Timing of Economic Growth and Regime Characteristics in Latin America

David Collier

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The tendency for "late developing" countries to exhibit distinctive political characteristics has received increasing attention in recent literature in comparative politics. Following earlier work of Thorstein Veblen and Alexander Gerschenkron, a number of authors have emphasized the importance of the timing of social and economic development.[1] These authors have related a variety of political outcomes—including regime types, forms of political participation and interest expression, and differences in public policy—to the timing of

[1] Thorstein Veblen, *Imperial Germany and the Industrial Revolution* (New York, 1915); Alexander Gerschenkron, "Economic Backwardness in Historical Perspective," in Bert F. Hoselitz, ed. *The Progress of the Underdeveloped Countries* (Chicago, 1952), pp. 3—20; Robert E. Ward and Dankwart A. Rustow, "Conclusion," in Ward and Rustow, eds. *Political Modernization in Japan and Turkey* (Princeton, 1964), pp. 434—68; Karl de Schweinitz, Jr., *Industrialization and Democracy* (New York, 1964), and "Growth, Development, and Political Modernization," *World Politics*, XXII (July 1970), 518—40; Barrington Moore, Jr., *Social Origins of Dictatorship and Democracy: Lord and Peasant in the Making of the Modern World* (Boston, 1966); S. N. Eisenstadt, *Modernization: Protest and Change* (Englewood Cliffs, 1966); Gerschenkron, *Economic Backwardness in Historical Perspective* (Cambridge [Mass.], 1966); Reinhard Bendix, "Tradition and Modernity Reconsidered," *Comparative Studies in Society and History*, IX (April 1967), 328; Ralf Dahrendorf, *Society and Democracy in Germany* (Garden City, 1967); Eldon Kenworthy, "Argentina: The Politics of Late Industrialization," *Foreign Affairs*, XLV (April 1967), 463—76; Glaucio Ary Dillon Soares, "The New Industrialization and the Brazilian Political System," in James Petras and Maurice Zeitlin, eds. *Latin America: Reform or Revolution?* (Greenwich, 1968), pp. 186—201; Albert O. Hirschman, "The Political Economy of Import-Substituting Industrialization in Latin America," *Quarterly Journal of Economics*, LXXXII (February 1968), 2—32; Fernando H. Cardoso and José L. Reyna, "Industrialization, Occupational Structure, and Social Stratification in Latin America," in Cole Blasier, ed. *Constructive Change in Latin America* (Pittsburgh, 1968); Douglas A. Chalmers, "Developing on the Periphery: External Factors in Latin American Politics," in James N. Rosenau, ed. *Linkage Politics* (New York, 1969), pp. 67—93; Alfred Diamant, "Bureaucracy in Developmental Movement Regimes," in Fred W. Riggs, ed. *Frontiers of Development Administration* (Durham, 1970); Philippe C. Schmitter, *Interest Conflict and Political Change in Brazil* (Stanford, 1971); "Desarrollo retrasado,

different aspects of the development process.[2]

In view of the apparent explanatory power of timing in the qualitative comparisons made by many of these authors, it seems fair to say that hypotheses about the timing of development offer an important supplement to the earlier functional requisites approach that treated the *level* of social and economic development achieved in nations, rather than the *timing* of that development, as a crucial variable in explaining their political characteristics.[3] Most political analysis has moved well beyond the earlier attempts to infer causal relationships from cross-sectional correlations between such variables as wealth and democracy. Yet the problem of finding a convincing explanation of these correlations remains. They may perhaps be explained by the fact that the countries which are presently at higher levels of development are also earlier developers. Timing, rather than level, of development may in fact be the crucial causal variable.

In spite of the growing importance of the timing literature, little effort has been devoted to cross-national testing of hypotheses about the relation between timing of development and politics.[4] The present research seeks to illustrate one approach to the comparative analysis of timing. It proposes a measure of one aspect of timing—that of economic growth—and of four ways in which the context of economic growth differs for early and late developers among nineteen Latin American countries.[5] The relation between these variables and

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dependencia externa y cambio político en América Latina," *Foro Internacional*, XII (October-December 1971), 135–74; and "Paths to Political Development in Latin America," in Chalmers, ed. *Changing Latin America: New Interpretations of Its Politics and Society* (Proceedings of American Academy of Political Science, XXX, No. 4, 1972); and Marion J. Levy, Jr., *Modernization: Latecomers and Survivors* (New York, 1972).

[2] The term "development" is used here to refer in a generic way to the processes of change examined in this literature. The subject of the present research is one aspect of what is broadly referred to as development—economic growth.

[3] We are following here the distinction between the requisites for the continued existence of a given phenomenon and the *pre*requisites for its initial appearance in Levy, *The Structure of Society* (Princeton, 1952), pp. 62–63 and 71–72. Three of the most important early studies in the large body of cross-national literature that examine the requisites hypotheses with regard to democratic outcomes are S. M. Lipset, "Some Social Requisites of Democracy: Economic Development and Political Legitimacy," *American Political Science Review*, LIII (March 1959), 69–105; James S. Coleman, "Conclusion: The Political Systems of the Developing Areas," in Gabriel A. Almond and Coleman, eds. *The Politics of the Developing Areas* (Princeton, 1960); and Phillips Cutright, "National Political Development: Measurement and Analysis," *American Sociological Review*, XXVIII (April 1963), 253–64.

[4] See Diamant, "Bureaucracy," for an attempt to relate a political timing variable to political and economic outcomes.

[5] Twenty countries are conventionally included in discussions of Latin America. However, Haiti is so far removed from the economic transformations that are the focus of this research that it was excluded from the analysis.

two characteristics of regimes—extent of adherence to constitutional norms and of military involvement in politics—is then analyzed. Finally, an attempt is made to assess the relative importance of timing of development and several rival explanations of these regime characteristics.

The Analysis of Timing of Development

Much of the analysis of the timing of development presented in recent literature may be seen as implicitly or explicitly viewing development in terms of patterns of diffusion. Particular attention has been given to patterns of diffusion associated with industrialization. Because of the existence of already developed countries and because of the diffusion of their evolving patterns of industrial technology, mass communications, medical technology, and political ideologies, each successive group of latecomers to the development process faces a different set of historical conditions as it develops. It is in this sense that the context of development differs for later developing countries. Reinhard Bendix argues that, "against the view that industrialization has the same effects wherever it occurs, I wish to maintain the importance of timing and sequence as crucial variables. Once industrialization has occurred anywhere, this fact alone alters the international environment of all other societies. There is a sense in which it is true to say that because of timing and sequence industrialization cannot occur in the same way twice."[6] Barrington Moore, Jr., has made the same point in suggesting that "the methods of modernization chosen in one country change the dimensions of the problem for the next countries to take the step."[7]

Much of the research that has used this general framework has been concerned with timing hypotheses which deal with European development. It has been argued that, among the earliest industrializers of Europe, an independent entrepreneurial class played a relatively large role in the industrialization process. Faced with the example of these early industrializers, the later developing countries tended to follow a pattern of defensive modernization in which the state played a much larger role.[8] Moore has characterized this as modernization through "revolution from above."[9] It is argued that these differing patterns of industrialization have important political

[6]Bendix, "Tradition and Modernity Reconsidered," p. 328.
[7]Moore, *Social Origins*, p. 414.
[8]See, for instance, Dahrendorf, *Society and Democracy in Germany*, pp. 35ff., and Gerschenkron, *Economic Backwardness in Historical Perspective*, esp. pp. 354–55.
[9]Moore, chap. 8.

consequences. A strong, independent entrepreneurial class is viewed as an important factor in the emergence of democratic politics, whereas the "premature" development of a strong state role has tended to inhibit democratic politics.[10]

Early and late developers in Europe differ in other important ways as well. In part because of diffusion, the later developers have had to deal with unionized labor and working-class parties and ideologies at much earlier stages of industrialization. For the earliest industrializers, these forces did not exist at the onset of industrialization. This also helps to account for the political differences among European countries.[11]

Timing of development is also receiving increasing attention in research on Latin America. Two comparisons have been employed in studies of this region: comparisons of the developmental experience of particular Latin American countries, or of the entire region, with that of North Atlantic countries; and comparisons of timing within Latin America. In making the contrast with North Atlantic countries, Albert O. Hirschman has compared the experience of the "late" industrializers of Europe and the "late, late" industrializers of Latin America. He has noted a number of contrasts in the type of industry that has developed, the size of industrial firms, the nature of available markets, and the particular characteristics of import-substituting industrialization.[12] Glaucio Soares has contrasted the occupational patterns associated with industrialization in Brazil and a number of North Atlantic countries. He found that, because of the tendency to apply the capital-intensive technology which was available from the North Atlantic countries, Brazil has a smaller proportion of its work force in industry and manufacturing and a larger proportion in the service sector than several European countries had at a comparable point in their development. Soares suggests that the chronic lower-class unemployment and underemployment and the pattern of middle-class development that result from this situation have important political consequences for Brazil.[13]

Fernando Henrique Cardoso and José Luis Reyna have made a similar comparison of occupational structure and other economic characteristics, contrasting several Latin American countries with countries of Europe.[14] In another analysis of Brazil, Philippe C.

[10]See, for instance, Moore, pp. 418 and 437 and Gerschenkron, *Economic Backwardness*, pp. 28–29.
[11]Lipset, "Some Social Requisites of Democracy," p. 100.
[12]Hirschman, "The Political Economy."
[13]Soares, "The New Industrialization."
[14]Cardoso and Reyna, "Industrialization."

Schmitter has noted that, in comparison with Europe, urbanization and the growth of the state bureaucracy came early and industrialization followed a distinct pattern, with the consequence that a far less antagonistic pattern of interest politics emerged than in the European context.[15] With reference to Argentina, Eldon Kenworthy has focused particularly on the contrast with the United States, noting that in Argentina, organized labor, middle-class consumer demands, and the expectation of a large state role in welfare developed much earlier relative to industrial growth than in the United States. These contrasts appear to be a key to the serious political difficulties that Argentina has faced in the course of industrialization.[16]

Variations in timing of development among Latin American countries have also begun to receive attention. Cardoso and Enzo Faletto and Anibal Quijano have noted important differences in patterns of national, as opposed to foreign, control of the economy in different countries that are associated with timing of development.[17] Cardoso and Reyna also gave some attention to differences in timing within Latin America, though their analysis focused primarily on the contrast between Latin America and Europe.[18] The comparison of timing among Latin American countries clearly merits further attention, both as a means of gaining insights into Latin American politics, and as a way of testing hypotheses about timing. This comparison forms the basis of the present research.

Before proceeding with the analysis, three observations about the study of the timing of development are in order. First, it must be emphasized that we are not interested in timing simply in a chronological sense, but rather in an historical sense. Time is not, in itself, an important variable. Instead, the historical context in which development occurs changes with the passage of time. As we have noted, this occurs in considerable measure because of the diffusion of the evolving technologies and ideologies of the advanced countries to each new group of developing countries.

Second, an important theme implicit in much of the timing literature is the hypothesis that the experience of nations at early stages of their development has abiding political consequences. No one would argue that the effects of formative national experiences are absolutely

[15]Schmitter, *Interest Politics*, chap. 14.

[16]Kenworthy, "Argentina."

[17]Fernando Henrique Cardoso and Enzo Faletto, *Dependencia y desarrollo en América Latina* (Mexico, 1969) and Anibal Quijano, "Imperialismo y capitalismo de estado," *Sociedad y Política,* I (June 1972), 5–12.

[18]Cardoso and Faletto.

permanent. Indeed, at the conclusion of the present analysis, it is hypothesized that the political consequences of the timing of one major stage of Latin American development are now being superseded by a new set of issues and problems. This change is clearly reflected in the growing role of military intervention and authoritarian politics in Latin America, even in the most advanced, earliest developing countries of the region. The fact that the long-term consequences of one phase of timing can eventually be superseded in no way diminishes the importance of studying them, however.

Finally, it is useful to call attention at the outset to the rival hypotheses to be considered in this study. On the one hand, the various relationships involving timing which were noted earlier seem inherently plausible. However, with reference to any hypothesis that explains a social, economic, or political outcome in terms of the timing of industrialization or modernization, it may equally be argued that the nation under consideration had certain premodern characteristics that explain both the timing of development and the particular social, economic, or political outcome. For instance, it seems reasonable to argue that the greater tendency toward authoritarian or totalitarian politics among the later developers of Europe is due to the timing of their development. On the other hand, both the timing of development and this tendency toward authoritarianism may be due to the greater degree of centralization of state power in these nations (and their prenational subunits) prior to modernization.[19] If this were the case, the relationship between timing and authoritarianism might be spurious. At the end of this analysis, we will attempt to deal with this problem.

Focus of the Present Analysis
The experience of early versus late developing countries in Latin America clearly differs in many ways, and the present research in no way pretends to consider all of them. It focuses specifically on the timing of the economic growth that is associated with the initiation of industrialization and on the extent to which early, as opposed to late, developers in Latin America experience at an early stage of economic growth the pressures associated with the "revolution of rising expectations," the "population explosion," and the "urban explosion." Four hypotheses will be considered:

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[19]Of the writers cited, Moore is particularly sensitive to the importance of premodern characteristics. For a summary of his view with regard to the conditions for democracy, see *Social Origins,* pp. 430–31.

1. *Growth of mass communications*. The later the economic growth of a country in Latin America, the more likely it is to experience the growth of mass communications at a relatively early stage of economic growth. This tendency is due to the greater availability of cheap mass communications in the latter half of this century. Of the various types of mass communications, radios are among the most important in the present context because they permit communication across barriers not only of distance but also of illiteracy.

It has been widely argued that this "premature" spread of mass communications produces what has variously been called the demonstration effect,[20] the revolution of rising expectations,[21] and the revolution of rising frustrations.[22] Samuel P. Huntington sees the balance between social mobilization and economic development as an important determinant of the level of societal frustration.[23] The appearance of these expectations and frustrations in response to the growth of mass communications and their translation into political demands and political crises is, of course, not automatic; but it does appear to occur.[24]

2. *Population growth*. The later the economic growth of a country in Latin America, the more likely it is to experience a high population growth rate at an early stage of economic growth. Lateness itself does not cause more rapid population growth. Rather, as with the other aspects of late development, lateness "positions" a country's growth relative to increases in rates of population growth throughout the Third World resulting from changes in medical technology.[25]

The strain that high population growth rates place on national resources has been widely noted; this is of particular concern in Latin America because it has the highest population growth rates of any region in the world.[26] In countries with high population growth rates, vigorous efforts to increase national income per capita, improve health facilities, raise the level of literacy, and increase the availability of employment, food, housing, and schools often

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[20] De Schweinitz, *Industrialization*, p. 246.

[21] Ithiel de Sola Pool, "The Mass Media and Politics in the Modernization Process," in Lucian W. Pye, ed. *Communications and Political Development* (Princeton, 1963), pp. 243−53 and Richard R. Fagen, *Politics and Communication* (Boston, 1966), p. 111.

[22] Daniel Lerner, "Toward a Communication Theory of Modernization," in Pye, ed. *Communications and Political Development*, pp. 330ff.

[23] Samuel P. Huntington, *Political Order in Changing Societies* (New Haven, 1968), p. 55.

[24] See Pye, *Communications and Political Development*, p. 150; Pool, "The Mass Media," p. 237; and Fagen, *Politics and Communication*, p. 122.

[25] Gerschenkron, *Economic Backwardness,* p. 27, and de Schweinitz, *Industrialization,* p. 246.

[26] Philip M. Hauser, "The World Population Explosion," in Hauser, ed. *Population Perspectives* (New Brunswick, 1960), pp. 3−30; Calvert L. Dedrick, "600 Million Latin Americans in the Year 2000?" in William E. Moran, Jr., ed. *Population Growth–Threat to Peace?* (New York, 1965), pp. 35−59; and David Chaplin, "Introduction," in Chaplin, ed. *Population Policies and Growth in Latin America* (Lexington [Mass.], 1971).

serve at best only to maintain earlier levels of development and welfare.[27] The widely held goal of *raising* these levels may be impossible to achieve.

In many contexts, the gap between high expectations and unchanging or even deteriorating living conditions may lead to political frustration and demand-making which further tax the already hard-pressed political system. In this sense, the arguments of both Richard R. Fagen and Huntington would suggest that there is an interaction between the effects of the early spread of mass communications and high population growth rates. They argue that when rapid population growth limits opportunities for economic mobility to a relatively small proportion of the population, the likelihood is increased that the higher expectations and frustrations stimulated by the penetration of media will be translated into political action.[28] A simple test for this interaction will be presented at the end of this article.

3. *Urban growth.* The later the economic growth of a country in Latin America, the higher the rate of urban growth at an early stage of economic growth. This may be seen as resulting in considerable measure from the effects of cityward migration of the combination of "push" factors, such as a rural overpopulation, and "pull" factors, such as the rapid diffusion of ideas about urban life through the mass media.

Two underlying themes may be found in discussions of the political consequences of rapid urbanization. On the one hand, an extensive literature, dating at least back to Louis Wirth and Robert Redfield, argues that it is an important source of social and political instability.[29] William Kornhauser identifies rapid urbanization as one of the types of social change that may lead to mass movements.[30] On the other hand, more recent research has suggested that the social and political discontinuities associated with cityward migration have been greatly exaggerated and that a variety of factors ease the transition to the city in such a way that the anticipated disruptive consequences are rarely found.[31] In light of these diverging interpretations, it will be particularly interesting to test the importance of urbanization in the present analysis.

4. *Backwardness of agriculture.* The later the economic growth of a country in Latin America, the more backward its agriculture at the time of the

[27]See various essays in The American Assembly, *Population Dilemma in Latin America* (Washington, 1966), and Kuan-I Chen, *World Population Growth and Living Standards* (New York, 1960).

[28]See Fagen, *Politics and Communication*, p. 122, and Huntington, *Political Order*, p. 55.

[29]Louis Wirth, "Urbanism as a Way of Life," *American Journal of Sociology*, XLIV (July 1938), 1−24, and Robert Redfield, "The Folk Society," *American Journal of Sociology*, LII (January 1947), 293−308.

[30]William Kornhauser, *The Politics of Mass Society* (Glencoe, 1959), pp. 143−50.

[31]See Joan M. Nelson, *Migrants, Urban Poverty, and Instability in Developing Nations* (Cambridge [Mass.], 1969), and Wayne A. Cornelius, Jr., "Urbanization as an Agent in Latin American Political Instability: The Case of Mexico," *American Political Science Review*, LXIII (September 1969), 833−57, and "The Political Sociology of Cityward Migration in Latin America: Toward Empirical Theory," in Francine F. Rabinovitz and Felicity M. Trueblood, eds. *Latin American Urban Research*, vol. 1 (Beverly Hills, 1971).

initiation of industrialization. This occurs because later developing countries do not delay the initiation of their industrialization until they have reached as high a level of agricultural productivity as the early developers had reached in their preindustrial phase. Rather, in considerable measure because of imitation, they initiate industrialization at a point of greater backwardness of agriculture. This tendency has been noted in the general development literature by Gerschenkron, Simon Kuznets, Bert F. Hoselitz, and Steven L. Barsby.[32]

One aspect of the political consequences of backwardness of agriculture may arise because the highly visible insertion of modern industry—often capital intensive, with little capacity to offer new employment—into a setting of economic backwardness may further heighten some of the pressures discussed in connection with the other aspects of late development. A very different argument may be made as well, however. Backwardness of agriculture is a central variable in Gerschenkron's analysis of differences in patterns of economic growth and regime characteristics in Europe, and he suggests that it may have important implications for the Third World as well. Within Europe, Gerschenkron has shown that countries with a higher degree of backwardness of agriculture at the initiation of industrialization tended to have a larger role by the state, as opposed to independent entrepreneurs, in the industrialization process.[33] In Latin America, the higher levels of backwardness appear to be associated with control of the industrialization process by foreign, as opposed to national, entrepreneurs.[34] It will be suggested that the strength of the national entrepreneurial groups has important consequences for our dependent variables.

Measuring the Timing of Growth in Latin America

In order to measure these aspects of late development in Latin America, we must first measure the timing of economic growth. Following the emphasis of the literature discussed in the previous section, we will focus on the timing of industrialization. We shall

[32]Gerschenkron, "Economic Backwardness"; Simon Kuznets, "The Present Underdeveloped Countries and Past Growth Patterns," in Easton Nelson, ed. *Economic Growth: Rationale, Problems, Cases* (Austin, 1960), pp. 18–23; Hoselitz, "Advanced and Underdeveloped Countries: A Study in Development Contrasts," in William B. Hamilton, ed. *The Transfer of Institutions* (Durham, 1964), pp. 27–58; Steven L. Barsby, "Economic Backwardness and the Characteristics of Development," *Journal of Economic History*, XXIX (September 1969), 449–93.

[33]Gerschenkron, *Economic Backwardness*, chap. 1 and pp. 353–55, and *Continuity in History and Other Essays* (Cambridge [Mass.], 1968), chap. 4.

[34]See Cardoso and Faletto, *Dependencia y desarrollo*, chap. 4.

follow the example of recent work in economics in relying on physi-
cal indicators of economic growth.[35] These have the advantage of
being measured in internationally comparable units, rather than in
terms of national currencies, which are often difficult to compare
across nations. Physical indicators are also available in many cases in
much longer time series. Both per capita and absolute measures were
employed in this study; but it was found that the absolute measures
had much weaker relationships with the dependent variables. Hence,
the analysis focused on per capita measures. The principal indicator
chosen was electric production per capita.[36]

Estimates of the year of the initiation of industrialization based on
a detailed examination of patterns of economic growth are available
for five Latin American countries.[37] It was found that these countries
had reached a roughly comparable level of electric production in their
respective years—approximately .10 kilowatt-hours per capita.
The year in which these five countries and the other fourteen
Latin American nations considered in this research reached this level
is presented in Table 1. This year is then used as the value for each
country on a variable which measures the timing of economic
growth. This method for developing a measure of timing follows the
procedure used by Gunnar Törnquist in his work on diffusion in
Sweden.[38] It might be objected that electric production is not an ideal
measure of economic growth for some countries. For instance, due to
Chile's heavy reliance on electricity in the extraction of copper and
the more limited use of electricity in the production of beef in
Argentina, the relative position of these two countries may be some-
what misrepresented in this variable. However, if other physical
measures of economic growth are used to construct the timing vari-

[35]See *United Nations Economic Survey of Europe, Part 1: Structural Trends and Prospects
in the European Economy* (New York, 1970), chap. 4, and sources cited therein. The source of
the data used to score timing is Arthur S. Banks, *Cross-Polity Time Series Data* (Cambridge
[Mass.], 1971), as well as supplementary data kindly supplied by Professor Banks.

[36]For an example of the use of electric production as an indicator of economic growth and a
discussion of its advantages as an indicator, see David C. McClelland, *The Achieving Society*
(Princeton 1961), pp. 50–51.

[37]Walt W. Rostow has estimated that the economic takeoff of Argentina began in 1935,
though he notes that it was really during World War I (*The Stages of Economic Growth*
[London, 1960], p. 38). He later estimated that the takeoff in Mexico occurred after 1940
(*Politics and the Stages of Growth* [London, 1971], p. 113). Schmitter (unpublished tables) has
suggested these dates as preceding accelerated industrialization in the following countries:
Argentina, 1925; Chile, 1930; Brazil, 1940; Mexico, 1940; and Peru, 1950. His date for
Argentina falls precisely between Rostow's two estimates, and that for Mexico is identical with
Rostow's.

[38].See Gunnar Törnquist, *TV-ägandets utveckling i Sverige 1956–65. En empirisk-teoretisk
studie* (Uppsala, 1967), pp. 56–59, esp. Table 4.2.

Table 1 Years When Electric Production in Latin American Countries Reached
.10 Kilowatt-Hours per Capita

Argentina	1924*	El Salvador	1960
Bolivia	1958	Guatemala	1964
Brazil	1946	Honduras	1968
Chile	1922*	Mexico	1934
Colombia	1953	Nicaragua	1958
Costa Rica	1948	Panama	1950
Cuba	1944*	Paraguay	1973*
Dominican		Peru	1950
Republic	1958	Uruguay	1938
Ecuador	1963	Venezuela	1950

*Indicates values based on short extrapolations or interpolations performed by the author. The date for Cuba falls during World War II, a period for which Banks did not present data. It was estimated on the basis of the assumption of a linear progression from the last prewar to the first postwar year. The other three starred cases fell just before or just after the available time series. They were estimated on the assumption of a linear continuation of the trend for the years just before the end of the series.

able, the results are very similar.[39] This provides important confirmation of the validity of the indicator, and suggests that the overall effect of the error introduced by the use of electricity is relatively small.

It must be emphasized that this scoring procedure is not intended to give a precise estimate of the year of the initiation of industrialization in each country. It is not meant to reflect a "threshold" year for each country. Instead, it is an approximate measure of variations among Latin American countries in the timing of their economic growth. In this sense, the spacing among the countries on this variable is fully as important as the precise year for each country. This spacing is important because, for several of the variables used to measure the aspects of late development, there are general secular trends for the entire region during this century. The timing variable allows us to assess the relationship between the timing of growth in each country and these secular trends.

[39] An attempt to develop an alternative measure of timing using per capita cement production resulted in a variable quite similar to the measure based on electric production, both in the sense of being highly correlated with it (.82) and of providing roughly the same estimated year for each country. As a further test, this measure of the timing of cement production was substituted for timing of electric production in the construction of the indicator of one of the aspects of late development presented later in the analysis, producing a variable with a correlation of .93 with the version using electric production. This would appear to be the most important confirmation of the adequacy of our measure of the timing of economic growth. Similar results were obtained using other measures of growth.

341

Measuring the Aspects of Late Development

With the measure of the timing of economic growth established, it is possible to score each country in terms of the four aspects of late development discussed earlier. Four indicators will be used.[40]

1. *Growth of mass communications.* Among the different aspects of mass communications, the particular significance of the increased availability of radios has been emphasized. A convenient and direct means of comparing the timing of the development of radios and of economic growth would be to examine the number of radios per capita in each country in the year for which it was scored on the measure of timing of economic growth. For some of the countries, however, this year falls considerably earlier than the earliest available data on radios.

   As an alternative procedure, a measure was constructed on the basis of the relative timing of economic growth and the timing of growth in the number of radios per capita. The timing variable for radios was constructed by noting the year in which the number of radios passed the level of .04 per capita.[41] This scoring procedure closely resembles that used in Törnquist's diffusion study cited earlier. The years on the resulting variable ranged from 1933 for Argentina to 1963 for the Dominican Republic. For each country, the year for the timing variable for radios was then subtracted from the year for the timing of economic growth. The resulting indicator assumes higher values to the extent that the appearance of radios came earlier relative to economic growth, and lower values to the extent that it came later.

2. *Population growth.* This is measured by the percentage increase in the national population in the ten-year period prior to the year for which it was scored on the timing variable. This period was selected both to reduce the error that might arise from a measure based on growth in a single year and to allow for a slight lag in the effect of population growth.

3. *Urban growth.* Rate of urbanization is calculated as the percentage increase in the population in urban centers of 50,000 or more in the ten years before the year for which each country was scored on the variable measuring timing of economic growth.[42]

[40]The additional variables used in constructing these measures are from Banks and from the supplementary data supplied by him. For a few countries, the Banks data on work force in agriculture were supplemented with those from the Flanigan-Fogelman data bank presented in Roger Benjamin, *Political Development* (Boston, 1972). Supplementary data on radios per capita were taken from the United Nations *Statistical Yearbook*, 1951.

[41]Due to limitations in available data and the relatively short period during which radios have been available in Latin America, this was the only threshold that could be used without having missing cases. Even with this threshold, short extrapolations or interpolations were required to estimate four cases. Hence, it was not possible to select the threshold on the basis of the type of criteria employed in constructing the indicator of the timing of economic growth.

[42]The growth of centers of 100,000 or more should be a better measure of the growth of "large" cities. However, in data sources such as Banks', there is a decline in the proportion of the population in such centers for many countries in the ten-year period under consideration.

Table 2   Product-Moment Correlations of Aspects of Late Development with
Timing of Economic Growth in Latin America

Aspects of Late Development	Timing of Economic Growth
Timing of growth of	
mass communications.	.77
Population growth	.63
Urban growth.	.40
Backwardness of	
agriculture.	.55

4. *Backwardness of agriculture*. Barsby measured backwardness of agri-
culture as the percent of the labor force in agriculture at the time of the
industrial spurt.[43] Following a similar procedure, the indicator used here is
the percent of the work force in agriculture in the year for which each
country was scored on the timing variable.

We may now test the hypothesis that these aspects of late develop-
ment really are more pronounced in late-developing countries. Exam-
ining the correlations between each of these variables and the timing
of growth in Table 2, they can be seen to be strongly related to the
timing of growth. In the ten years prior to the year for which each
country was scored on the timing variable, the later developers
experienced more rapid population and urban growth than earlier
developers. Economic growth came later relative to the increasing
availability of radios among later developers; and later developers
were characterized by a greater degree of backwardness of agriculture
in the year for which they were scored on the timing variable. These
findings confirm a major argument of the timing literature with
reference to these countries: the developmental experience of the later
developing countries is, indeed, different in a series of important
ways.

Dependent Variables
In examining the regime characteristics that may be associated with
these aspects of late development, it is important to note a substantial

This presumably results from data based on legal definitions of cities, rather than analytic
definitions of metropolitan areas. The measure for centers of 50,000 or more was therefore
chosen because it appeared to reflect urban growth more adequately.
    [43]Barsby, "Economic Backwardness."

shift that has taken place in research on Latin America in the last few
years. Whereas previously the radical or revolutionary potential of
the transformations reflected in aspects of late development was
emphasized, the emphasis today is far more on the way in which
established power groups, including the state, move toward a
stronger assertion of their power in order to control the consequences
of late development.[44] The following discussion will suggest several
hypotheses along these lines in relation to two dependent variables:
constitutional regularity and military involvement in politics.

Constitutional regularity   Latin American countries differ greatly
in the extent to which their political practices conform to the proce-
dures prescribed by their constitutions. At the broadest level, the
provisions for the election of a legislature and an executive and for a
balance of power between the legislature and executive are among the
most important, and among the most frequently violated. These
procedures are obviously basic features of what is commonly referred
to as democracy. However, the term democracy is not used as a label
for the variable presented in this research in order to make it clear
that the variable is not intended to measure genuine "rule by the
people."[45]

The hypothesis tested here is the following: The greater the degree
to which a country experiences the four aspects of late development
discussed, the less likely it is to experience constitutional regularity.
We may state briefly the theoretical argument that links these vari-
ables. The ways in which the aspects of late development place
pressure on the political system have already been discussed. This
pressure threatens the stability of the system within the constitutional
format and pushes it toward more authoritarian rule which serves to
control demand-making and which may also improve the perfor-

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[44]See footnote 31 for valuable summaries of the earlier radicalization hypotheses with regard
to urbanization and of the reasons why they appear not to hold. Examples of work on the
greater assertion of state authority in response to—or anticipation of—modernizing stress are
José Nun, *Latin America: The Hegemonic Crisis and the Military Coup* (Berkeley, 1969);
Julio Cotler, *El populismo militar como modelo de desarrollo nacional: El caso peruano*
(Lima, 1969); Schmitter, *Interest Conflict,* and Guillermo A. O'Donnell, *Modernization and
Bureaucratic-Authoritarianism: Studies in South American Politics* (Berkeley, 1973).

[45]Though the author feels that constitutional regularity is a preferable label for this variable,
it should be pointed out that this label is also slightly imprecise. In several countries, there is a
constitutional requirement that the political opposition be given a certain number of seats in the
legislature. See Martin C. Needler, *Political Development in Latin America* (New York,
1968), p. 84. Under the scoring system used here, however, this was not counted unless it was
considered to represent a "genuine" opposition.

mance of the state in meeting citizen demands. These relationships need not be viewed as merely operating in a mechanical fashion; rather, they may be seen as the result of political choice on the part of economically dominant groups which lend indispensable support for a shift toward a more authoritarian type of rule as the best means of protecting their position in society.[46]

Operational measure   The features of constitutional regularity that are of interest are the election of the legislature and executive and a balance of power between the two. In developing an operational measure, elections were scored in terms of (1) whether or not they occurred and (2) the extent to which they involved genuine, as opposed to controlled, competition. Since the balance of power between legislature and executive in Latin America has virtually always been violated through executive dominance, balance was measured by an indicator of legislative effectiveness. In order to give equal weight to executive and legislature, annual scores were given on the following basis: zero to six, according to the degree to which the executive was selected through competitive elections; zero to three, according to the degree to which the legislature was selected on the basis of competitive elections; and zero to three, according to the degree of legislative effectiveness. The ten-year period 1963 – 72 was scored.[47] The significance of this particular time period is discussed later.

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[46]See Nun, *Latin America*.

[47]The scores were assigned as follows: *Executive selection*—O. nonelected; 2. elected, but election heavily controlled, noncompetitive; 4. genuine election, but president received more than 70 percent of vote; 6. genuine competition, president received less than 70 percent of vote. *Legislative selection*—O. no legislature existed, or it was nonelective; 1. elective, but no genuine party competition; 2. genuine party competition, but leading party had more than 70 percent of seats or second party had less than 20 percent; 3. genuine party competition, both 70 percent and 20 percent criteria met. *Legislative effectiveness*—O. no legislature; 1. it was ineffective; 2. partially effective; 3. effective.

The measures of executive and legislative selection draw heavily on the executive and legislative components of Cutright and Wiley's measure of political representation (1969 – 70). However, the present measures differ from theirs in two ways: (1) their procedure placed considerably more emphasis on the legislature than the executive, since the effective range of their annual scores for Latin America was 0 to 2.5 for the legislature and only 0.5 to 1.5 for the executive. I have given equal weight to executive and legislative selection and effectiveness combined; (2) the scoring in this research was done in such a way as to attempt to meet Needler's objection to an earlier measure of Cutright's which gave high scores to legislatures in which powerless oppositions were permitted to be elected as a showpiece for foreign observers (see the score of 1 for legislative selection). Fractional scores were used to reflect changes that took place part way through a given year.

Scoring was based on Cutright's original scores for legislature and executive, which he kindly supplied; Cutright's original source, the *Political Handbook of the World* (New York,

Military involvement in politics Of the types of regime that appear in Latin American countries in contexts of low constitutional regularity, military governments are certainly among the most important. The role of the military goes far beyond direct rule, however. There are many instances of formal compliance with constitutional norms concerning elections in which the military retains a high degree of political influence as a check against the disruption of established political arrangements. We may expect military involvement and lack of constitutional regularity to have similar causes, but we would not expect a perfect relationship between them.

Operational measure The procedure used in scoring military involvement for the 1963−72 period was identical to that developed by Robert D. Putnam for his measure of military intervention in politics for the period 1956−65.[48] Since the term "intervention" might be thought to refer only to direct military rule, the variable has been relabelled military involvement. This is appropriate, given Putnam's careful scoring of the varying degrees of military involvement in politics. He used a scale of zero to three for each year, with zero representing the absence of a political role, three representing the direct rule by a military regime, and one and two representing intermediate levels of military involvement in politics.[49] As might be expected, there is a moderately strong, but far from perfect, correlation between military involvement and constitutional regularity for the ten-year period considered here—minus .47.

Timing of Economic Growth and Regime Characteristics
Having hypothesized that the countries which experience the four aspects of late development to a greater degree will have lower levels of constitutional regularity and higher levels of military involvement in politics, we may now examine the correlations among these variables (Table 3).[50] The correlations between the timing of growth itself and the dependent variables are also presented for illustrative purposes. The timing variable is not used in the subsequent path analysis, however, since timing itself is not interpreted as having a

1958 to 1970); *The Annual Register* (London, 1958 to 1970); and *Latin American Digest* (1968 to 1972). The measure of legislative effectiveness is from the Banks volume.

[48] Robert D. Putnam, "Toward Explaining Military Intervention in Latin American Politics," *World Politics*, XX (October 1967), 83−110.

[49] Putnam, 89−91. The scoring for subsequent years relied heavily on his principal source, *The Annual Register*, as well as the other sources referred to in footnote 47.

[50] An examination of the scatter plots for these correlations revealed reasonably even distributions and an absence of extreme outliers that might unduly influence the correlations.

Table 3 Product-Moment Correlations of Regime Characteristics with Aspects
of Late Development in Latin America

Aspects of Late Development	Constitutional Regularity	Military Involvement
Timing of growth of		
mass communications.	−.43	.44
Population growth.	−.06	.35
Urban growth.	.11	.12
Backwardness of agriculture.	−.29	.23
Timing of economic growth	−.30	.42

direct causal role. It is not the timing of growth which is important,
but rather the relationships between timing of growth and other
aspects of the nation's developmental experience. These relationships
are more directly measured by the four aspects of late development.
In reading Table 3, it is important to remember that the four aspects
of late development are not measured with reference to the same year
for all countries, but rather with reference to the year selected
through the procedure described earlier for measuring the timing of
economic growth. The measure of the timing of growth is simply this
year for each country, with the later countries therefore having higher
values on the timing variable. Hence, the predicted direction of the
correlation for all five independent variables is the same.

Table 3 offers preliminary evidence that the aspects of late devel-
opment and the timing of economic growth are related to the depen-
dent variables. With the exception of population growth in relation to
constitutional regularity and of urban growth for both regime charac-
teristics, the relationships are moderately but consistently in the
predicted direction.

As a second step in the analysis of these relationships, we may
examine simultaneously the effects of all four aspects of late develop-
ment using multiple regression. This allows us to assess the effect of
each aspect while controlling for the effect of the others. Table 4
presents the results of these regressions.[51] Growth of mass communi-

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[51]With reference to the problem of multicollinearity, the correlations among the four aspects
are fortunately low, the highest being .39. Significance levels are reported in this table, even
though these are not sample data. Following the advice of Tufte, this is done to provide a rough
screening device that offers a supplementary basis for confidence in our findings. See Edward
R. Tufte, "Improving Data Analysis in Political Science," *World Politics*, XXI (January
1969), 643.

Table 4 Regressions of Regime Characteristics on Four Aspects of Late
Development in Latin America*

Aspects of Late Development	Constitutional Regularity		Military Involvement	
	SRC	Significance	SRC	Significance
Timing of growth of				
mass communications	−.44	.005	.38	.025
Population growth	.07	NS	.24	.25
Urban growth	.31	NS	−.05	NS
Backwardness of agriculture	−.37	.025	.11	NS

*Numbers reported in the table are standardized regression coefficients and significance levels. "NS" means not significant. Since this is a one-tailed test of the hypothesis that associations with constitutional regularity are negative, those with military involvement positive, any association in the opposite from predicted direction is automatically not significant.

cations emerges as the aspect of late development that has the strongest relationship with the dependent variables. Backwardness of agriculture shows some relation with constitutional regularity; population growth is moderately related to military involvement; and urban growth does not show the predicted relationships at all. Given the exploratory nature of this analysis, these findings hardly permit any definitive conclusions regarding the relative importance of the different aspects of late development. However, they clearly suggest that the spread of mass communications merits particular attention in studies of timing, and that patterns of urbanization may, by themselves, have less importance than has been suggested.

Testing Rival Explanations
A useful means of demonstrating the importance of an explanation of any given phenomenon is to test its importance against that of major rival explanations. In the present case, there are two major rival explanations which are closely enough related to timing that there is little basis for concluding that timing is important until it has been tested along with these rival explanations. The first of these is the functional requisites thesis discussed earlier.[52] It emphasizes how far nations have developed by a given point in time, rather than when this development began. The work of Putnam and Phillips Cutright and James A. Wiley provided substantial confirmation of the requisites thesis for military involvement and constitutional regularity.

[52]See footnote 3 for citations of this literature.

Putnam used literacy as the measure of present level of development in his final model, and Cutright and Wiley used literacy and energy consumption. Since our dependent variables are drawn largely from their work, it seems appropriate to use the same measures of present level of development. Literacy and energy consumption in 1960 were therefore chosen.[53]

The other rival explanation is that the Latin American countries possessed certain characteristics *prior* to the recent period of economic growth that influenced both the timing of their growth *and* the political outcomes that we are examining. If this is the case, then the relation between the experience of nations in the transition period and their present political characteristics may be spurious. Three variables were used to operationalize this possible effect of "previous history."

1. *The dependent variables measured at an earlier point in time.* Both political outcomes were measured for the ten-year period 1906−15, which falls *before* the earliest years for the timing of growth for all of the countries.[54] This earlier period of constitutional regularity was then used as a predictor of constitutional regularity from 1963−72, and the earlier period of military involvement as a predictor of the more recent period of military involvement.

2. *Level of development at an earlier point in time.* This was measured by literacy in 1910.[55] An indicator of energy consumption was unfortunately not available for this earlier period.

3. *Iberic heritage.* Recent writing on Latin America that analyzes the region's "Iberic heritage" suggests that this is another premodern characteristic which may influence the timing of economic growth and present regime characteristics.[56] In selecting an indicator to reflect the strength of the Iberic heritage in each country, we will rely on the results of Schmitter's factor analysis of a large number of variables for Latin America. This produced a factor which he labelled "Hispanic."[57] Though it is obviously not possible

[53]Literacy is taken from the Latin American Data Bank of Schmitter, energy consumption from the Banks volume.

[54]The military involvement measure was taken from Putnam, "Toward Explaining Military Intervention," p. 109. Constitutional regularity could not be scored on the basis of Cutright and Wiley's ("Modernization and Political Representation") major source because this time period is earlier than the first year of publication of that source. *The Annual Register* was used, as well as political histories of individual countries.

[55]This variable was taken from Putnam, p. 110.

[56]See, for instance, Richard M. Morse, "The Heritage of Latin America," in Louis Hartz, ed. *The Founding of New Societies* (New York, 1964), pp. 123−77, and Howard J. Wiarda, "Toward a Framework for the Study of Political Change in the Iberic-Latin Tradition: The Corporative Model," *World Politics*, XXV (January 1973), 206−35.

[57]See Schmitter, "Desarrollo retrasado." Because of the difficulty of redoing the entire factor analysis in order to reconstruct the factor, the variable with highest loading on the factor (.90) was used to represent the factor.

fully to represent the role of Iberic heritage in Latin America with a single factor, the values of the countries on this variable do correspond to a reasonable expectation as to which countries have a more dominant Iberic heritage. Mexico, Central America, and the Andean countries have high scores, whereas Argentina, Chile, and Uruguay have low ones. Though this factor is based on data from around 1960, it is treated as causally prior to all of the other variables in the analysis, since it represents features of Latin American countries whose origins antedate the present century.

These rival explanations will be tested against the three variables which, on the basis of the analysis in the previous section, appeared to be the most important aspects of timing: for military involvement—growth of mass communications, and population growth; for constitutional regularity—growth of mass communications, and backwardness of agriculture. Urban growth is dropped completely from the analysis.[58]

The technique employed in testing these alternative explanations is the method of path analysis presented by Otis Dudley Duncan.[59] It is an extension of multiple regression that permits not only the examination of the effect of each of several variables controlling for the others, but also a comparison of the total direct and indirect effects that may be attributed to each of a series of variables in a way that is not possible with regression alone. Figure 1 presents the full set of hypothesized relations among the variables. Though the model looks complicated in this form, it will become simpler when the paths that turn out to have no causal significance are eliminated. As may be seen in Figure 1, the simplifying assumption was made that the aspects of late development did not affect energy consumption and literacy in 1960. This seemed necessary, since for some countries the years in which the aspects of lateness were measured fell in the 1960s. With regard to the causal interrelations among the aspects of late development, they obviously do exist, and they might be represented in the model. However, they do not seem sufficiently important in the present context to justify complicating the model to that degree. On the other hand, we have noted that there may be an interaction effect between the timing of the growth of mass communi-

[58]Alternatively, all of the aspects of timing could have been included in the model. However, this would have produced an extremely cumbersome model—and would, in fact, have produced the same final results.

[59]Otis Dudley Duncan, "Path Analysis: Sociological Examples," *American Journal of Sociology*, LXXII (July 1966), 1−16. The paths were estimated by regressing each variable on all of the prior variables with which it had direct paths and using the standardized regression coefficients as path coefficients.

Figure 1   Full Model Tested
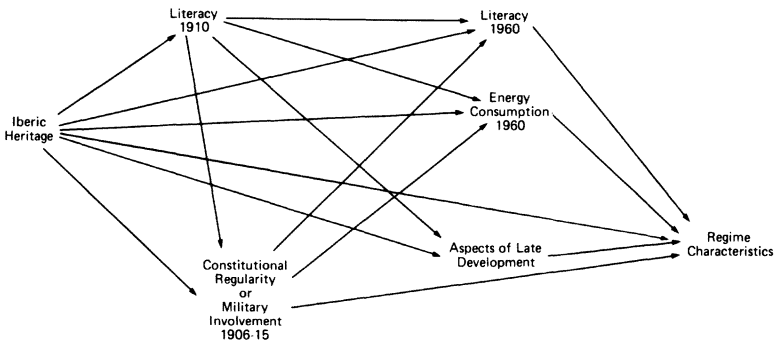
cations and population growth. This possibility will be tested later. Finally, following the reasoning of Putnam, we assumed that literacy in 1910 would not have a direct effect on the political outcomes, but rather would have an effect through literacy in 1960.[60]

Figure 2 presents the results of the path analysis, with the insignificant paths eliminated.[61] An examination of the direct paths to the political outcomes reveals that backwardness of agriculture is eliminated as a predictor of constitutional regularity, but that timing of growth of mass communications is a good predictor of military

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[60]Because of the high correlation between literacy in 1910 and in 1960 (.90), it would be meaningless to try to test for the direct effect of both on political outcomes. In choosing literacy in 1960, we opted for a stronger test of the functional requisites hypothesis, instead of the previous history hypothesis. However, literacy in 1910 did not produce notably different results.

Considering, more generally, the problem of multicollinearity among the independent variables in the model, the correlation among the two measures of literacy was one of the six correlations that had an absolute value of .6 or more. Four of the others involved backwardness of agriculture. Hence the finding of a zero path between backwardness of agriculture and constitutional regularity may be among the less reliable of our conclusions. Thus, we may have an overly conservative test of this aspect of the timing hypothesis.

The other correlation of .6 or more was between Iberic heritage and military involvement in 1910. However, since both Iberic heritage and the earlier period of military involvement are being treated as aspects of "previous history," errors in estimating their relative causal importance favor neither confirmation nor disconfirmation of the main hypothesis being tested here.

[61]The procedure for determining insignificant paths or "trimming" the model (see David R. Heise, "Problems in Path Analysis and Causal Inference," in Edgar Borgatta, ed. *Sociological Methodology 1969* [San Francisco, 1969] pp. 59–61) was to eliminate any path not significant at the .25 level. This eliminated a number of very weak paths, yet was a low enough threshold so that recalculation of the other paths produced only very small changes in the remaining path coefficients—obviously a desirable outcome.

351

Figure 2 Trimmed Models
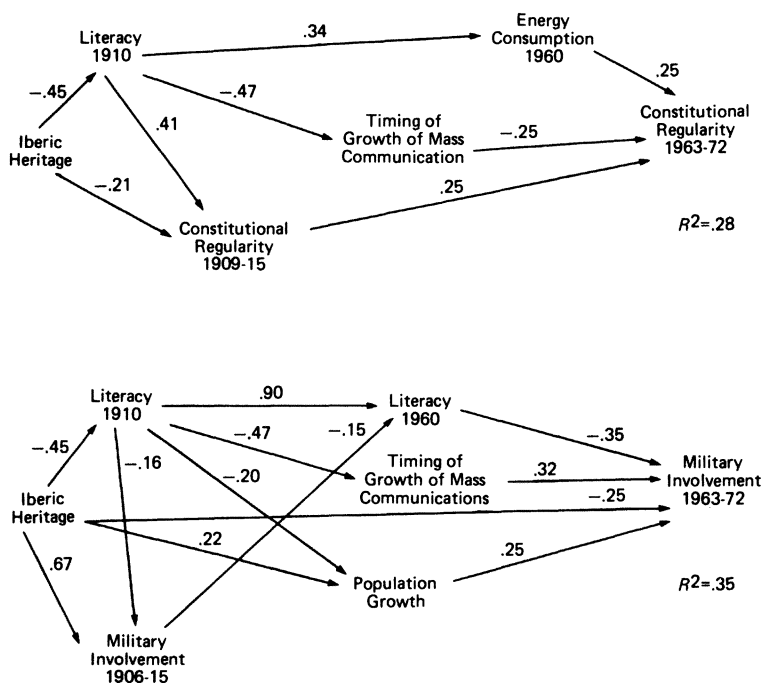
involvement. The timing hypothesis thus continues to be confirmed when the effect of other variables is removed.

Though the path coefficients that we have found are consistent with the timing hypothesis, the significance levels and the multiple R squared for each set of relationships is not as high as might be expected. The path between growth of mass communications and constitutional regularity is only significant at the .25 level; and, though the one from mass communications to military involvement is significant at the .05 level, that between population growth and military involvement is only significant at the .25 level. Likewise, the multiple R squared is quite low— .28 for constitutional regularity and .35 for military involvement—in spite of the large number of predicting variables used. It is somewhat surprising that the combined predictive power of the three explanations considered here—timing, functional requisites, and previous history—is so modest.

An examination of the residuals from the regressions suggests an

explanation for these results. Argentina and Brazil have far more military involvement and far less constitutional regularity than predicted. Both countries experienced relatively high levels of military involvement throughout the period 1963−72, and departed from constitutional regularity with the establishment of military governments in mid-1966 and early 1964, respectively.

In trying to explain these outcomes for Argentina and Brazil, we may examine the possibility that they are due to further consequences of economic growth not considered so far. Our earlier discussion is based on the assumption that economic growth increases the capacity of dominant groups to control the political system, and that the crucial variables that influence the political outcomes in which we are interested involve the question of how early the system undergoes certain types of stress relative to economic growth. However, writers such as Hirschman have contrasted the "easy" and "exuberant" early phase of industrialization with its tendency to get bogged down after an initial period, leading eventually to serious problems of stagnation and underemployment.[62]

Guillermo A. O'Donnell has argued that two countries in Latin America—Argentina and Brazil—have reached a stage in which a series of transformations associated with a high level of modernization have had a decisive effect on their constitutional regularity and military involvement.[63] It is noteworthy that, if our dependent variables had been measured a decade earlier, these two countries would have fitted the regression much better. It is not clear how many other countries of Latin America will enter a comparable period of crisis as they approach a high level of modernization, though the higher levels of military involvement in politics in Chile and Uruguay at the very end of the time period we are considering—and the coup in Chile just after this time period—suggest that a number of countries may eventually experience these same political consequences. If they do, it might be argued that this is a subsequent phase of economic growth that reverses the relationships hypothesized in this research. Though we must wait to discover whether this is indeed a next phase for other Latin American countries, we can perform a simple test to discover the effect of events in Argentina and Brazil on our findings. If we remove these two countries from the analysis, the effects in which we

[62]See Hirschman, "The Political Economy," pp. 98−101, and Werner Baer, "Import Substitution and Industrialization in Latin America: Experiences and Interpretations," *Latin American Research Review*, VII (Spring 1972), esp. 106−8.

[63]O'Donnell, *Modernization and Bureaucratic-Authoritarianism*.

353

are interested should become more pronounced, since we will be considering only countries that have not entered this hypothesized next phase.

Figure 3 presents the results of the path analysis without Argentina and Brazil. The multiple R squared is much higher for both political outcomes—.60 for constitutional regularity, and .65 for military involvement. Similarly, the significance levels are much higher— .005 for mass communications and constitutional regularity, .0005 for mass communications and military involvement, and .05 for population growth and military involvement. The size of the path coefficients is also somewhat larger. However, though the exclusion of these two countries provides stronger evidence that the findings concerning timing of development are significant statistically, it produces a similar relative weighting of the direct paths to the political outcomes. In this sense, there is a basic consistency between the

Figure 3 Trimmed Models without Argentina and Brazil
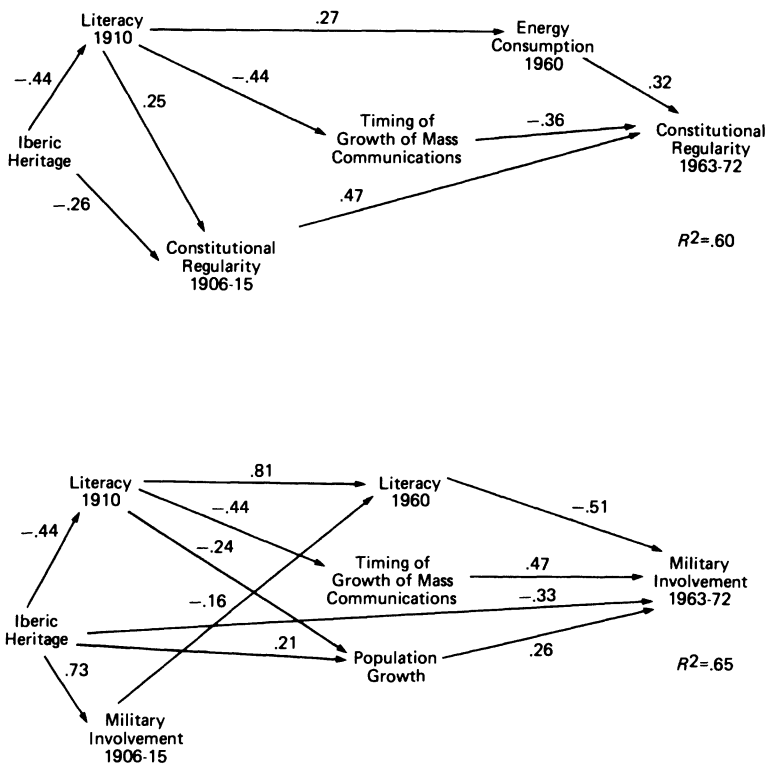
versions with and without Argentina and Brazil.

We may now turn to the possibility of an interaction effect between two of the aspects of late development—timing of the growth of mass communications and of population. The hypothesis that a particularly strong effect will occur in countries that are high on both variables will be tested by entering into the analysis the product of the two variables in standardized form.[64] Unfortunately, the introduction of this new variable into the earlier regression and path analysis would not have been meaningful because of the high correlation between the new variable and its two components—both .78. We may, however, get an approximate idea of its importance by entering it in the path models of Figures 2 and 3 *without* any of the other aspects of timing. We find that it does not have a significant path with constitutional regularity for either nineteen or seventeen cases. For military involvement, however, the paths are .45 for nineteen cases and .58 for seventeen cases—both larger than the paths for either of the component variables. If the new variable were entered at the same time as its two components, it would obviously come out with a much larger path coefficient than either component. In light of the high intercorrelations among these variables, it seems appropriate not to push the analysis further, but simply to conclude that, for military involvement, there is some evidence that an interaction effect is present.

In an overall assessment of the importance of the different aspects of late development, the timing of the growth of mass communications is clearly the most important if we consider both dependent variables. In interpreting this finding, it is perhaps relevant to note that, of the four aspects of late development, the growth of mass communications is the most highly correlated with the timing of economic growth itself. In fact, the four aspects of late development appear to have been successful predictors of the dependent variables precisely to the extent that they are correlated with the timing variable (see Table 3). This might suggest that other aspects of late development which are even more highly correlated with the timing variable are also important causes of these political outcomes, and the measure of communications is in part picking up their covariation with the dependent variables. There is no way of ruling out this possibility until much more extensive research has been done on the different aspects of late development. It should be noted, however,

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[64] A mean of 100 rather than O was used to avoid the distorting effect of getting a positive product when pairs of negative (and hence low) values on the component variables were multiplied together.

Table 5 Total Net Effects

	Constitutional Regularity		Military Involvement	
	$N=19$	$N=17$	$N=19$	$N=17$
Aspects of timing of development	−.25	−.36	.57	.73
Present level of development	.25	.32	−.35	−.51
Military involvement *or* constitutional regularity, 1906−15	.25	.47	.05	.08
Literacy, 1910	.31	.36	−.52	−.68
Iberic heritage	−.19	−.29	.08	.08

that if the timing of economic growth itself were entered in the path analysis, it would *not* have a significant path as a predictor of constitutional regularity, though it would have had a path approximately equal to that for mass communications in the model that predicts military involvement. These findings hold both with and without Argentina and Brazil. The communications variable is hence more strongly related to the regime characteristics than timing itself, and the apparent importance of communications is therefore not due simply to its high correlation with timing.

Apart from examining the relative importance of the different aspects of timing, we may also consider the overall effect of aspects of late development, as opposed to alternative explanations, in predicting regime characteristics.[65] This will be done with and without Argentina and Brazil. To simplify the comparison, the total net effects of the two aspects of timing that were related to military involvement were added together and presented as a single number in Table 5. It should be noted that the heading "present level of development" refers to energy consumption in the case of constitutional regularity, and to literacy in the case of military involvement. As this table shows, the importance of the aspects of timing compare favorably with the other variables. Ignoring the direction of the

[65]This was calculated on the basis of Duncan's revised technique. See his, "Path Analysis: Sociological Examples (Addenda)," in H. M. Blalock, Jr., ed. *Causal Models in the Social Sciences* (Chicago, 1971). The result reported here is referred to as a *net* total effect, since coefficients of opposite polarity were allowed to cancel one another out.

effects, the size of the effects of the other variables is consistently either approximately equal to that for the aspects of timing, or smaller.

On the basis of Table 5, we may conclude that the aspects of late development are related to these regime characteristics. This relationship is not explained away by rival hypotheses, nor does it explain away the rival hypotheses. Present level of development continues to have some importance, as do the variables representing previous history. Timing of development appears to be one of several important explanations of these regime characteristics. Removing the two countries that have entered the hypothesized next stage in terms of the political consequences of industrialization strengthens, but does not basically alter, the relationships.

Conclusion

This research has sought to measure the timing of economic growth in Latin America, to identify aspects of what it means to be a late developer in that region, and to examine the relationship between these aspects of late development and two regime characteristics. When the effects of variables suggested by rival hypotheses were removed, an important relationship was found between certain aspects of late development and constitutional regularity and military involvement. Nations that experienced an earlier growth of mass communications relative to economic growth were apt to have lower levels of constitutional regularity and higher levels of military involvement in politics. It appears that the demonstration effect, which is presumed to place a substantial stress on the resources and capabilities of developing political systems, may indeed be intensified among later developers when the spread of mass communications comes earlier relative to economic growth. The tendency to experience higher rates of population growth at an early stage of economic growth was also associated with higher levels of military involvement. The data analysis also suggests that there may be interaction effect between the timing of the growth of mass communications and population growth that may heighten their causal importance in countries with high values on both. On the other hand, the findings support the thesis of more recent writing on rapid urbanization which suggests that it does *not* necessarily have a disruptive impact on the political life of nations. Backwardness of agriculture was likewise of little importance, suggesting that this apparently important aspect of the European experience does not play an important role in Latin America.

The experience of the earlier as opposed to the later developing countries in Latin America has obviously differed in many ways. The attempt to measure certain aspects of late development presented here represents only a first step in the exploration of the meaning of late development in this region. The growing literature on economic dependency offers many additional hypotheses related to the timing of development which merit comparative analysis. We have already referred briefly to the thesis of Cardoso and Faletto that later developers experience a greater degree of foreign dependence at the initiation of industrialization, a theme that clearly merits further attention.[66] The famous analysis by Prebisch of declining terms of trade suggests another advantage of early development in Latin America;[67] but recent research indicates that this is an extremely complex topic on which a massive collection of data on a country-by-country basis will be required before it can be fully tested.[68]

Many aspects of late development do not readily lend themselves to measurement across nations, and further research on this topic must combine comparisons of larger numbers of cases with studies of one or a few countries. A useful approach might involve a shift to longitudinal analysis within individual countries. One might analyze the relationship over time between selected measures of social and economic development and the dependent political variables, taking as a zero-point in the time series for each country not the same absolute year, but rather a comparable point in the history of economic growth of each country. Quasi-experimental, interrupted time-series analyses of the dependent variables could similarly serve as a means of assessing the political consequences in different nations of major developmental transitions. Such techniques would provide an entirely different approach to such problems as separating out the relative importance of timing and the present level of development.

Finally, the progress of comparative research on timing of development clearly depends on the availability of more refined indicators. Research currently in progress which attempts to measure the density of Spanish and Portuguese colonial penetration in Latin America may provide useful indicators of "Iberic heritage," thereby offering a more satisfactory basis for estimating its causal importance.[69]

[66]Cardoso and Faletto, *Dependencia*.

[67]Economic Commission for Latin America, *The Economic Development of Latin America and Its Principal Problems* (New York, 1950).

[68]Theodore Morgan, "Trends in Terms of Trade, and Their Repercussions on Primary Products," in Morgan and George W. Betz, eds. *Economic Development* (Belmont, 1970), pp. 228–40.

[69]This work is currently being carried out by David Scott Palmer of Bowdoin College.

With regard to timing itself, the indicator presented in this research has been intended to illustrate one approach to the study of timing; it is by no means a definitive measure. Though indicators of this type offer one useful basis for scoring timing, the analysis of economic growth and innovation within particular economic sectors may also provide a useful approach. For instance, the timing of technological innovations and "technological epochs" provides an important alternative basis for measuring timing.[70] This approach would have the advantage of being far more sensitive to differences in the types of growth and types of industrialization which occur in early as opposed to late developers—differences that appear to have important political consequences.[71] Extremely detailed, country-by-country data would be required to develop such alternative measures. However, as more data become available, it will be increasingly possible to test the rich variety of hypotheses offered by the growing literature on the timing of development.

[70]See G.S. Maddala and Peter T. Knight, "International Diffusion of Technical Change—A Case Study of the Oxygen Steel Making Process," *Economic Journal*, LXXVII (September 1967), 531–58 and Murray Brown, *On the Theory and Measurement of Technological Change* (Cambridge, 1968).

[71]I would like to thank Guillermo A. O'Donnell for calling this crucial point to my attention. See also his *Modernization and Bureaucratic-Authoritarianism*.