VICTOR J. ELIAS

EXECUTIVE SUMMARY

A Study of Seven Latin American Economies

# Sources of Growth

Fundación del Tucumán

International Center for Economic Growth

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## A Study of Seven Latin American Economies

by Victor J. Elías

A Joint Research Project of
the Fundación del Tucumán and the
International Center for Economic Growth

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# Contents

## Contents of the book *Sources of Growth*

# Preface

Economic growth is one of the primary goals of national economic policy, but for most of the Latin American countries this goal has been notoriously difficult to achieve in the past couple of decades. While scholars have conducted extensive studies on the sources of economic growth in the industrial countries, few have applied the sources-of-growth method to Latin America. In *Sources of Growth: A Study of Seven Latin American Economies,* Victor J. Elías examines the sources of growth, and the forces that underlie them, in Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Venezuela. In so doing, he comes to some interesting conclusions about the roles of various factor inputs, such as capital, labor, and technology, and economic sectors in contributing to growth.

Elías's findings, outlined in this executive summary, shed light on why different growth behavior is observed in the developed and developing countries. The study presents useful guidelines for future investment by both the public and the private sector. Ultimately, his conclusions have important implications for policy in Latin America. Only by pursuing policies that promote growth will the countries of Latin America succeed in overcoming the economic stagnation and poverty that plague them.

In this study, students of economic growth will find suggestions for future research; professors, a useful text for empirical economic growth courses; and policy designers, evaluations of different policy tools.

Through a joint research project with the Fundación del Tucumán of

Argentina, the International Center for Economic Growth supported the study whose results are presented here.

Nicolás Ardito-Barletta
General Director
International Center for Economic Growth

Panama City, Panama
May 1992

# Summary of Conclusions

Although economists continually stress growth as a goal of economic policy, they are still learning just what combination of factors and conditions produces growth. The attempt to pin down the sources of growth has produced an extensive literature, focused mainly on the industrial countries, that aims to determine why growth fluctuates among countries and time periods, how to measure the factors that influence growth, and how policy can stimulate growth. For instance, is capital or labor more important for growth? What is the role of technology advances?

In this study, Victor J. Elías examines the sources of growth in seven Latin American countries—Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Venezuela—from 1940 to 1985, comparing these countries both with each other and with the industrial countries. He identifies the role of labor, capital, and technology and derives lessons for policy.

1. The formula used to analyze the sources of growth is as follows: output growth (that is, the growth of gross domestic product) is the sum of the contributions of labor, capital, and technology (also known as total factor productivity). The labor contribution is made up of growth in the quantity of labor plus growth in the quality of labor times the labor income share, and the capital contribution comprises growth in the quantity of capital plus growth in the quality of capital times the capital income share. The technological contribution equals the change of output per unit of total input.

2. Comparing the seven Latin American countries with certain industrial countries reveals some interesting insights into how growth occurs in the two groups of countries:

   - Latin America has experienced phases of growth acceleration and slowdown. The phases were synchronized with those of the industrial countries and had similar durations. The accelerations were not as pronounced as those of the industrial countries, but they were somewhat smoother.

   - The quality of labor has played an important role as a source of growth. However, its role was more varied in Latin America than in the industrial countries, making its future role more difficult to predict.

   - Capital input has been an important factor in GDP growth, mainly because of its quantity component. This phenomenon is different from that observed in industrial countries, where both components of capital (quantity and quality) were important.

   - In the agricultural, manufacturing, and public sectors, capital input was, again, an important growth factor. At the same time, the labor contribution to growth was irregular across these sectors, both among countries and over time.

   - The rate of technological change is less closely related to capital accumulation in Latin American countries than it is in industrial countries.

   - Important productivity gaps exist among Latin American countries and between those countries and more developed countries.

3. Policy variables, such as those related to government expenditures, the size of the fiscal deficit, and foreign trade, are significant elements in explaining the diverse rates of

growth observed among Latin American countries. Some Latin American countries, notably Colombia and Mexico, report greater growth stability than others in the fifty-year period studied.

4. The sources-of-growth analysis suggests that specific policies should be designed on the basis of careful attention to the behavior of the main sources of growth, especially in the public, agricultural, and manufacturing sectors. Examples include the following:

   - The analysis reveals that the quality of labor has been an important source of labor input growth and that education has been the main source of growth in labor quality. Therefore, educational investment seems to be a useful direction for future economic policies.

   - Policies that help make capital markets more efficient should greatly improve the quality of capital, thus accelerating growth.

   - Productivity analysis of the public sector reveals misallocations of both inputs—labor and capital—suggesting that future policies could stimulate growth by promoting the transfer of part of these inputs to the private sector.

   - Technological change has been associated with capital accumulation in agriculture in Latin America. This suggests that policies could promote growth by stimulating some additional contribution from technological change.

# An Overview of *Sources of Growth*

Economic growth, defined as the growth of gross domestic product (GDP) per capita, can improve the well-being of a country's poor and bring an increase in social welfare for all members of a society. But as an objective of policy, economic growth has not been easy to achieve. After 1950, many countries registered strong and rapid economic growth, doubling their GDP per capita in a very short period, after centuries of slow and fitful growth. Yet in the 1980s many developing countries experienced economic stagnation and even decline. These experiences suggest that there is strong potential for the design of optimal economic growth policies and for increasing the number of countries that can benefit from economic growth in the 1990s and beyond.

Sources-of-growth analysis seeks to explain the diverse stages of growth and disparities in growth across countries and over time. The book *Sources of Growth* proposes a methodological advance by quantifying the data for traditional sources of growth and providing some new empirical tools for measuring the role of other factors that seem significant in recent growth acceleration experiences. These advances are based on a detailed analysis of the economic performance of Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Venezuela between 1940 and 1985.

## The Sources-of-Growth Methodology

This study uses the following formula to analyze the sources of growth: output growth is the sum of the contributions of labor, capital, and a residual element that has come to be called technology or total factor productivity. The labor contribution is made up of growth in the quantity and quality of labor times the labor income share, and the capital contribution comprises growth in the quantity and quality of capital times the capital income share. The technological contribution equals the change of output per unit of total input. This formula is shown schematically in Figure 1.

The sources-of-growth method provides a structure for organizing the information in national accounts. The current state of these accounts was influenced by the development of macroeconomic models that emphasized the demand side of economic growth questions. This method attempts to complete the information, approaching the material from the supply side as well. In this way, the method gives the analysis of national accounts a more powerful role in the interpretation of the process of economic growth than was possible previously.

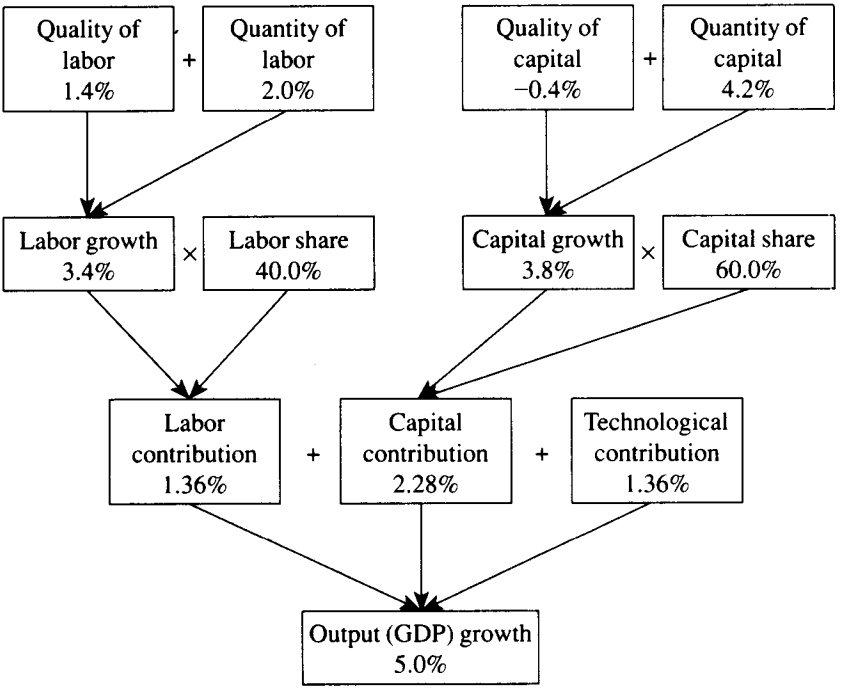
Even though this method is not a theory of economic growth, it provides a great deal of information that is useful for the design of economic policies, showing the role played by each component in the past and measuring the changes experienced by each variable, along with the effect to be expected from a change in each of them. This information is vital for the design of government expenditure and tax policies, many of which affect the quality of both labor and capital inputs.

A complete theory of growth will have to go beyond the input sources of growth and discover their determinants. Such a theory will have to account not only for the behavioral function underlying the determination of the level of each input, but also for the relevance of each of the elements as a determinant of growth.

## Latin American Macroeconomic Performance

By way of background, it is useful to look at both growth and stability in the seven Latin American countries studied. These countries showed a

**FIGURE 1** Sources of Economic Growth for Seven Latin American Countries, 1940–1985 (average annual percentage)




SOURCE: Victor J. Elías, *Sources of Growth: A Study of Seven Latin American Economies*, International Center for Economic Growth (San Francisco: ICS Press, 1992).

positive trend in their average annual growth rate of per capita GDP. The average rate for all the countries rose from 1.29 percent in the period 1900–1940 to 2.37 percent in the period 1940–1980.

One measure of economic stability is an appraisal of the business cycle. Recent studies have included business-cycle quantifications for Argentina, Mexico, and Venezuela, showing that in all three countries expansionary periods lasted much longer than contractionary periods. Although business-cycle phases in these economies were of similar duration, they were not synchronized. In a period of twenty-one years, for example, Argentina and Mexico were in different phases half the time. More

advanced countries report a higher degree of synchronization of business-cycle and growth phases.

The variability of the inflation rate is another important measure of economic stability. In the 1940s, these Latin American countries had similar rates of annual inflation, around 13 percent. In the 1950s, Argentina, Brazil, and Chile had accelerating inflation rates, while the other countries experienced low inflation, below 13 percent. In the 1960s, Brazil experienced an acceleration of its inflation rate, a phenomenon that spread to the rest of the continent in the 1970s.

## The Sources of Economic Growth

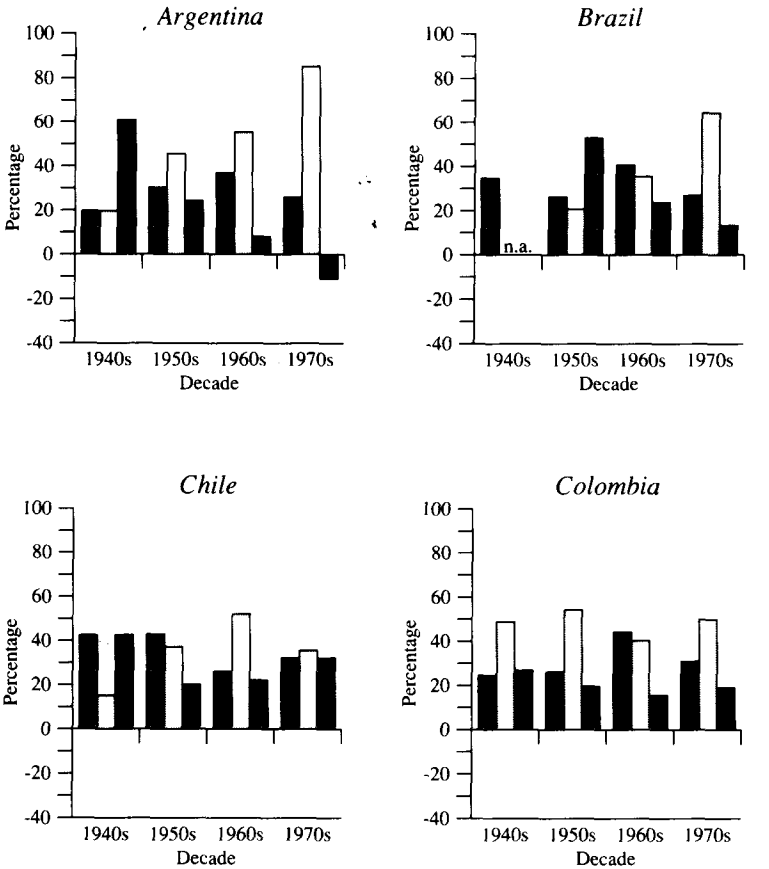
Figure 2 shows the contribution to growth made by each input—capital, labor, and total factor productivity (TFP)—by decade in the seven study countries. The contribution shares of each input vary considerably across countries and over time, although the variability of the labor contribution share was a little higher than that of the capital contribution share.

In most countries and decades, the capital contribution share was larger than the labor contribution share. Over time, a trend toward a larger capital contribution share occurred in Argentina, Brazil, Chile, and Mexico. In Mexico, Peru, and Venezuela, however, the labor contribution share grew during the decades under consideration. These diverse trends were mainly due to the growth rate of the overall contribution of the corresponding inputs in the different countries.

The contribution share of the TFP showed a negative trend over time, reflecting the rise of the labor and capital contribution shares. This rise was due in part to improved identification of input growth over time and, probably, to a declining trend in the TFP contribution itself. However, the contribution share of the TFP was positively related to the rate of growth of GDP.

**TFP index.** The TFP index is the ratio of GDP to the total inputs and demonstrates more clearly the role of productivity in output growth. The total inputs are defined here as the quantity of labor and capital only and do not include the quality components of those inputs. For the period

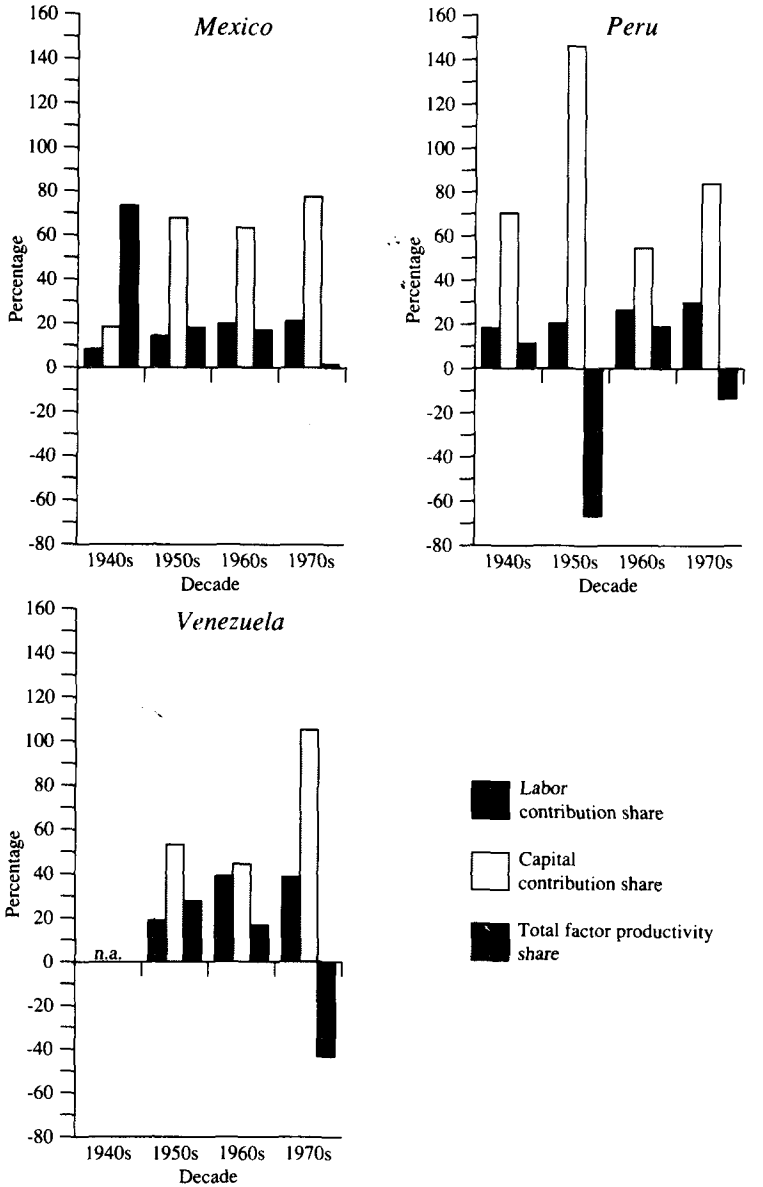
**FIGURE 2** Contribution of Inputs to Output Growth by Decade, 1940–1980 (percentage)




*(continued on following page)*

1940–1973 the index showed a positive trend, implying a rise in productivity, in all countries except Peru. After 1973, the trend was negative except in Colombia and Peru, and after 1980 the negative trend became general. From 1950 to 1985, the index behaved in a generally similar fashion in all countries, suggesting that productivity was being affected in a similar way by common forces, such as changes in labor quality and the growth patterns of developed countries.

**FIGURE 2** *(continued)*




n.a. = not available.

SOURCE: Victor J. Elías, *Sources of Growth: A Study of Seven Latin American Economies*, International Center for Economic Growth (San Francisco: ICS Press, 1992).

**Foreign trade as a source of growth.** In the economic literature, foreign trade is considered not only a way of increasing economic welfare, but also an important source of economic growth. The international trade literature offers many models in which the foreign sector plays a crucial role in determining thé growth rate of GDP. Development economists have also stressed the importance of exports for economic growth.

Foreign trade generally has a positive effect on economic growth through several channels: (1) production expansion, which provides benefits from economies of scale; (2) direct trade in technology, which allows for increases in TFP; (3) trade in capital goods, which allows for investments that will embody new technologies or are superior to capital goods produced domestically; (4) factor mobility in any one of the inputs; and (5) some short-run multiplier effects for countries with unemployed capital or labor.

This study focuses on trade in capital goods, using the traditional two-good country model; the two goods, at a given international price, are consumption and investment goods. The seven Latin American countries are assumed to be exporters of consumption goods and importers of investment goods.

Foreign trade made an important contribution to the growth of capital stock (that is, more than 20 percent) for all countries except Peru. It appears that the variability of the foreign trade contribution to capital accumulation was due in part to the behavior of the terms of trade between consumption and investment goods. In the period 1950–1975, the movement in the terms of trade was consistent with the degree of variability of the foreign trade contribution to capital accumulation in the cases of Brazil, Chile, Colombia, Mexico, and Venezuela.

## Output and Income Distribution

**Output and its components.** Real aggregate output (GDP) can be divided into investment and consumption goods. The share of investment goods in GDP was volatile for most of the seven countries and for some decades between 1940 and 1980. This instability is greater than that in the industrial countries and could be due in part to the fact that the share of investment