% 0.37% 1981-1990 -0.03% 0.37% 1991-2000 3.01% 0.43%	111 0.36% 2.59% 0.35% 1.76% ww.Residual) 0.15% 1.06% 0.14%	0.80%	
A. I Annual Growth Rates 1961-1970 1.38% 0.74% 1971-1980 3.01% 0.35% 1981-1990 -0.03% 0.62% 1991-2000 3.01% 0.73% A.2 Contribution to Output Growth (TFP1 = Sold 1961-1970 1.38% 1961-1970 1.38% 0.44% 1971-1980 3.01% 0.21% 1981-1990 -0.03% 0.37% 1991-2000 3.01% 0.43%	0.36% 2.59% 0.35% 1.76% ww.Residual) 0.15% 1.06% 0.14%	0.80%	
1961-1970 1.38% 0.74% 1971-1980 3.01% 0.35% 1981-1990 -0.03% 0.62% 1991-2000 3.01% 0.73% A.2 Contribution to Output Growth (TFP1 = Solo 1961-1970 1.38% 0.44% 1971-1980 3.01% 0.21% 1981-1990 -0.03% 0.37% 1981-1990 -0.03% 0.37% 1991-2000 3.01% 0.43%	0.36% 2.59% 0.35% 1.76% ww.Residual) 0.15% 1.06% 0.14%	0.80%	
1961-1970 1.38% 0.74% 1971-1980 3.01% 0.35% 1981-1990 -0.03% 0.62% 1991-2000 3.01% 0.73% A.2 Contribution to Output Growth (TFP1 = Solo 1961-1970 1.38% 1971-1980 3.01% 0.21% 1981-1990 -0.03% 0.37% 1991-2000 3.01% 0.43%	0.36% 2.59% 0.35% 1.76% ww.Residual) 0.15% 1.06% 0.14%	0.80%	
1971-1980 3.01% 0.35% 1981-1990 -0.03% 0.62% 1991-2000 3.01% 0.73% A.2 Contribution to Output Growth (TFP1 = Solo 1961-1970 1.38% 0.44% 1971-1980 3.01% 0.21% 1981-1990 -0.03% 0.37% 1991-2000 3.01% 0.43% -0.43% -0.43%	2.59% 0.35% 1.76% ww.Residual) 0.15% 1.06% 0.14%	0.80%	
1981-1990 -0.03% 0.62% 1991-2000 3.01% 0.73% A.2 Contribution to Output Growth (TFP1 = Solar 1961-1970 1.38% 0.44% 1971-1980 3.01% 0.21% 1981-1990 -0.03% 0.37% 1981-1990 -0.03% 0.43% 0.43% 0.43%	0.35% 1.76% ww.Residual) 0.15% 1.06% 0.14%	0.80%	
1991-2000 3.01% 0.73% A.2 Contribution to Output Growth (TFP1 = Sold 1961-1970 1.38% 0.44% 1971-1980 3.01% 0.21% 1981-1990 -0.03% 0.37% 1991-2000 3.01% 0.43% -0.43% -0.43%	1.76% w Residual) 0.15% 1.06% 0.14%	0.80%	
A.2 Contribution to Output Growth (TFP1 = Sold 1961-1970 1.38% 0.44% 1971-1980 3.01% 0.21% 1981-1990 -0.03% 0.37% 1991-2000 3.01% 0.43%	ow Residual) 0.15% 1.06% 0.14%	0.80%	
1961-1970 1.38% 0.44% 1971-1980 3.01% 0.21% 1981-1990 -0.03% 0.37% 1991-2000 3.01% 0.43%	0.15% 1.06% 0.14%	0.80%	
1901-1970 1.35% 0.44% 1971-1980 3.01% 0.21% 1981-1990 -0.03% 0.37% 1991-2000 3.01% 0.43%	0.13% 1.06% 0.14%	0.80%	
19/1-1980 3.01% 0.21% 1981-1990 -0.03% 0.37% 1991-2000 3.01% 0.43%	0.14%	1.1/10/	
1991-2000 3.01% 0.43%	0.1470	-0.54%	
1771 2000 5.01% 0.45%	0.72%	1.86%	
	0.7270	1.80%	
B. Growth Accounting 2: Including Adjustments f	for Human Capital		
B.1 Annual Growth Rates	•		
1961-1970 1.38% 1.19%	0.36%		
1971-1980 3.01% 0.97%	2.59%		
1981-1990 -0.03% 1.78%	0.35%		
1991-2000 3.01% 1.41%	1.76%		
B.2 Contribution to Output Growth (TFP2 = Sold	ow Residual after Contr	colling for Human Capital)	
1961-1970 1.38% 0.70%	0.15%	0.53	3%
1971-1980 3.01% 0.57%	1.06%	1.38	8%
1981-1990 -0.03% 1.05%	0.14%	-1.2	2%
1991-2000 3.01% 0.83%	0.72%	1.40	5%
C. Growth Accounting 3: Including Adjustments 1	for Inputs Utilization ar	d Human Capital	
C.1 Annual Growth Rates			
1961-1970 1.38%			
1971-1980 3.01% 0.54%	2.62%		
1981-1990 -0.03% 4.44%	0.13%		
1991-2000 3.01% 4.42%	1.23%		
C.2 Contribution to Output Growth (TFP3 = Sold	ow Residual after Conti	colling for Inputs Utilization and	l Human Capital)
1961-1970 1 38%			

1971-1980	3.01%	0.32%	1.07%	1.62%
1981-1990	-0.03%	2.62%	0.05%	-2.70%
1991-2000	3.01%	2.61%	0.50%	-0.10%

Memo:

		Change			
	Capital Utilization	Human Capital Stock	Employment	Worked Hours	Unemployment Rate
1961-1970		0.45%			
1971-1980	0.02%	0.62%	1.14%	-0.31%	-0.21%
1981-1990	-0.22%	1.16%	1.75%	0.17%	2.01%
1991-2000	-0.52%	0.68%	0.54%	-0.23%	4.60%

Selected Calculations:

1. Human Capital Stock (H): Weighted average of educational attainment by shares of the adult population with different educational levels. The social returns to education are obtained from Psacharopoulos (1994). The categories and their respective returns are: No Education (benchmark) = 1, Incomplete Primary Education = 1.68, Complete Primary Education = 2.69, Incomplete Secondary Education = 3.91, Complete Secondary Education = 5.53, Incomplete College Education = 5.87, Complete College Education = 8.80.

Labor Adjusted for Human Capital (HL) = Labor * H.
 Labor Adjusted for Human Capital (HL) = Labor * H.
 Labor Adjusted for Human Capital and Employment = HL * (1- Unemployment rate) * Participation Rate * Worked Hours.

Sources	
GDP	Authors' construction using Summers and Heston (1991) and The World Bank (2002).
Working-Age Population	WDI
Capital	Authors' construction using Nehru and Dareshwar (1993) and The World Bank (2002).
Human Capital	Authors' calculations using data from Barro and Lee (2000) and Psacharopoulos (1994)
Unemployment Rate	Central Bank of Uruguay
Employment	Central Bank of Uruguay
Worked Hours	Splicing using series from Central Bank of Uruguay and authors' estimations using information on unemploment rate and per-capita GDP
Capital Share	Bernanke and Gurkaynak (2001)

Table A.20 Venezuela

			Physical	Total	Factor Producti	ivity
	Output	Labor	Capital	TFP1	TFP2	TFP.
A Growth Acc	counting: Traditi	onal-Solow Rec	idual			
A. 1 Annual Gr	owth Rates	Shai-Solow Res	lduar			
1.1 / 1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.	own Rules					
1961-1970	5.05%	3.47%	2.62%			
1971-1980	2.70%	4.38%	6.51%			
1981-1990	0.82%	2.97%	1.69%			
1991-2000	2.02%	2.75%	1.53%			
A.2 Contribution	on to Output Gro	owth (TFP1 = S)	olow Residual)			
1961-1970	5.05%	1.91%	1.18%	1.96%		
1971-1980	2.70%	2.41%	2.93%	-2.64%		
1981-1990	0.82%	1.63%	0.76%	-1.57%		
1991-2000	2.02%	1.51%	0.69%	-0.18%		
B. Growth Acc	counting 2: Inclu	ding Adjustmen	ts for Human Capital			
B.1 Annual Gr	owth Rates					
1961-1970	5.05%	4.25%	2.62%			
1971-1980	2.70%	7.93%	6.51%			
1981-1990	0.82%	2.34%	1.69%			
1991-2000	2.02%	5.07%	1.53%			
B.2 Contribution	on to Output Gre	owth (TFP2 = State)	olow Residual after Cont	rolling for Human Capital)		
1961-1970	5.05%	2.34%	1.18%		1.53%	
1971-1980	2.70%	4.36%	2.93%		-4.59%	
1981-1990	0.82%	1.29%	0.76%		-1.23%	
1991-2000	2.02%	2.79%	0.69%		-1.46%	
		1. A.1				
C.1 Annual Gr	owth Rates	aing Adjustmen	is for inputs Utilization a	nd Human Capital		
1961-1970	5.05%					
1971-1980	2.70%	8.72%	6.51%			
1981-1990	0.82%	2.07%	1.69%			
1991-2000	2.02%	5.60%	1.53%			
C.2 Contributi	on to Output Gre	owth (TFP3 = S	olow Residual after Com	rolling for Inputs Utilizatio	n and Human C	apital)

1961-1970	5.05%				
1971-1980	2.70%	4.80%	2.93%	-5.03%	,
1981-1990	0.82%	1.14%	0.76%	-1.08%	,
1991-2000	2.02%	3.08%	0.69%	-1.75%	,

Memo:

		Change			
	Capital	Unemployment			
	Utilization	Stock			Rate
1961-1970		0.78%		-0.23%	
1971-1980	0.10%	3.55%	4.90%	0.09%	-0.93%
1981-1990	-0.49%	-0.63%	3.29%	-0.55%	4.47%
1991-2000	-0.41%	2.32%	3.13%	0.07%	3.60%

Selected Calculations:

1. Human Capital Stock (H): Weighted average of educational attainment by shares of the adult population with different educational levels. The social returns to education are obtained from Psacharopoulos (1994). The categories and their respective returns are: No Education (benchmark) = 1, Incomplete Primary Education = 1.68, Complete Primary Education = 2.69, Incomplete Secondary Education = 3.91, Complete Secondary Education = 5.53, Incomplete College Education = 5.87, Complete College Education = 8.80.

Labor Adjusted for Human Capital (HL) = Labor * H.
 Labor Adjusted for Human Capital (HL) = Labor * H.
 Labor Adjusted for Human Capital and Employment = HL * (1- Unemployment rate) * Participation Rate * Worked Hours.

Sources	
GDP	Authors' construction using Summers and Heston (1991) and The World Bank (2002).
Working-Age Population	WDI
Capital	Authors' construction using Nehru and Dareshwar (1993) and The World Bank (2002).
Human Capital	Authors' calculations using data from Barro and Lee (2000) and Psacharopoulos (1994)
Unemployment Rate	National Bureau of Statistics, Venezuela
Employment	National Bureau of Statistics, Venezuela
Worked Hours	Splicing using series from Maddison (1995) and authors' estimations using information on unemploment rate and per-capita GDP
Capital Share	Bernanke and Gurkaynak (2001)

Appendix B				
Definitions and Sources of	Variables	Used in	Regression	Analysis

Variable	Definition and Construction	Source
1. Growth Accounting		
Output		
Level	Ratio of total GDP to total population. GDP is in 1985 PPP-adjusted US\$.	Authors' construction using Summers and Heston (1991) and The World Bank (2002).
Growth	Log difference of real GDP per capita.	Authors' construction using Summers and Heston (1991) and The World Bank (2002).
Physical and Human Capital		
Domestic Capital Stock (in 1987 US\$ dollars)	Data until 1990 from Nehru and Dareshwar (1993), updated with WDI data, using perpetual inventory method, and assuming a 4% depreciation rate.	Authors' construction using Nehru and Dareshwar (1993) and The World Bank (2002).
Labor Force, Total	Working-age population (aged 15 to 64). Series were smoothed when unjustified jumps were found.	Authors' construction using data from The World Bank (2002).
Unemployment Rates	Ratio of the number of people actually working to the economically active population, taken from several labor surveys.	Several sources: ILO, IMF, ECLA, and various Central Banks and National Statistical Agencies.
Employment, total.	Number of people actually working, taken from several labor surveys.	Several sources: ILO, IMF, ECLA, and various Central Banks and National Statistical Agencies.
Average Worked Hours	Average numbers of hours actually worked by worker. Data was extrapolated for some periods, on the basis of unemployment rates and per capita GDP series.	Authors' construction using data from ILO, Angus Maddison, and various Central Banks and National Statistical Agencies.
Average Years of Schooling	Average number of years of schooling in the population.	Barro and Lee (2000).
Domestic Capital Stock (in 1987 US\$ dollars) adjusted for capacity utilization.	Domestic Capital Stock adjusted for capacity utilization, which is assumed equal to one minus the unemployment rate.	Authors' construction using data from Nehru and Dareshwar (1993) updated with The World Bank (2002), and unemployment rates from ILO, IMF, ECLA, and various Central Banks and National Statistical Agencies.
Labor Force, total, adjusted for human capital.	Working-age population (aged 15 to 64), adjusted for the average years of primary, secondary and tertiary schooling in the population, using the rates of social returns to education calculated by Psacharopoulos (1995).	Authors' construction using The World Bank (2002), Barro and Lee (2000), and Psacharopoulos (1994).
Employment, total, adjusted for human capital and for average worked hours.	Number of people actually working, adjusted for the average years of primary, secondary and tertiary schooling in the population, using the rates of social returns to education calculated by Psacharopoulos (1995), and for the average numbers of hours actually worked.	Authors' construction using The World Bank (2002), Barro and Lee (2000), Psacharopoulos (1994), ILO, IMF, ECLA, Angus Deaton, and various Central Banks and National Statistical Agencies.

Appendix B (cont.) Definitions and Sources of Variables Used in Regression Analysis

Variable	Definition and Construction	Source
2. Saving and Investment		
Output Growth	See above.	
Gross Domestic Saving (% of GDP)	Ratio of Gross Domestic Saving to GDP.	The World Bank (2002).
Investment (% of GDP)	Ratio of Gross Domestic Investment (in 1995 US\$) to GDP (in 1995 US\$).	Authors' construction using Summers and Heston (1991) and The World Bank (2002).
3. Growth Determinants		
Output Growth	See above.	
Transitional Convergence		
Initial GDP Per Capita	Initial value of ratio of total GDP to total population. GDP is in 1985 PPP-adjusted US\$.	Authors' construction using Summers and Heston (1991) and The World Bank (2002).
Cyclical Reversion		
Initial Output Gap	Difference between the log of actual GDP and (the log of) potential (trend) GDP around the start of the period. In order to decompose the log of GDP, the Baxter-King filter is used.	Author's calculations.
Structural Policies and Institutions		
Education	Ratio of total secondary enrollment, regardless of age, to the population of the age group that officially corresponds to that level of education.	World Development Network (2002) and The World Bank (2002).
Financial Depth	Ratio to GDP of the stock of claims on the private sector by deposit money banks and other financial institutions.	Beck, Demirguc-Kunt and Levine (2000).
Trade Openness	Residual of a regression of the log of the ratio of exports and imports (in 1995 US\$) to GDP (in 1995 US\$), on the logs of area and population, and dummies for oil exporting and for landlocked countries.	Author's calculations with data from World Development Network (2002) and The World Bank (2002).
Government Burden	Ratio of government consumption to GDP.	The World Bank (2002).
Public Infrastructure	Telephone mainlines are telephone lines connecting a customer's equipment to the public switched telephone network. Data are presented per 1,000 population for the entire country.	Canning (1998), International Telecommunications Union.
Governance	First principal component of four indicators: prevalence of law and order, quality of bureaucracy, absence of corruption, and accountability of public officials.	International Country Risk Guide (ICRG).

Appendix B (cont.) Definitions and Sources of Variables Used in Regression Analysis

Variable	Definition and Construction	Source
Stabilization Policies		
Lack of Price Stability	Measured by the consumer price index: annual percentage change in the cost to the average consumer of acquiring a fixed basket of goods and services.	The World Bank (2002).
Cyclical Volatility	Standard deviation of the output gap for the period.	Author's calculations.
Real Exchange Rate Overvaluation	Real effective exchange rate, with the level adjusted such that the average for 1976-85 equals Dollar's (1992) index of overvaluation (based on the ratio of actual to income- adjusted Summers-Heston purchasing power parity comparisons).	Easterly (2001).
Systemic Banking Crises	Number of years in which a country underwent a systemic banking crisis, as a fraction of the number of years in the corresponding period.	Author's calculations using data from Caprio and Klingebiel (1999), and Kaminsky and Reinhart (1998).
External Conditions		
Terms of Trade Shocks	Log difference of the terms of trade. Terms of trade are defined as customary.	The World Bank (2000) "World Development Indicators".
Period-specific Shifts	Time dummy variables.	Authors' construction.

Appendix	С
Sample of	Countries

	Sample:		5-	yr Panel Sa	mple			10-yr P	10-yr Panel Sample		Cross-Sectional Sample
	Periods:	1971-75	1976-80	1981-85	1986-90	1991-95	1996-99	1971-80	1981-90	1991-99	1966/70 - 1996/99
Countries	LAC										
Algeria				x	x	x			x	x	Y
Argentina	x	х	x	~	~	~	x	х	x	x	x
Australia		х	х	х	х	х		х	х		х
Austria		х	х	х	х	х	х	х	х	x	х
Bangladesh							x				x
Belgium	_	х	х	х	x	x	x	х	x	x	х
Botswana	x				Α.	x	x		А	~	
Brazil	x					x	x				х
Burkina Faso						х	x				x
Canada				х	х	х	x		х	x	х
Chile	x	х	х	х	х	х	x	х	х	x	х
Congo Dem Rep	x	x	x	x	x	x	x	x	x	x	x
Congo, Rep.		х	x	x	x	x	x	x	x	x	x
Costa Rica	x		х	х	х	х	x	х	х	x	х
Cote d'Ivoire		х	х	x	х	х	x	х	х	x	х
Denmark		х	х	х	х	х	x	х	х	x	х
Dominican Republic	x				х	х	x		х	x	х
Ecuador	x	х	x	x	x	x	x	x	x	x	x
Egypt, Arab Rep. El Salvador	x	x	x	x	x	x	x	x	x	x	x
Finland	-	x	x	x	x	x	x	x	x	x	x
France		х	x	x	х	x	x	x	x	x	х
Gambia, The					х	х			х	x	х
Ghana		х	х	х	х	х	х	х	х	x	х
Greece	_	х	х	х	х	х	х	х	х	х	x
Haiti	x					v	×				x
Honduras	x			x	x	x	x		x	x	x
Iceland		х	х	x	x	x		х	x		x
India			х	х	х	х	x	х	х	x	х
Indonesia			х	х	х	х	x	х	х	x	х
Iran, Islamic Rep.					х	х	х				
Ireland		x	x	x	x	x	x	x	x	x	x
Italy		x	x	x	x	x	x	x	x	x	x
Jamaica	x	x	x	x	x	x	x	x	x	x	x
Japan		х	x	x	х	x	x	x	x	x	х
Jordan						х	x				
Kenya		х	х	х	х	х	х	х	х	x	х
Korea, Rep.				х	х	х	x		х	x	х
Madagascar Malawi		x	х	x	х	x	x				x
Malavsia		х	х	x	х	x	x	x	х	x	x
Mexico	x	x	x	x	x	x	x	x	x	x	x
Morocco		х	х	х	х	х	x	х	х	x	х
Netherlands		х	х	х	х	х	x	х	х	x	х
Nicaragua	x				х	х	x		х	x	х
Nigeria			х	х	x	x	x	X	х	х	x
Norway		x	x	x	x	x	x	x	x	x	x
Pakistan		x	x	x	x	x	x	x	x	x	x
Panama	x				х	х	x		х	x	
Papua New Guinea				х	х	х			х	x	х
Paraguay	x	х	х	х	х	х	x	х	х	x	х
Peru Philippinos	х	x	x	x	x	x	x	x	x	x	X
Portugal		x	x	x	x	x		x	x	~	x
Senegal			х	х	х	х	x	х	х	x	х
Sierra Leone					х	х			х	x	х
South Africa		х	х	х	х	х	х	х	х	x	х
Spain		х	х	х	х	х	x	х	х	x	х
Sri Lanka Sweden		x	x	x	x	x	x	x	x	x	x
Switzerland		x	x	x	x	x		x	x	~	x
Syrian Arab Republic			x	x	x	x	x	x	x	x	x
Thailand			х	x	х	х	x	х	х	x	х
Togo					х	х	х		х	x	х
Trinidad and Tobago	x	х	х	х	х	х	x	х	х	x	х
1 unisia Turkey							x				х
Uganda							x				
United Kingdom		x	x	x	x	x	x	x	x	х	х
United States		x	x	x	x	x		v	x		x
Uruguay	х	x	x	x	x	x	x	x	x	х	X
Venezuela	х			x	х	х	x		х	х	
Zambia							x				х
Zimbabwe					х	х	х		х	х	

Appendix D Explaining Changes in Growth by

Explaining Changes in Growth by Countries Variable of interest: Change in the growth rate of GDP per capita

Table D.1 Argentina

(A) Decades

(B) Five-Year Periods

Growth			
Determinants	1990s vs. 80s	1990s vs. 70s	1980s vs. 70s
Initial GDP per capita (in logs)	0.15	0.16	0.01
Initial output gap (log[actual GDP/potential GDP])	1.70	0.92	-0.39
Secondary enrollment (in logs)	0.24	0.64	0.40
Private domestic credit/GDP (in logs)	0.07	-0.04	-0.11
Structure-adjusted trade volume/GDP (in logs)	0.56	0.80	0.24
Government consumption /GDP (in logs)	-0.17	-0.35	-0.19
Main telephone lines per capita (in logs)	0.37	0.62	0.26
Inflation rate (in log [1+inf. rate])	0.90	0.31	-0.59
Std. Dev. of output gap	0.37	-0.07	-0.44
Index of real exchange rate overvaluation (in logs)	-0.40	-0.09	0.30
Frequency of years under banking crisis	0.83	-0.03	-0.87
Growth rate of terms of trade	0.31	0.05	-0.26
Period shifts	-0.48	-1.72	-1.25
Projected Change	4.45	1.18	-3.27
Actual Change	6.71	2.40	-4.31

Growth				
Determinants	1996-99 vs. 1991-95	1991-95 vs. 1986-90	1986-90 vs. 1981-85	1981-85 vs. 1976-80
Initial GDP per capita (in logs)	-0.44	0.17	0.36	-0.11
Initial output gap (log[actual GDP/potential GDP])	-1.77	0.73	2.67	-1.47
Secondary enrollment (in logs)	0.27	0.02	0.20	0.19
Private domestic credit/GDP (in logs)	0.13	0.10	-0.17	0.00
Structure-adjusted trade volume/GDP (in logs)	0.30	0.41	0.04	0.08
Government consumption /GDP (in logs)	-0.12	-0.20	0.17	-0.35
Main telephone lines per capita (in logs)	0.30	0.17	0.12	0.18
Inflation rate (in log [1+inf. rate])	0.17	1.06	-0.47	-0.21
Std. Dev. of output gap	0.13	0.64	-0.65	0.36
Index of real exchange rate overvaluation (in logs)	-0.01	-0.44	0.09	0.26
Frequency of years under banking crisis	0.58	0.58	0.00	-0.58
Growth rate of terms of trade	-0.29	0.39	0.08	-0.39
Period shifts	-0.13	-0.64	0.44	-1.45
Projected Change	-0.87	2.99	2.86	-3.50
Actual Change	-2.91	6.90	2.20	-5.34

Note: Bold numbers indicate that the data used for the corresponding projection are taken from complementary data sources, not used in the regression data set Source: Authors' calculations

Table D.2 Bolivia

(A) Decades

Growth			
Determinants	1990s vs. 80s	1990s vs. 70s	1980s vs. 70s
Initial GDP per capita (in logs)	0.11	0.13	0.02
Initial output gap (log[actual GDP/potential GDP])	-0.02	-0.58	-0.28
Secondary enrollment (in logs)	0.11	0.47	0.36
Private domestic credit/GDP (in logs)	0.81	0.87	0.06
Structure-adjusted trade volume/GDP (in logs)	0.33	0.28	-0.05
Government consumption /GDP (in logs)	-0.26	-0.28	-0.02
Main telephone lines per capita (in logs)	0.36	0.39	0.03
Inflation rate (in log [1+inf. rate])	0.88	0.04	-0.84
Std. Dev. of output gap	0.08	-0.06	-0.14
Index of real exchange rate overvaluation (in logs)	0.17	0.19	0.03
Frequency of years under banking crisis	0.58	0.00	-0.58
Growth rate of terms of trade	-0.12	0.04	0.16
Period shifts	-0.48	-1.72	-1.25
Projected Change	2.54	-0.23	-2.77
Actual Change	3.49	-0.14	-3.62

(B) Five-Year Periods

Growth				
Determinants	1996-99 vs. 1991-95	1991-95 vs. 1986-90	1986-90 vs. 1981-85	1981-85 vs. 1976-80
Initial GDP per capita (in logs)	-0.14	0.00	0.35	-0.01
Initial output gap (log[actual GDP/potential GDP])	0.03	-0.16	0.12	-0.07
Secondary enrollment (in logs)	0.03	0.09	0.01	0.23
Private domestic credit/GDP (in logs)	0.15	0.62	0.26	-0.23
Structure-adjusted trade volume/GDP (in logs)	0.06	0.16	0.28	-0.13
Government consumption /GDP (in logs)	-0.10	-0.25	0.07	0.15
Main telephone lines per capita (in logs)	0.45	0.16	0.00	0.03
Inflation rate (in log [1+inf. rate])	0.02	0.19	1.35	-1.52
Std. Dev. of output gap	-0.09	0.08	0.08	-0.23
Index of real exchange rate overvaluation (in logs)	0.00	0.04	0.25	-0.05
Frequency of years under banking crisis	0.00	1.16	-1.16	0.00
Growth rate of terms of trade	0.25	-0.51	0.44	-0.12
Period shifts	-0.13	-0.64	0.44	-1.45
Projected Change	0.53	0.95	2.47	-3.40
Actual Change	-0.17	1.60	3.93	-4.04

Note: Bold numbers indicate that the data used for the corresponding projection are taken from complementary data sources, not used in the regression data set Source: Authors' calculations

Table D.3 Brazil

(A) Decades

Growth			
Determinants	1990s vs. 80s	1990s vs. 70s	1980s vs. 70s
Initial GDP per capita (in logs)	-0.03	-0.68	-0.64
Initial output gap (log[actual GDP/potential GDP])	0.89	-0.31	-0.60
Secondary enrollment (in logs)	0.70	1.21	0.51
Private domestic credit/GDP (in logs)	0.13	0.07	-0.07
Structure-adjusted trade volume/GDP (in logs)	0.41	0.37	-0.04
Government consumption /GDP (in logs)	-0.72	-0.91	-0.19
Main telephone lines per capita (in logs)	0.36	0.87	0.52
Inflation rate (in log [1+inf. rate])	0.14	-0.51	-0.65
Std. Dev. of output gap	0.14	0.24	0.10
Index of real exchange rate overvaluation (in logs)	-0.13	-0.02	0.11
Frequency of years under banking crisis	-0.67	-0.96	-0.29
Growth rate of terms of trade	0.27	0.24	-0.03
Period shifts	-0.48	-1.72	-1.25
Projected Change	1.00	-2.12	-3.11
Actual Change	1.49	-4.69	-6.17

(B) Five-Year	Periods
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Growth				
Determinants	1996-99 vs. 1991-95	1991-95 vs. 1986-90	1986-90 vs. 1981-85	1981-85 vs. 1976-80
Initial GDP per capita (in logs)	-0.14	-0.02	0.09	-0.36
Initial output gap (log[actual GDP/potential GDP])	-0.80	0.36	1.43	-1.79
Secondary enrollment (in logs)	0.77	0.27	0.17	0.18
Private domestic credit/GDP (in logs)	0.07	0.17	-0.14	0.00
Structure-adjusted trade volume/GDP (in logs)	0.24	0.28	0.05	-0.01
Government consumption /GDP (in logs)	-0.04	-0.41	-0.59	0.05
Main telephone lines per capita (in logs)	0.25	0.17	0.15	0.30
Inflation rate (in log [1+inf. rate])	1.15	-0.01	-0.74	-0.23
Std. Dev. of output gap	0.10	0.03	0.12	0.16
Index of real exchange rate overvaluation (in logs)	0.00	-0.10	-0.05	0.14
Frequency of years under banking crisis	0.43	-1.16	0.58	-0.58
Growth rate of terms of trade	0.01	0.29	-0.04	0.03
Period shifts	-0.13	-0.64	0.44	-1.45
Projected Change	1.91	-0.76	1.46	-3.57
Actual Change	-1.21	1.41	1.23	-5.14

Note: Bold numbers indicate that the data used for the corresponding projection are taken from complementary data sources, not used in the regression data set Source: Authors' calculations

Table D.4 Chile

(A) Decades

Growth			
Determinants	1990s vs. 80s	1990s vs. 70s	1980s vs. 70s
Initial GDP per capita (in logs)	-0.66	-0.98	-0.32
Initial output gap (log[actual GDP/potential GDP])	0.65	-0.46	-0.55
Secondary enrollment (in logs)	0.19	0.80	0.60
Private domestic credit/GDP (in logs)	0.14	1.24	1.10
Structure-adjusted trade volume/GDP (in logs)	0.27	0.47	0.19
Government consumption /GDP (in logs)	0.27	0.52	0.25
Main telephone lines per capita (in logs)	0.79	1.08	0.29
Inflation rate (in log [1+inf. rate])	0.04	0.41	0.37
Std. Dev. of output gap	0.41	0.70	0.29
Index of real exchange rate overvaluation (in logs)	0.01	0.45	0.44
Frequency of years under banking crisis	0.87	0.29	-0.58
Growth rate of terms of trade	0.08	0.44	0.36
Period shifts	-0.48	-1.72	-1.25
Projected Change	2.59	3.23	0.64
Actual Change	2.91	3.78	0.87

(B) Five-Year Pe	riods
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Growth				
Determinants	1996-99 vs. 1991-95	1991-95 vs. 1986-90	1986-90 vs. 1981-85	1981-85 vs. 1976-80
Initial GDP per capita (in logs)	-0.59	-0.43	0.06	-0.48
Initial output gap (log[actual GDP/potential GDP])	-0.95	0.35	0.94	-3.40
Secondary enrollment (in logs)	0.25	-0.08	0.32	0.28
Private domestic credit/GDP (in logs)	0.13	0.14	-0.12	0.77
Structure-adjusted trade volume/GDP (in logs)	0.14	0.19	0.05	0.04
Government consumption /GDP (in logs)	-0.16	0.14	0.42	-0.02
Main telephone lines per capita (in logs)	0.38	0.52	0.21	0.15
Inflation rate (in log [1+inf. rate])	0.04	0.02	0.01	0.20
Std. Dev. of output gap	-0.15	-0.09	1.14	-0.31
Index of real exchange rate overvaluation (in logs)	-0.05	-0.10	0.26	0.13
Frequency of years under banking crisis	0.00	0.00	1.73	-1.16
Growth rate of terms of trade	-0.66	0.04	0.66	-0.63
Period shifts	-0.13	-0.64	0.44	-1.45
Projected Change	-1.76	0.07	6.12	-5.88
Actual Change	-3.84	1.86	5.51	-6.17

Table D.5 Colombia

(A) Decades

Growth			
Determinants	1990s vs. 80s	1990s vs. 70s	1980s vs. 70s
Initial GDP per capita (in logs)	-0.32	-0.72	-0.40
Initial output gap (log[actual GDP/potential GDP])	0.15	-0.15	-0.15
Secondary enrollment (in logs)	0.44	0.86	0.42
Private domestic credit/GDP (in logs)	0.38	0.36	-0.02
Structure-adjusted trade volume/GDP (in logs)	0.43	0.46	0.03
Government consumption /GDP (in logs)	-0.60	-0.73	-0.13
Main telephone lines per capita (in logs)	0.51	0.87	0.36
Inflation rate (in log [1+inf. rate])	0.01	0.00	-0.01
Std. Dev. of output gap	-0.33	-0.11	0.22
Index of real exchange rate overvaluation (in logs)	0.06	0.19	0.13
Frequency of years under banking crisis	1.73	0.00	-1.73
Growth rate of terms of trade	0.14	-0.10	-0.24
Period shifts	-0.48	-1.72	-1.25
Projected Change	2.11	-0.81	-2.92
Actual Change	-0.55	-2.33	-1.78

(B) Five-Year	Periods
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Growth				
Determinants	1996-99 vs. 1991-95	1991-95 vs. 1986-90	1986-90 vs. 1981-85	1981-85 vs. 1976-80
Initial GDP per capita (in logs)	-0.22	-0.22	-0.01	-0.26
Initial output gap (log[actual GDP/potential GDP])	-0.37	-0.52	0.81	-0.69
Secondary enrollment (in logs)	0.07	0.27	0.28	-0.03
Private domestic credit/GDP (in logs)	0.15	0.57	-0.51	0.07
Structure-adjusted trade volume/GDP (in logs)	0.16	0.33	0.05	0.02
Government consumption /GDP (in logs)	-0.79	-0.37	0.26	-0.32
Main telephone lines per capita (in logs)	0.34	0.25	0.22	0.16
Inflation rate (in log [1+inf. rate])	0.03	0.00	-0.01	0.01
Std. Dev. of output gap	-0.32	-0.28	0.18	0.21
Index of real exchange rate overvaluation (in logs)	-0.13	-0.03	0.29	0.03
Frequency of years under banking crisis	0.00	1.16	1.16	-2.31
Growth rate of terms of trade	-0.20	0.21	0.04	-0.46
Period shifts	-0.13	-0.64	0.44	-1.45
Projected Change	-1.43	0.72	3.20	-5.02
Actual Change	-3.97	0.03	2.37	-2.87

Table D.6 Costa Rica

(A) Decades

Growth			
Determinants	1990s vs. 80s	1990s vs. 70s	1980s vs. 70s
Initial GDP per capita (in logs)	-0.19	-0.41	-0.22
Initial output gap (log[actual GDP/potential GDP])	0.36	-0.24	-0.30
Secondary enrollment (in logs)	0.16	0.26	0.10
Private domestic credit/GDP (in logs)	-0.09	-0.36	-0.27
Structure-adjusted trade volume/GDP (in logs)	0.41	0.43	0.02
Government consumption /GDP (in logs)	0.26	0.25	-0.02
Main telephone lines per capita (in logs)	0.36	0.85	0.49
Inflation rate (in log [1+inf. rate])	0.04	-0.02	-0.06
Std. Dev. of output gap	-0.16	-0.11	0.05
Index of real exchange rate overvaluation (in logs)	-0.02	0.34	0.35
Frequency of years under banking crisis	0.29	0.00	-0.29
Growth rate of terms of trade	0.17	0.17	0.00
Period shifts	-0.48	-1.72	-1.25
Projected Change	1.13	-0.57	-1.69
Actual Change	3.80	0.73	-3.07

(B) Five-Year Periods

Growth				
Determinants	1996-99 vs. 1991-95	1991-95 vs. 1986-90	1986-90 vs. 1981-85	1981-85 vs. 1976-80
Initial GDP per capita (in logs)	-0.29	-0.17	0.23	-0.19
Initial output gap (log[actual GDP/potential GDP])	-0.52	-0.29	1.01	-1.33
Secondary enrollment (in logs)	0.08	0.19	-0.13	-0.05
Private domestic credit/GDP (in logs)	0.06	-0.07	-0.10	-0.21
Structure-adjusted trade volume/GDP (in logs)	0.19	0.22	0.21	-0.12
Government consumption /GDP (in logs)	0.02	0.30	-0.08	0.16
Main telephone lines per capita (in logs)	0.20	0.21	0.11	0.22
Inflation rate (in log [1+inf. rate])	0.03	-0.01	0.08	-0.11
Std. Dev. of output gap	-0.30	-0.41	0.76	-0.23
Index of real exchange rate overvaluation (in logs)	-0.01	0.00	-0.02	0.35
Frequency of years under banking crisis	0.00	0.58	-0.58	0.00
Growth rate of terms of trade	-0.15	0.27	-0.07	-0.25
Period shifts	-0.13	-0.64	0.44	-1.45
Projected Change	-0.83	0.19	1.87	-3.20
Actual Change	0.44	1.30	4.61	-4.76

Table D.7 Dominican Republic

(A) Decades

Growth			
Determinants	1990s vs. 80s	1990s vs. 70s	1980s vs. 70s
Initial GDP per capita (in logs)	-0.14	-0.61	-0.47
Initial output gap (log[actual GDP/potential GDP])	0.46	0.40	-0.03
Secondary enrollment (in logs)	0.08	0.59	0.51
Private domestic credit/GDP (in logs)	-0.10	0.01	0.11
Structure-adjusted trade volume/GDP (in logs)	0.16	0.39	0.23
Government consumption /GDP (in logs)	0.41	0.39	-0.02
Main telephone lines per capita (in logs)	0.73	0.97	0.24
Inflation rate (in log [1+inf. rate])	0.05	0.00	-0.06
Std. Dev. of output gap	0.33	-0.05	-0.37
Index of real exchange rate overvaluation (in logs)	0.10	0.27	0.17
Frequency of years under banking crisis	0.00	0.00	0.00
Growth rate of terms of trade	0.82	0.36	-0.46
Period shifts	-0.48	-1.72	-1.25
Projected Change	2.42	1.00	-1.42
Actual Change	3.44	-0.43	-3.87

(B) Five-Year Periods

Growth				
Determinants	1996-99 vs. 1991-95	1991-95 vs. 1986-90	1986-90 vs. 1981-85	1981-85 vs. 1976-80
Initial GDP per capita (in logs)	-0.19	-0.05	0.00	-0.21
Initial output gap (log[actual GDP/potential GDP])	-0.44	0.03	0.89	-0.29
Secondary enrollment (in logs)	0.62	-0.02	-0.35	0.42
Private domestic credit/GDP (in logs)	0.09	-0.12	-0.06	0.03
Structure-adjusted trade volume/GDP (in logs)	0.04	-0.06	0.40	0.06
Government consumption /GDP (in logs)	-0.81	0.45	0.65	-0.66
Main telephone lines per capita (in logs)	0.17	0.47	0.36	0.06
Inflation rate (in log [1+inf. rate])	0.04	0.06	-0.05	-0.03
Std. Dev. of output gap	0.32	0.44	-0.50	-0.16
Index of real exchange rate overvaluation (in logs)	-0.04	-0.05	0.34	0.04
Frequency of years under banking crisis	0.00	0.00	0.00	0.00
Growth rate of terms of trade	-0.68	1.30	-0.35	0.02
Period shifts	-0.13	-0.64	0.44	-1.45
Projected Change	-1.01	1.81	1.76	-2.17
Actual Change	3.50	1.58	0.60	-2.34

Table D.8 Ecuador

(A) Decades

Growth			
Determinants	1990s vs. 80s	1990s vs. 70s	1980s vs. 70s
Initial GDP per capita (in logs)	0.01	-0.61	-0.63
Initial output gap (log[actual GDP/potential GDP])	0.20	-0.69	-0.44
Secondary enrollment (in logs)	-0.11	0.50	0.62
Private domestic credit/GDP (in logs)	0.14	0.23	0.09
Structure-adjusted trade volume/GDP (in logs)	0.13	-0.02	-0.15
Government consumption /GDP (in logs)	0.27	0.38	0.11
Main telephone lines per capita (in logs)	0.40	0.68	0.28
Inflation rate (in log [1+inf. rate])	0.00	-0.10	-0.09
Std. Dev. of output gap	0.29	0.44	0.15
Index of real exchange rate overvaluation (in logs)	0.15	0.28	0.13
Frequency of years under banking crisis	-0.42	-1.00	-0.58
Growth rate of terms of trade	0.13	-0.22	-0.35
Period shifts	-0.48	-1.72	-1.25
Projected Change	0.73	-1.83	-2.56
Actual Change	0.04	-6.08	-6.12

(B) Five-Year Periods

Growth				
Determinants	1996-99 vs. 1991-95	1991-95 vs. 1986-90	1986-90 vs. 1981-85	1981-85 vs. 1976-80
Initial GDP per capita (in logs)	-0.10	0.03	0.05	-0.30
Initial output gap (log[actual GDP/potential GDP])	-0.33	0.47	-0.07	-0.59
Secondary enrollment (in logs)	0.08	-0.16	0.02	0.30
Private domestic credit/GDP (in logs)	0.33	0.05	-0.12	0.11
Structure-adjusted trade volume/GDP (in logs)	0.02	0.11	0.02	-0.17
Government consumption /GDP (in logs)	-0.37	0.31	0.26	0.13
Main telephone lines per capita (in logs)	0.19	0.22	0.20	0.09
Inflation rate (in log [1+inf. rate])	0.01	0.02	-0.07	-0.07
Std. Dev. of output gap	-0.78	0.77	-0.27	-0.54
Index of real exchange rate overvaluation (in logs)	-0.01	-0.02	0.36	0.02
Frequency of years under banking crisis	-2.89	0.00	1.73	-1.16
Growth rate of terms of trade	0.03	0.13	-0.03	-0.93
Period shifts	-0.13	-0.64	0.44	-1.45
Projected Change	-3.94	1.31	2.52	-4.56
Actual Change	-3.64	1.57	0.18	-4.02

Table D.9 El Salvador

(A) Decades

Growth			
Determinants	1990s vs. 80s	1990s vs. 70s	1980s vs. 70s
Initial GDP per capita (in logs)	-0.05	0.22	0.27
Initial output gap (log[actual GDP/potential GDP])	-0.10	-0.37	-0.14
Secondary enrollment (in logs)	0.42	0.80	0.38
Private domestic credit/GDP (in logs)	0.13	0.13	0.00
Structure-adjusted trade volume/GDP (in logs)	0.37	0.24	-0.13
Government consumption /GDP (in logs)	0.65	0.35	-0.30
Main telephone lines per capita (in logs)	0.63	0.98	0.35
Inflation rate (in log [1+inf. rate])	0.04	0.01	-0.03
Std. Dev. of output gap	0.21	0.31	0.11
Index of real exchange rate overvaluation (in logs)	-0.13	-0.37	-0.24
Frequency of years under banking crisis	0.29	0.00	-0.29
Growth rate of terms of trade	0.10	0.07	-0.03
Period shifts	-0.48	-1.72	-1.25
Projected Change	2.09	0.65	-1.45
Actual Change	4.14	2.85	-1.29

Growth				
Determinants	1996-99 vs. 1991-95	1991-95 vs. 1986-90	1986-90 vs. 1981-85	1981-85 vs. 1976-80
Initial GDP per capita (in logs)	-0.35	-0.06	0.32	0.19
Initial output gap (log[actual GDP/potential GDP])	-0.81	0.28	-0.47	-0.51
Secondary enrollment (in logs)	0.60	0.07	0.16	0.19
Private domestic credit/GDP (in logs)	0.29	0.07	-0.13	0.08
Structure-adjusted trade volume/GDP (in logs)	0.26	0.30	-0.09	-0.11
Government consumption /GDP (in logs)	-0.09	0.51	0.35	-0.35
Main telephone lines per capita (in logs)	0.42	0.38	0.15	0.13
Inflation rate (in log [1+inf. rate])	0.04	0.04	-0.04	-0.01
Std. Dev. of output gap	0.34	-0.30	0.70	0.13
Index of real exchange rate overvaluation (in logs)	-0.13	-0.06	-0.03	-0.17
Frequency of years under banking crisis	0.00	0.58	-0.58	0.00
Growth rate of terms of trade	-0.45	-0.04	0.67	-0.66
Period shifts	-0.13	-0.64	0.44	-1.45
Projected Change	-0.01	1.14	1.46	-2.54
Actual Change	-2.80	3 26	4 26	-1 43

(B) Five-Year Periods

Table D.10 Haiti

(A) Decades

(B) Five-Year Periods

Growth			
Determinants	1990s vs. 80s	1990s vs. 70s	1980s vs. 70s
Initial GDP per capita (in logs)	0.49	0.23	-0.27
Initial output gap (log[actual GDP/potential GDP])	0.54	-0.67	-0.61
Secondary enrollment (in logs)	0.71	1.96	1.25
Private domestic credit/GDP (in logs)	0.08	0.30	0.22
Structure-adjusted trade volume/GDP (in logs)	0.52	0.77	0.25
Government consumption /GDP (in logs)	0.68	0.50	-0.18
Main telephone lines per capita (in logs)	0.25		
Inflation rate (in log [1+inf. rate])	-0.06	-0.04	0.02
Std. Dev. of output gap	-0.49	0.00	0.49
Index of real exchange rate overvaluation (in logs)	-0.01	-0.09	-0.08
Frequency of years under banking crisis	0.00	0.00	0.00
Growth rate of terms of trade	0.10	0.17	0.06
Period shifts	-0.48	-1.72	-1.25
Projected Change	2.34		
Actual Change	-0.59	-5.43	-4 84

Growin				
Determinants	1996-99 vs. 1991-95	1991-95 vs. 1986-90	1986-90 vs. 1981-85	1981-85 vs. 1976-80
Initial GDP per capita (in logs)	0.47	0.16	0.25	-0.34
Initial output gap (log[actual GDP/potential GDP])	0.15	-0.25	1.33	-2.39
Secondary enrollment (in logs)	0.21	0.44	0.36	0.67
Private domestic credit/GDP (in logs)	0.08	0.07	-0.05	0.02
Structure-adjusted trade volume/GDP (in logs)	0.47	0.26	0.10	0.06
Government consumption /GDP (in logs)	-0.01	0.53	0.30	-0.31
Main telephone lines per capita (in logs)	0.09	0.08	0.24	
Inflation rate (in log [1+inf. rate])	0.04	-0.09	0.02	0.00
Std. Dev. of output gap	1.15	-1.07	0.14	0.58
Index of real exchange rate overvaluation (in logs)	-0.25	0.11	-0.01	-0.05
Frequency of years under banking crisis	0.00	0.00	0.00	0.00
Growth rate of terms of trade	-0.11	0.09	0.12	-0.29
Period shifts	-0.13	-0.64	0.44	-1.45
Projected Change	2.17	-0.30	3.23	
Actual Change	5.59	-3.58	1.00	-6.67

Table D.11 Honduras

(A) Decades

Growth			
Determinants	1990s vs. 80s	1990s vs. 70s	1980s vs. 70s
Initial GDP per capita (in logs)	0.04	-0.23	-0.27
Initial output gap (log[actual GDP/potential GDP])	0.25	-0.09	-0.17
Secondary enrollment (in logs)	-0.10	1.04	1.13
Private domestic credit/GDP (in logs)	-0.16	-0.06	0.10
Structure-adjusted trade volume/GDP (in logs)	-0.07	-0.24	-0.18
Government consumption /GDP (in logs)	0.44	0.22	-0.22
Main telephone lines per capita (in logs)	0.60	1.06	0.46
Inflation rate (in log [1+inf. rate])	-0.05	-0.05	0.00
Std. Dev. of output gap	-0.09	0.22	0.31
Index of real exchange rate overvaluation (in logs)	0.30	0.26	-0.04
Frequency of years under banking crisis	0.00	0.00	0.00
Growth rate of terms of trade	0.13	0.06	-0.07
Period shifts	-0.48	-1.72	-1.25
Projected Change	0.82	0.46	-0.36
Actual Change	0.84	-1.94	-2.78

Growth				
Determinants	1996-99 vs. 1991-95	1991-95 vs. 1986-90	1986-90 vs. 1981-85	1981-85 vs. 1976-80
Initial GDP per capita (in logs)	-0.05	0.00	0.13	-0.31
Initial output gap (log[actual GDP/potential GDP])	-0.20	0.51	-0.01	-1.60
Secondary enrollment (in logs)	-0.03	-0.10	0.03	0.82
Private domestic credit/GDP (in logs)	-0.01	-0.18	0.05	0.03
Structure-adjusted trade volume/GDP (in logs)	-0.01	-0.05	-0.03	-0.15
Government consumption /GDP (in logs)	0.11	0.45	-0.13	-0.13
Main telephone lines per capita (in logs)	0.35	0.31	0.27	0.26
Inflation rate (in log [1+inf. rate])	0.01	-0.05	-0.01	0.01
Std. Dev. of output gap	-0.03	-0.09	0.02	0.18
Index of real exchange rate overvaluation (in logs)	-0.04	0.30	0.02	-0.05
Frequency of years under banking crisis	0.00	0.00	0.00	0.00
Growth rate of terms of trade	-0.30	-0.02	0.56	-0.60
Period shifts	-0.13	-0.64	0.44	-1.45
Projected Change	-0.32	0.46	1.34	-3.00
Actual Change	-0.93	0.51	1.49	-5.03

(B) Five-Year Periods

Table D.12 Jamaica

(A) Decades

Growth			
Determinants	1990s vs. 80s	1990s vs. 70s	1980s vs. 70s
Initial GDP per capita (in logs)	-0.30	0.15	0.45
Initial output gap (log[actual GDP/potential GDP])	-0.88	-0.45	0.22
Secondary enrollment (in logs)	0.21	0.40	0.18
Private domestic credit/GDP (in logs)	-0.07	0.02	0.09
Structure-adjusted trade volume/GDP (in logs)	0.16	0.34	0.18
Government consumption /GDP (in logs)	0.28	0.38	0.10
Main telephone lines per capita (in logs)	0.86	1.12	0.26
Inflation rate (in log [1+inf. rate])	-0.05	-0.04	0.01
Std. Dev. of output gap	0.58	0.75	0.18
Index of real exchange rate overvaluation (in logs)	0.10	0.30	0.20
Frequency of years under banking crisis	-1.93	-1.93	0.00
Growth rate of terms of trade	-0.23	-0.03	0.19
Period shifts	-0.48	-1.72	-1.25
Projected Change	-1.73	-0.70	1.03
Actual Change	-1.86	1.50	3.36

Growth				
Determinants	1996-99 vs. 1991-95	1991-95 vs. 1986-90	1986-90 vs. 1981-85	1981-85 vs. 1976-80
Initial GDP per capita (in logs)	-0.03	-0.35	0.13	0.39
Initial output gap (log[actual GDP/potential GDP])	0.28	-1.86	0.10	1.16
Secondary enrollment (in logs)	0.30	0.05	0.05	0.04
Private domestic credit/GDP (in logs)	0.03	-0.12	0.07	0.12
Structure-adjusted trade volume/GDP (in logs)	0.03	0.01	0.27	0.07
Government consumption /GDP (in logs)	-0.48	0.31	0.37	0.11
Main telephone lines per capita (in logs)	0.41	0.59	0.19	0.10
Inflation rate (in log [1+inf. rate])	0.11	-0.11	0.01	0.02
Std. Dev. of output gap	0.02	0.64	-0.14	-0.09
Index of real exchange rate overvaluation (in logs)	-0.20	0.11	0.17	0.13
Frequency of years under banking crisis	-1.73	-1.16	0.00	0.00
Growth rate of terms of trade	-0.53	0.01	0.01	0.37
Period shifts	-0.13	-0.64	0.44	-1.45
Projected Change	-1.93	-2.52	1.68	0.96
Actual Change	-2.26	-3.60	5.49	2.91

(B) Five-Year Periods

Table D.13 Mexico

(A) Decades

Growth			
Determinants	1990s vs. 80s	1990s vs. 70s	1980s vs. 70s
Initial GDP per capita (in logs)	0.05	-0.44	-0.49
Initial output gap (log[actual GDP/potential GDP])	0.19	-0.20	-0.19
Secondary enrollment (in logs)	0.18	0.98	0.81
Private domestic credit/GDP (in logs)	0.46	0.00	-0.46
Structure-adjusted trade volume/GDP (in logs)	0.65	0.87	0.22
Government consumption /GDP (in logs)	-0.18	-0.06	0.11
Main telephone lines per capita (in logs)	0.40	0.80	0.40
Inflation rate (in log [1+inf. rate])	0.17	-0.01	-0.18
Std. Dev. of output gap	-0.05	-0.14	-0.08
Index of real exchange rate overvaluation (in logs)	-0.09	0.05	0.15
Frequency of years under banking crisis	0.22	-0.64	-0.87
Growth rate of terms of trade	0.28	-0.31	-0.59
Period shifts	-0.48	-1.72	-1.25
Projected Change	1.80	-0.81	-2.61
Actual Change	1.72	-2.15	-3.87

Growth				
Determinants	1996-99 vs. 1991-95	1991-95 vs. 1986-90	1986-90 vs. 1981-85	1981-85 vs. 1976-80
Initial GDP per capita (in logs)	0.03	0.03	0.03	-0.37
Initial output gap (log[actual GDP/potential GDP])	1.23	0.45	-0.07	-0.58
Secondary enrollment (in logs)	0.31	0.04	0.01	0.50
Private domestic credit/GDP (in logs)	-0.27	0.63	-0.09	-0.28
Structure-adjusted trade volume/GDP (in logs)	0.44	0.37	0.16	0.13
Government consumption /GDP (in logs)	0.06	-0.30	0.19	0.15
Main telephone lines per capita (in logs)	0.12	0.28	0.13	0.18
Inflation rate (in log [1+inf. rate])	-0.02	0.19	-0.04	-0.14
Std. Dev. of output gap	0.42	-0.56	0.64	-0.26
Index of real exchange rate overvaluation (in logs)	0.05	-0.16	0.10	0.09
Frequency of years under banking crisis	-0.14	-0.58	1.73	-1.73
Growth rate of terms of trade	0.19	0.08	0.23	-0.90
Period shifts	-0.13	-0.64	0.44	-1.45
Projected Change	2.29	-0.17	3.45	-4.67
Actual Change	3.88	0.00	-0.01	-4.48

(B) Five-Year Periods

Table D.14 Nicaragua

(A) Decades

Growth			
Determinants	1990s vs. 80s	1990s vs. 70s	1980s vs. 70s
Initial GDP per capita (in logs)	0.67	1.35	0.68
Initial output gap (log[actual GDP/potential GDP])	-0.97	-1.26	-0.15
Secondary enrollment (in logs)	0.48	1.17	0.69
Private domestic credit/GDP (in logs)	0.41	-0.07	-0.48
Structure-adjusted trade volume/GDP (in logs)	0.30	0.34	0.04
Government consumption /GDP (in logs)	1.00	-0.66	-1.66
Main telephone lines per capita (in logs)	0.37	0.60	0.23
Inflation rate (in log [1+inf. rate])	0.52	-0.46	-0.98
Std. Dev. of output gap	0.36	1.35	0.99
Index of real exchange rate overvaluation (in logs)	0.36	-0.76	-1.11
Frequency of years under banking crisis	-1.06	-1.93	-0.87
Growth rate of terms of trade	-0.12	0.26	0.38
Period shifts	-0.48	-1.72	-1.25
Projected Change	1.84	-1.79	-3.62
Actual Change	4.40	3.17	-1.23

Growth				
Determinants	1996-99 vs. 1991-95	1991-95 vs. 1986-90	1986-90 vs. 1981-85	1981-85 vs. 1976-80
Initial GDP per capita (in logs)	0.13	0.50	0.21	0.65
Initial output gap (log[actual GDP/potential GDP])	0.02	-0.40	-1.53	-0.47
Secondary enrollment (in logs)	0.10	0.43	0.02	0.34
Private domestic credit/GDP (in logs)	0.01	0.94	-1.08	0.06
Structure-adjusted trade volume/GDP (in logs)	0.27	0.21	-0.06	0.01
Government consumption /GDP (in logs)	0.06	1.08	-0.23	-1.21
Main telephone lines per capita (in logs)	0.38	0.19	0.02	0.11
Inflation rate (in log [1+inf. rate])	0.88	0.93	-1.62	-0.16
Std. Dev. of output gap	-0.09	0.62	-0.44	1.85
Index of real exchange rate overvaluation (in logs)	0.08	1.02	-1.40	-0.40
Frequency of years under banking crisis	2.17	-1.16	-1.73	0.00
Growth rate of terms of trade	-0.87	1.40	-2.27	1.49
Period shifts	-0.13	-0.64	0.44	-1.45
Projected Change	3.00	5.14	-9.67	0.82
Actual Change	3 99	4 26	-3.28	4 96

(B) Five-Year Periods

Table D.15 Panama

(A) Decades

Growth			
Determinants	1990s vs. 80s	1990s vs. 70s	1980s vs. 70s
Initial GDP per capita (in logs)	0.04	-0.19	-0.23
Initial output gap (log[actual GDP/potential GDP])	-0.24	-0.05	0.09
Secondary enrollment (in logs)	0.17	0.36	0.19
Private domestic credit/GDP (in logs)	0.17	0.14	-0.03
Structure-adjusted trade volume/GDP (in logs)	-0.11	-0.35	-0.24
Government consumption /GDP (in logs)	0.33	0.17	-0.16
Main telephone lines per capita (in logs)	0.28	0.45	0.17
Inflation rate (in log [1+inf. rate])	0.00	0.03	0.02
Std. Dev. of output gap	0.93	0.14	-0.80
Index of real exchange rate overvaluation (in logs)	0.15	0.26	0.12
Frequency of years under banking crisis	0.58	0.00	-0.58
Growth rate of terms of trade	0.05		
Period shifts	-0.48	-1.72	-1.25
Projected Change	1.87		
Actual Change	3.51	1.33	-2.18

(B) Five-Year Periods

Growth				
Determinants	1996-99 vs. 1991-95	1991-95 vs. 1986-90	1986-90 vs. 1981-85	1981-85 vs. 1976-80
Initial GDP per capita (in logs)	-0.31	0.24	-0.11	-0.09
Initial output gap (log[actual GDP/potential GDP])	-0.60	0.70	-1.19	0.54
Secondary enrollment (in logs)	0.09	0.11	0.04	-0.06
Private domestic credit/GDP (in logs)	0.21	0.12	-0.09	-0.05
Structure-adjusted trade volume/GDP (in logs)	-0.03	-0.06	-0.07	-0.21
Government consumption /GDP (in logs)	-0.02	0.39	-0.11	-0.10
Main telephone lines per capita (in logs)	0.19	0.14	0.12	0.11
Inflation rate (in log [1+inf. rate])	0.00	0.00	0.01	0.02
Std. Dev. of output gap	0.13	1.29	-0.82	-0.18
Index of real exchange rate overvaluation (in logs)	0.04	0.09	0.08	0.06
Frequency of years under banking crisis	0.00	1.16	-1.16	0.00
Growth rate of terms of trade	0.13	0.00	-0.02	
Period shifts	-0.13	-0.64	0.44	-1.45
Projected Change	-0.30	3.52	-2.87	
Actual Change	-1.57	6.19	-3.97	0.23

Table D.16 Paraguay

(A) Decades

Growth			
Determinants	1990s vs. 80s	1990s vs. 70s	1980s vs. 70s
Initial GDP per capita (in logs)	-0.02	-0.79	-0.77
Initial output gap (log[actual GDP/potential GDP])	0.47	-0.51	-0.49
Secondary enrollment (in logs)	0.50	1.17	0.67
Private domestic credit/GDP (in logs)	0.36	0.22	-0.14
Structure-adjusted trade volume/GDP (in logs)	0.71	0.87	0.16
Government consumption /GDP (in logs)	-0.15	-0.18	-0.03
Main telephone lines per capita (in logs)	0.37	0.79	0.42
Inflation rate (in log [1+inf. rate])	0.03	0.00	-0.03
Std. Dev. of output gap	0.51	0.29	-0.22
Index of real exchange rate overvaluation (in logs)	0.20	0.24	0.04
Frequency of years under banking crisis	-1.61	-1.61	0.00
Growth rate of terms of trade	-0.18	-0.27	-0.09
Period shifts	-0.48	-1.72	-1.25
Projected Change	0.73	-1.51	-2.24
Actual Change	-0.30	-6.29	-5.99

(B) Five-Year P	eriods
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Growth				
Determinants	1996-99 vs. 1991-95	1991-95 vs. 1986-90	1986-90 vs. 1981-85	1981-85 vs. 1976-80
Initial GDP per capita (in logs)	-0.04	-0.06	0.11	-0.65
Initial output gap (log[actual GDP/potential GDP])	-0.19	-0.05	0.99	-1.83
Secondary enrollment (in logs)	0.44	0.31	-0.01	0.43
Private domestic credit/GDP (in logs)	0.18	0.36	-0.16	-0.03
Structure-adjusted trade volume/GDP (in logs)	-0.01	0.54	0.34	-0.11
Government consumption /GDP (in logs)	-0.30	-0.04	0.05	-0.15
Main telephone lines per capita (in logs)	0.26	0.18	0.15	0.25
Inflation rate (in log [1+inf. rate])	0.04	0.04	-0.05	0.00
Std. Dev. of output gap	-0.04	0.19	0.68	-0.18
Index of real exchange rate overvaluation (in logs)	-0.01	0.05	0.30	-0.06
Frequency of years under banking crisis	-2.31	-0.58	0.00	0.00
Growth rate of terms of trade	-0.35	-0.40	0.76	-0.85
Period shifts	-0.13	-0.64	0.44	-1.45
Projected Change	-2.46	-0.10	3.62	-4.63
Actual Change	-2.45	-0.20	1.99	-8.64
Table D.17 Peru

(A) Decades

Growth			
Determinants	1990s vs. 80s	1990s vs. 70s	1980s vs. 70s
Initial GDP per capita (in logs)	0.30	0.33	0.03
Initial output gap (log[actual GDP/potential GDP])	0.28	0.28	0.00
Secondary enrollment (in logs)	0.21	0.81	0.59
Private domestic credit/GDP (in logs)	0.12	-0.16	-0.28
Structure-adjusted trade volume/GDP (in logs)	0.33	0.24	-0.09
Government consumption /GDP (in logs)	0.12	0.39	0.27
Main telephone lines per capita (in logs)	0.51	0.76	0.25
Inflation rate (in log [1+inf. rate])	0.72	-0.09	-0.81
Std. Dev. of output gap	0.73	-0.33	-1.07
Index of real exchange rate overvaluation (in logs)	-0.48	-0.51	-0.03
Frequency of years under banking crisis	1.45	0.00	-1.45
Growth rate of terms of trade	0.02	-0.20	-0.22
Period shifts	-0.48	-1.72	-1.25
Projected Change	3.84	-0.22	-4.05
Actual Change	5.32	1.48	-3.83

Growth				
Determinants	1996-99 vs. 1991-95	1991-95 vs. 1986-90	1986-90 vs. 1981-85	1981-85 vs. 1976-80
Initial GDP per capita (in logs)	-0.32	0.35	0.18	0.04
Initial output gap (log[actual GDP/potential GDP])	-2.49	0.02	0.55	0.49
Secondary enrollment (in logs)	0.21	0.05	0.13	0.26
Private domestic credit/GDP (in logs)	0.50	0.09	-0.40	0.05
Structure-adjusted trade volume/GDP (in logs)	0.16	0.33	-0.14	0.01
Government consumption /GDP (in logs)	-0.31	0.21	0.10	0.14
Main telephone lines per capita (in logs)	0.49	0.22	0.15	0.10
Inflation rate (in log [1+inf. rate])	0.33	1.17	-1.19	-0.15
Std. Dev. of output gap	0.62	0.57	-0.23	-1.05
Index of real exchange rate overvaluation (in logs)	0.01	-0.31	-0.35	0.09
Frequency of years under banking crisis	0.00	2.31	-1.73	-0.58
Growth rate of terms of trade	-0.18	-0.06	0.32	-0.95
Period shifts	-0.13	-0.64	0.44	-1.45
Projected Change	-1.11	4.32	-2.17	-3.01
Actual Change	-2.85	7.53	-1.91	-1.63

(B) Five-Year Periods

Table D.18 Trinidad and Tobago

(A) Decades

Growth			
Determinants	1990s vs. 80s	1990s vs. 70s	1980s vs. 70s
Initial GDP per capita (in logs)	0.21	-0.56	-0.77
Initial output gap (log[actual GDP/potential GDP])	0.01	-0.37	-0.19
Secondary enrollment (in logs)	-0.08	0.68	0.76
Private domestic credit/GDP (in logs)	-0.12	0.38	0.51
Structure-adjusted trade volume/GDP (in logs)	0.00	0.20	0.21
Government consumption /GDP (in logs)	0.66	0.15	-0.51
Main telephone lines per capita (in logs)	0.45	1.03	0.58
Inflation rate (in log [1+inf. rate])	0.02	0.03	0.01
Std. Dev. of output gap	0.23	0.29	0.06
Index of real exchange rate overvaluation (in logs)	0.12	-0.01	-0.12
Frequency of years under banking crisis	0.00	0.00	0.00
Growth rate of terms of trade	-0.35	-1.36	-1.01
Period shifts	-0.48	-1.72	-1.25
Projected Change	0.68	-1.24	-1.92
Actual Change	3.28	-3.05	-6.33

Growth				
Determinants	1996-99 vs. 1991-95	1991-95 vs. 1986-90	1986-90 vs. 1981-85	1981-85 vs. 1976-80
Initial GDP per capita (in logs)	-0.05	0.25	-0.04	-0.59
Initial output gap (log[actual GDP/potential GDP])	-0.01	0.24	-0.22	-1.16
Secondary enrollment (in logs)	0.02	-0.16	0.13	0.48
Private domestic credit/GDP (in logs)	-0.08	-0.17	0.18	0.30
Structure-adjusted trade volume/GDP (in logs)	0.24	-0.28	0.34	0.02
Government consumption /GDP (in logs)	0.10	0.49	0.26	-0.70
Main telephone lines per capita (in logs)	0.14	0.12	0.54	0.31
Inflation rate (in log [1+inf. rate])	0.01	0.01	0.01	0.00
Std. Dev. of output gap	0.24	-0.14	0.53	-0.40
Index of real exchange rate overvaluation (in logs)	0.05	0.04	0.11	-0.15
Frequency of years under banking crisis	0.00	0.00	0.00	0.00
Growth rate of terms of trade	1.21	-1.20	0.63	-0.91
Period shifts	-0.13	-0.64	0.44	-1.45
Projected Change	1.73	-1.44	2.92	-4.25
Actual Change	3.28	3.51	-3.38	-6.21

(B) Five-Year Periods

Table D.19 Uruguay

(A) Decades

Growth			
Determinants	1990s vs. 80s	1990s vs. 70s	1980s vs. 70s
Initial GDP per capita (in logs)	-0.20	-0.41	-0.20
Initial output gap (log[actual GDP/potential GDP])	0.76	0.27	-0.24
Secondary enrollment (in logs)	0.27	0.59	0.32
Private domestic credit/GDP (in logs)	-0.25	0.41	0.66
Structure-adjusted trade volume/GDP (in logs)	0.39	0.61	0.22
Government consumption /GDP (in logs)	0.16	0.13	-0.03
Main telephone lines per capita (in logs)	0.49	0.74	0.26
Inflation rate (in log [1+inf. rate])	0.07	0.08	0.01
Std. Dev. of output gap	0.48	0.01	-0.47
Index of real exchange rate overvaluation (in logs)	-0.21	-0.10	0.12
Frequency of years under banking crisis	1.45	0.29	-1.16
Growth rate of terms of trade	0.12	0.44	0.32
Period shifts	-0.48	-1.72	-1.25
Projected Change	3.03	1.34	-1.69
Actual Change	3.36	0.10	-3.26

Growth				
Determinants	1996-99 vs. 1991-95	1991-95 vs. 1986-90	1986-90 vs. 1981-85	1981-85 vs. 1976-80
Initial GDP per capita (in logs)	-0.28	-0.28	0.40	-0.34
Initial output gap (log[actual GDP/potential GDP])	-0.18	-0.73	2.24	-1.18
Secondary enrollment (in logs)	0.08	0.12	0.21	0.20
Private domestic credit/GDP (in logs)	0.10	-0.18	-0.24	0.44
Structure-adjusted trade volume/GDP (in logs)	0.18	0.27	0.08	0.07
Government consumption /GDP (in logs)	-0.12	0.12	0.19	-0.19
Main telephone lines per capita (in logs)	0.22	0.28	0.22	0.12
Inflation rate (in log [1+inf. rate])	0.16	0.05	-0.10	0.03
Std. Dev. of output gap	0.07	0.01	0.89	-0.72
Index of real exchange rate overvaluation (in logs)	-0.10	-0.24	0.14	0.08
Frequency of years under banking crisis	0.00	0.00	2.89	-2.89
Growth rate of terms of trade	-0.10	0.00	0.34	-0.03
Period shifts	-0.13	-0.64	0.44	-1.45
Projected Change	-0.09	-1.23	7.70	-5.85
Actual Change	-1.03	-0.01	7.66	-8.35

(B) Five-Year Periods

Table D.20 Venezuela

(A) Decades

Growth			
Determinants	1990s vs. 80s	1990s vs. 70s	1980s vs. 70s
Initial GDP per capita (in logs)	0.11	0.37	0.26
Initial output gap (log[actual GDP/potential GDP])	0.20	0.53	0.16
Secondary enrollment (in logs)	0.48	-0.05	-0.52
Private domestic credit/GDP (in logs)	-0.83	-0.69	0.13
Structure-adjusted trade volume/GDP (in logs)	0.19	0.01	-0.18
Government consumption /GDP (in logs)	0.54	0.65	0.11
Main telephone lines per capita (in logs)	0.30	0.71	0.41
Inflation rate (in log [1+inf. rate])	-0.08	-0.15	-0.06
Std. Dev. of output gap	0.01	-0.37	-0.38
Index of real exchange rate overvaluation (in logs)	0.10	0.24	0.14
Frequency of years under banking crisis	-0.96	-0.96	0.00
Growth rate of terms of trade	0.04	-0.74	-0.78
Period shifts	-0.48	-1.72	-1.25
Projected Change	-0.39	-2.18	-1.79
Actual Change	1.45	0.46	-0.99

(B) Five-Year Periods

Growth				
Determinants	1996-99 vs. 1991-95	1991-95 vs. 1986-90	1986-90 vs. 1981-85	1981-85 vs. 1976-80
Initial GDP per capita (in logs)	-0.10	0.00	0.31	0.09
Initial output gap (log[actual GDP/potential GDP])	-1.05	-0.04	0.45	-0.41
Secondary enrollment (in logs)	0.21	-0.03	0.83	-0.87
Private domestic credit/GDP (in logs)	-0.48	-0.50	-0.23	0.10
Structure-adjusted trade volume/GDP (in logs)	0.15	0.12	0.00	-0.15
Government consumption /GDP (in logs)	0.34	0.28	0.23	0.04
Main telephone lines per capita (in logs)	0.13	0.16	0.16	0.20
Inflation rate (in log [1+inf. rate])	-0.02	-0.02	-0.11	0.00
Std. Dev. of output gap	-0.25	0.53	-0.81	0.05
Index of real exchange rate overvaluation (in logs)	-0.18	0.03	0.31	0.00
Frequency of years under banking crisis	1.73	-1.73	0.00	0.00
Growth rate of terms of trade	0.32	0.25	-0.70	-0.43
Period shifts	-0.13	-0.64	0.44	-1.45
Projected Change	0.66	-1.61	0.87	-2.84
Actual Change	-3.20	1.15	3.45	-2.50

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