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—*Executive Summary*—

Sources of Growth
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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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.

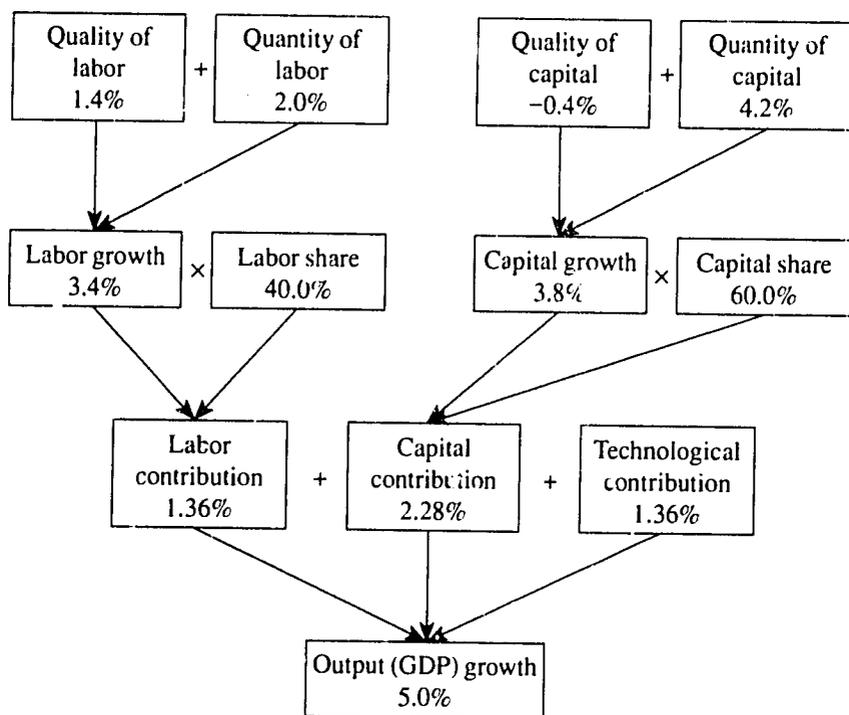
Even though this method is not a theory of economic growth, it provides a great deal of information that is useful for the design of economic policies, showing the role played by each component in the past and measuring the changes experienced by each variable, along with the effect to be expected from 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

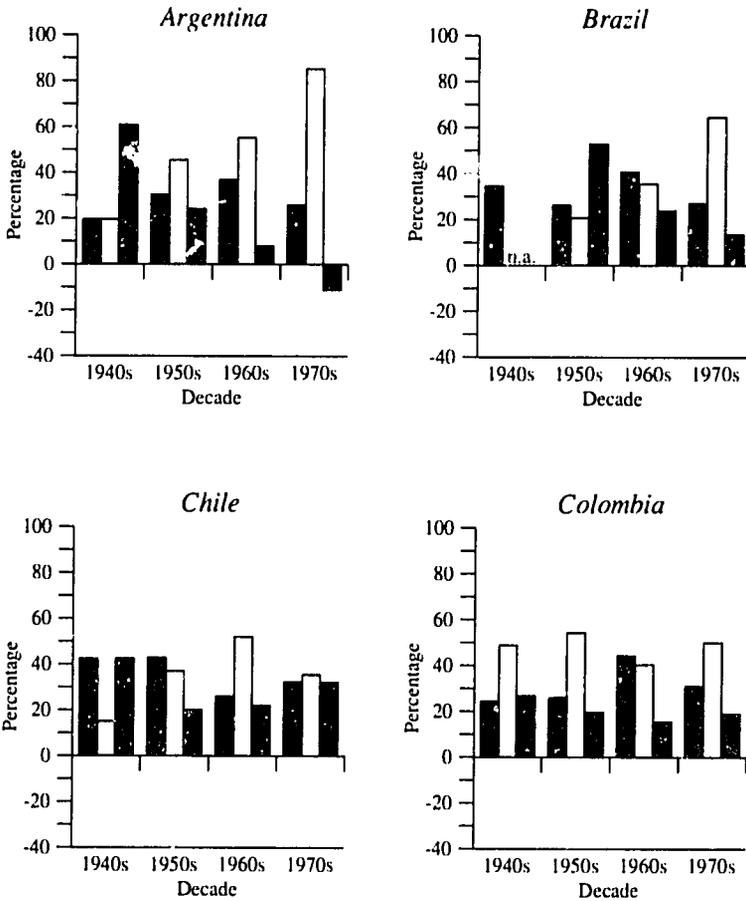
Figure 2 shows the contribution to growth made by each input—capital, labor, and total factor productivity (TFP)—by decade in the seven study countries. The contribution shares of each input vary considerably across countries and over time, although the variability of the labor contribution share was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

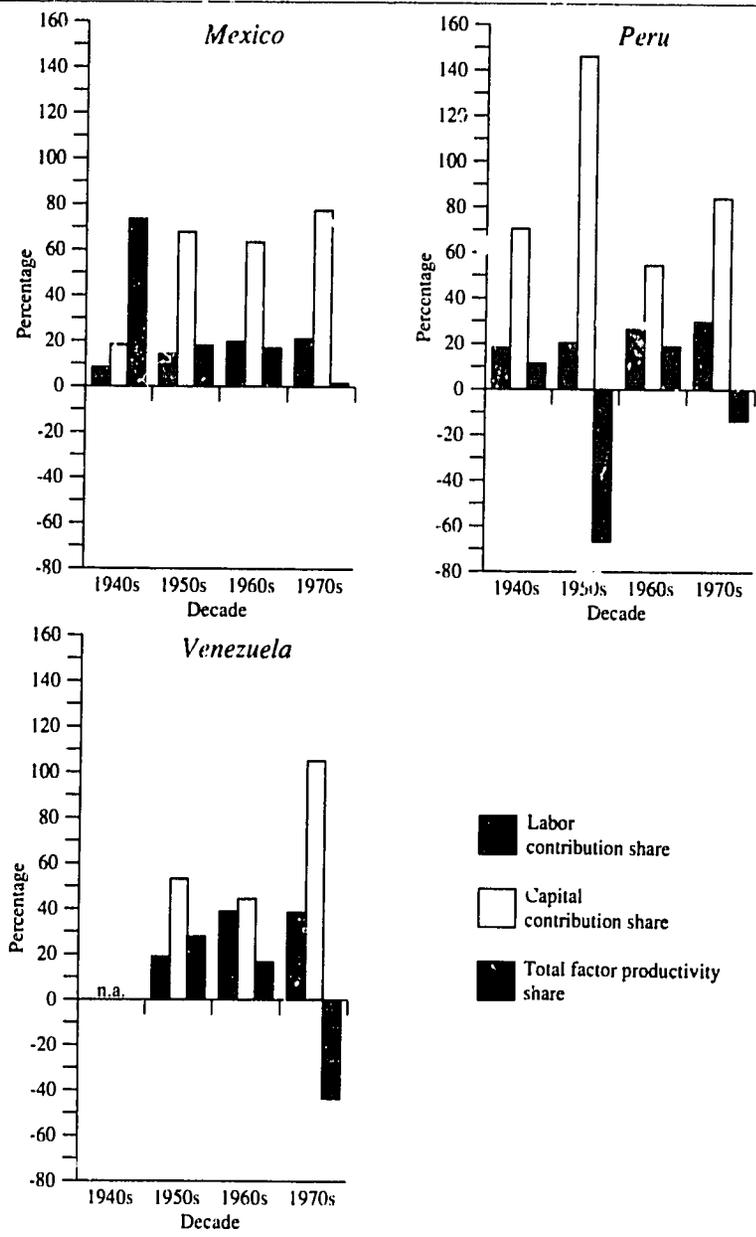
FIGURE 2 Contribution of Inputs to Output Growth by Decade, 1940–1980 (percentage)



(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 the 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

goods in total GDP was much lower in Latin American countries than in industrial countries. It could also be due to the much greater fluctuation in the terms of trade between investment and consumption goods, owing to changing protectionist policies in Latin America that have caused the domestic investment-consumption price ratios to differ substantially from the corresponding world ratio.

The annual growth rate of GDP also varied significantly across countries in Latin America. This high variability is not observed in the United States and many European countries. Some variability, although much less than in Latin America, can be observed in the high-growth countries of the Pacific Rim (South Korea, Taiwan, Hong Kong, and Singapore). This sort of shared variability might indicate that fluctuations are a necessary condition for increasing rates of growth and that there are some common cross-country economic forces.

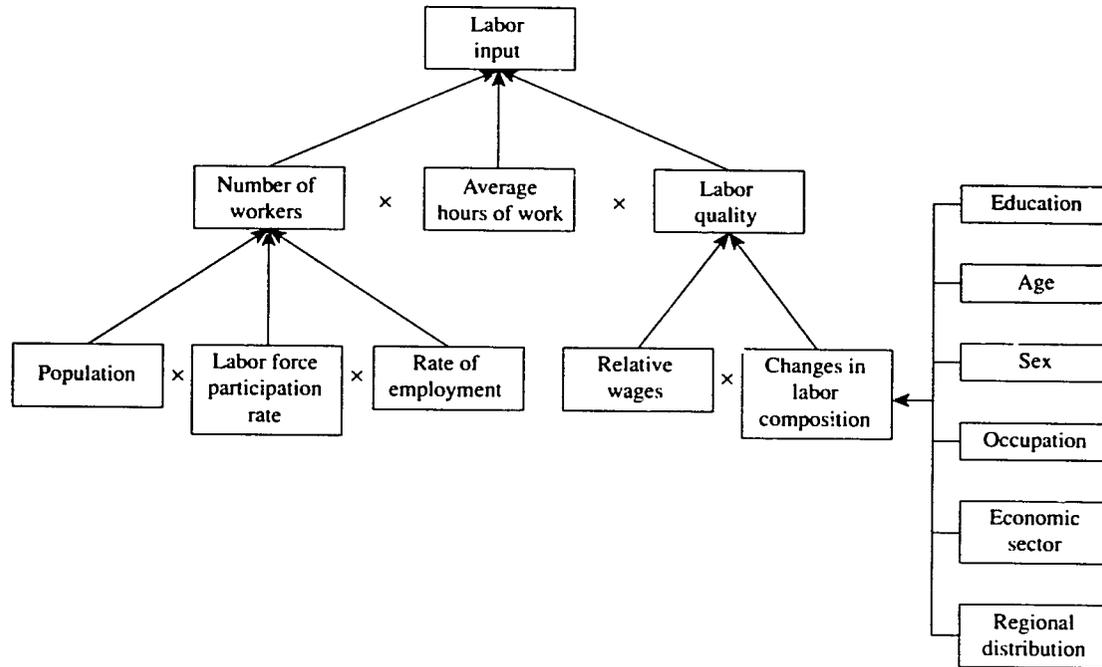
Income distribution. The sources-of-growth method given here calculates the functional income distribution between labor and capital in order to weight the growth of both inputs. The share of capital income in GDP in the seven countries between 1940 and 1985 was very high in comparison with that commonly observed in industrial countries. This difference could be due partly to the exclusion, in the calculation of labor income, of the income of many independent and executive workers, for which data are scarce in Latin America.

Labor Input

The labor input is defined as the total number of homogeneous hours worked in a given period. This is equal to the total number of workers multiplied by the average annual number of hours worked per worker, and multiplied by a quality factor that takes into account differences in productivity among workers. A schematic presentation of this formula appears in Figure 3.

The quantity component. Most of the information for estimating the number of workers in Latin America is based on the concept of the labor

FIGURE 3 Schematic Presentation of Labor Input



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

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force (employed plus unemployed labor). In general, the labor force participation rate (the labor force divided by the population) does not change substantially over time for the aggregate of the population, even though it can be very different across countries and among different components of the population, such as different age and gender groups. In the short run, this rate is not extremely accurate because of fluctuations in the rate of unemployment. However, for long-run aggregate analyses within each country, like those in this study, this rate is very reliable for deriving an estimate of the number of workers from the total population. The labor force participation rate in the study countries varied from about 42 percent to about 57 percent for selected years from 1940 to 1980. These values are high compared with those found in industrial and other developing countries. All seven countries showed declining values over time, and Chile and Mexico experienced important decreases. Changes in this rate can be explained, in part, by changes in the labor force participation rate among women and young people.

According to the sources-of-growth literature, the average number of hours worked per worker has been an important determinant of the growth of the gross labor input, and it usually makes a negative contribution. It showed a slightly declining trend in the seven study countries and important differences among countries.

The quality component. According to the growth-accounting methodology, the rate of change of the quality component of labor should capture the effects of changes in the composition of the labor force. The rate of change of the quality component is equal to the weighted average of changes in the share of each kind of labor in the total labor force. The weights are the wages for each kind of labor with respect to the average wage for the whole labor force.

For the purposes of this calculation, each component of labor corresponds to a well-defined category. The category is defined by a set of characteristics such as education, age, gender, occupation, economic sector, and regional reallocation. These have proven to be the most important elements in the explanation of labor income.

Education. Computing the growth of labor quality requires data on relative wages by education. Although increased attention has been given to this issue in the past decade, information is still scarce for Latin American countries. What few data there are indicate that relative wages were similar across countries in Latin America, but these countries had a higher relative wage for those with secondary and university education than did the United States and some European countries.

The available data show that for the seven study countries the rate of growth of the quality component due to education was an important part of the rate of growth of the whole labor input, often growing at a rate higher than 1 percent. A decline in illiteracy had a considerable influence on the value obtained for the rate of growth of labor quality.

In recent decades, the industrial countries have reported a decrease in the range of variation of relative wages according to educational level. This trend was reflected in a decrease in the rate of return to investment in higher education and was due in part to an increase of the skilled-unskilled ratio in the labor force. Since Latin American countries can be expected to experience this same phenomenon, changes in the educational composition of the labor force will in the future have a smaller impact on the quality of the labor force.

Gender. Women make up an increasing share of the labor force in many countries, both industrial and developing, but wages for men are still significantly higher. The labor economics literature suggests that the determinants of this wage differential may include hours of work, education, productivity, and sex discrimination. In other studies, after correcting for hours worked and education, an important difference persists. The available data do not allow the effects of these four factors to be separated here, but since this study uses the ratio of the wages of each gender with respect to the average wage (which includes both men's and women's wages), some of these determinants should cancel out and will highlight productivity as the major cause of the wage differential.

In 1970, women represented approximately 20 percent of the total labor force in almost all seven countries. Women's share in the labor force is larger in the industrial countries, which could indicate that, in the coming decades, a higher positive trend in this share will develop in Latin America.

For most countries and periods, the annual rate of change of the gender quality component of labor was very small or negative, with values of less than 0.1 percent per year. Because of the wage differential in favor of men, this increasing share of women has had a negative effect on the quality of the labor force, but because the increase in women workers raised the total quantity of workers, the net effect on the labor contribution was positive.

Age. Data for relative wages based on age are available only for Brazil from 1960 to 1970. These data reveal that relative wages increased with age until the age bracket of forty to forty-nine, similar to what occurs in industrial countries. Applying the data for Brazil to the six other countries shows that the age quality component made only a small contribution to growth, mainly because changes in the age composition of labor were small.

Occupation. To examine productivity differences, it is useful to classify occupations by dividing workers into employers, employees, professionals, independent (or self-employed) workers, and unpaid family workers. Estimates of the change of the quality of labor based on occupation were negative for most countries and in most periods.

Economic sector. Dividing the labor force into primary, secondary, and tertiary sectors can also be useful for analyzing labor quality. Over time, the economic sector composition of labor in the seven study countries tended to become more similar. Overall, the primary sector made up 40 percent of the labor force, except in Argentina and Chile. In some countries the largest component of this sector was agriculture, and in others it was mining. The tertiary sector increased its share significantly in all countries, mainly because of growth in the service and government components. In most countries and periods, the tertiary sector has the highest relative wage and the primary sector, the lowest. One explanation for this phenomenon may be that these sectors are composed differently in terms of education, age, and gender. Primary sector wages may also be underestimated because payments-in-kind are not included and the higher proportion of unpaid family workers is not taken into account.

For most countries and periods, the average annual rate of change of the quality component of labor by economic sector was very high

and positive, except in the cases of Colombia and Venezuela in the 1960s.

Regional reallocation. Labor reallocation by region is a product of internal migration and affects the quality of labor as labor moves from lower- to higher-wage regions, or vice versa. Data on this component are available for only a few regions. The reallocation factor was especially important for Mexico.

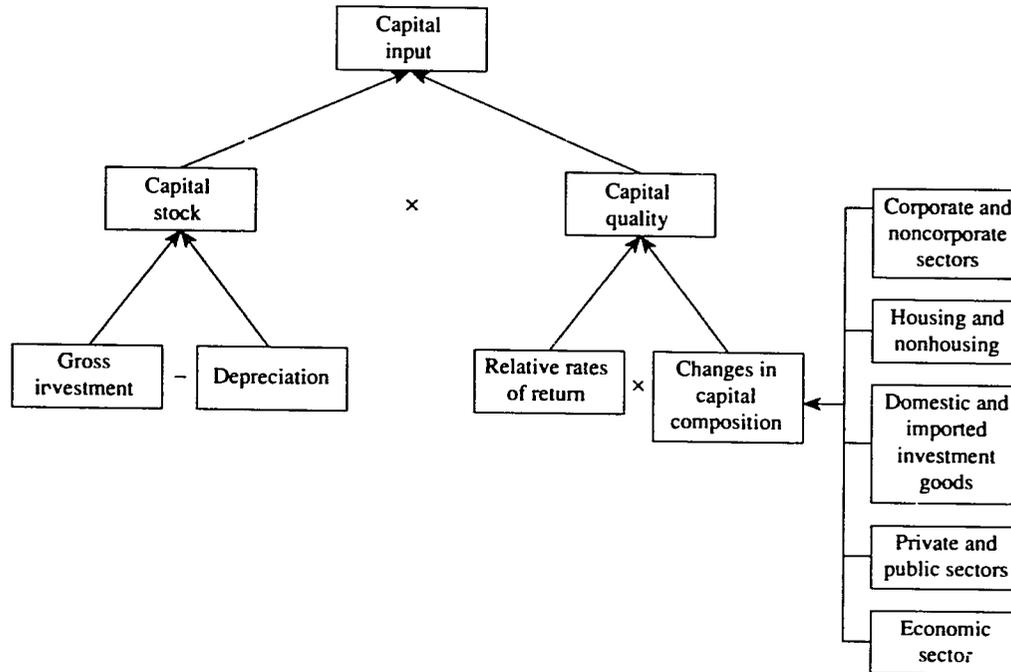
Capital Input

The sources-of-growth method analyzes capital input, as it did labor input, in terms of both quantity and quality. Figure 4 gives a schematic representation of the different elements that enter into the definition of capital input.

The quantity component. The growth rate of the capital stock varied significantly across countries and decades. The highest value observed, 12.3 percent in Brazil in the 1970s, was comparable to the highest rate observed in the rapidly growing Pacific Rim countries. The growth rate of the capital stock accelerated in Argentina, Brazil, and Mexico until 1980 and in Chile until 1970.

The quality component. Estimating the quality component of capital requires estimating the composition of the capital stock, with rates of return for each constitutive element. Capital input can be classified by many criteria useful for the measurement of its quality component. The classifications used here are (1) capital in the corporate and noncorporate sectors; (2) capital in the private and public sectors; (3) residential structures, nonresidential structures, and equipment; (4) domestic and imported capital goods; and (5) capital by economic sector, such as agriculture and manufacturing. These five kinds of capital composition differ greatly across countries and show important changes over time. The rate of return on the corporate element was much lower than the average on total capital in the cases of Colombia and Mexico. This result is the opposite of what is found in industrial countries. In the case of Colombia, the rate of return on

FIGURE 4 Schematic Presentation of Capital Input



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

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private capital was much larger than that on public capital. The low figures for public capital could be explained by underestimates of the benefits of public investment. As one would expect, the gross rate of return on the housing component was generally much lower than that for total capital, except in Venezuela. In the case of economic sector composition, agriculture reported the highest rate of return, and the manufacturing component showed a similar rate across countries.

Although data are scarce, it appears that in most periods and countries, the overall quality of capital either declined or did not grow at all, because of shifts in the capital composition in favor of components with a lower gross rate of return. The values of the annual rate of growth of the quality components were, in general, only 10 percent of the rate of growth of the quantity of capital.

Agriculture, Manufacturing, and the Public Sector

The growth of agricultural output in the seven Latin American countries from 1950 to 1980 was moderate compared with other developing countries, and in six of the seven countries the share of TFP in this growth was high. TFP can be accounted for by inputs that were omitted from the calculation, including modern inputs such as fertilizer and research and public inputs such as infrastructure and marketing services, and by changes in the quality of land, labor, and capital. In many cases, the contribution of public inputs to agricultural growth was greater than that of modern inputs.

In most of the study countries, manufacturing grew much faster than the rest of the economy. The increase of capital per unit of labor seemed more intensive in the manufacturing sector than in the rest of the economy. The size of TFP seemed positively associated with the growth of output and with the growth of the capital-labor ratio.

Only in Argentina and Colombia did public output grow as a share of total output. If public enterprises were included in public output, however, most countries would have reported an overall increase in the share of public output. Both the capital-labor ratio and TFP show highly variable growth rates across countries and decades, but, interestingly, negative TFP values generally correspond with high rates of capital-labor ratio growth,

whereas positive TFP values correspond with low rates of the growth of the capital-labor ratio.

A Comparison of Latin American and Industrial Countries

Researchers who have applied sources-of-growth analysis to the industrial countries have come up with a number of conclusions about the behavior of inputs and outputs. These include the following:

- Variations in average growth rates of output among countries are associated with variations in growth rates of total factor inputs.
- Increases and decreases in average growth rates of total factor inputs are strongly associated with increases and decreases in average output growth rates.
- Very high average output growth rates are associated with high average growth rates for both capital and labor inputs, and low average output growth rates are associated with low average rates of growth of both inputs.
- A rise or fall in the average rate of growth of the labor input is associated with a fall or rise in the rate of growth of the capital input.

These rules offer general support for the usefulness of the growth-accounting method because both sides of the accounts seem to behave consistently.

Other studies have concluded that the contribution of labor has been much greater than the contribution of capital. In Latin America, however, the capital contribution share in output growth has been much more important than that of labor in recent decades.

The stages of growth that are common to many of the industrial countries have been identified as 1913–1950 (low growth), 1950–1973 (growth acceleration), and 1973–1984 (growth slowdown). The Latin American countries follow the same pattern as the industrial countries.

Differences between the two groups occur in the degree of intensity of the stages of acceleration and slowdown. Growth acceleration in Latin America was only about half that of the industrial countries, whereas the slowdown in Latin America was nearly equal to that in the industrial world. These fluctuations in growth are mainly associated with fluctuations in capital accumulation and its associated factors.

Predictions and Policy Implications

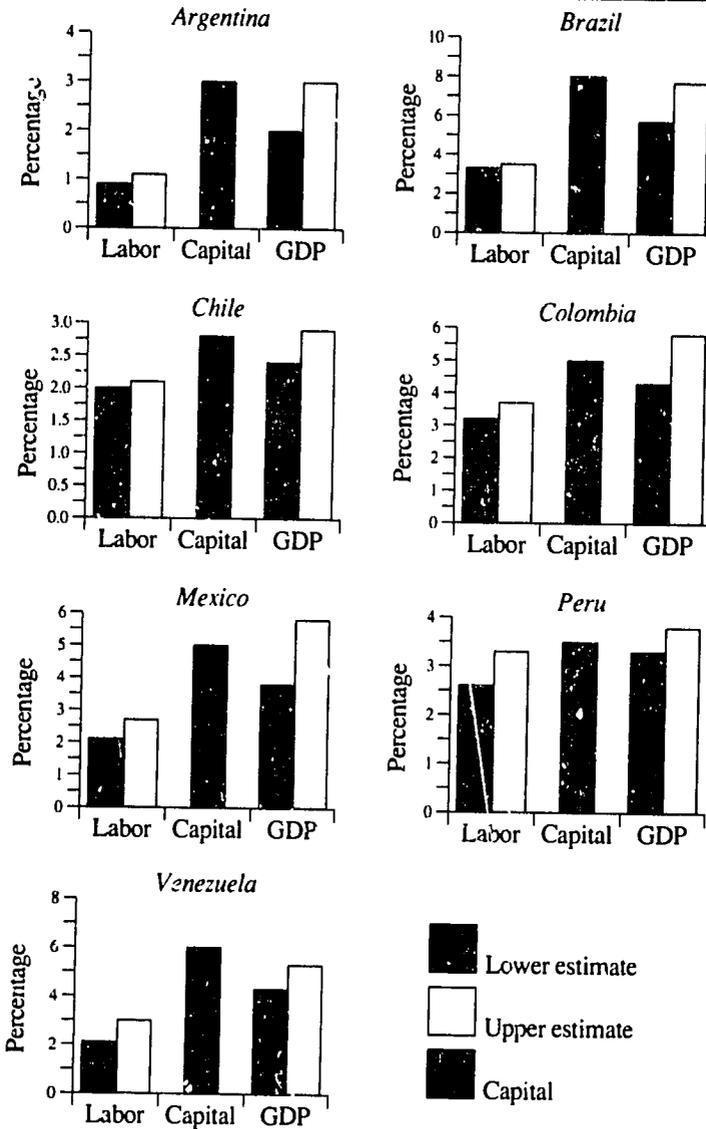
Predictions for the growth rate of GDP in the 1990s are based on predictions of the rates of growth of the inputs—labor and capital—along with some assumptions about the growth of technology. Such predictions must take into account or weight the periods of growth acceleration (1950–1973) and growth slowdown (1973–1984).

Figure 5 gives predictions of the rate of growth of labor, capital, and GDP for the 1990s. The lower estimate of GDP assumes zero technological change, and the higher estimate assumes a value similar to that observed between 1940 and 1980. The high and low estimates of the labor input are based on separate estimates for the labor force participation rate and the population.

The sources-of-growth method, as applied in this study, offers general clues about optimum economic policies for achieving growth and provides a framework to guide the formulation of specific policies. For example, the study reveals that the quality of labor was an important source of labor input growth, and, within it, the education component was its main source of growth. Therefore, educational investment would seem to be a useful tool for future economic policies. More detailed analyses will determine whether primary, secondary, or higher education is most relevant for growth acceleration.

Another example concerns the role of capital. The quantity of capital was the main determinant of its growth. The role of the quality of capital was very minor. A small change in the composition of capital should make its quality component important, but this response did not occur, suggesting that policies that make the markets more efficient would greatly improve the quality of capital, thereby accelerating growth.

FIGURE 5 Predicted Growth Rates of Labor, Capital, and GDP for the 1990s
(annual percentage)



NOTE: The upper estimates of GDP growth are based on the upper estimates of labor input growth plus TFP. The weights used to combine the growth of both inputs are described in the book *Sources of Growth*.

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

The 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.

At the aggregate level, technological change in Latin America was not as closely associated with capital accumulation as in developed countries. In the agricultural sector, however, such change has been associated with capital accumulation, suggesting that some additional contribution from technological change could be stimulated.

About the Author

Victor J. Elías received his Ph.D. in economics from the University of Chicago in 1969. Since 1965 he has been a professor in the Department of Economics of the National University of Tucumán, Tucumán, Argentina. He has been a visiting fellow at Harvard University and Stanford University; a visiting researcher at the International Food Policy Research Institute in Washington, D.C., and the Instituto Torcuato Di Tella in Buenos Aires; and a visiting professor at several institutions in Brazil. Elías was a Ford Foundation Doctoral Dissertation Fellow (1964–1965), a Social Science Research Council Fellow (1973), a Guggenheim Fellow (1974), and one of the “Ten Outstanding Young Men of Argentina” (1976). He served as president of the Argentine Economic Association for two terms (1970–1972 and 1978–1980) and as president of the Latin American Standing Committee of the Econometric Society (1984). He is married to Ana M. Ganum, and they have two daughters and one son.

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