

## Socioeconomic Development and Social Stratification: Reassessing the Brazilian Case

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The question of how processes of social stratification are influenced by processes of socioeconomic development or industrialization is of long-standing interest to sociologists. To a very large extent, the "theory of industrialization" has been adduced to account for the effect of socioeconomic development on social stratification, and in many ways this theory seems to constitute the received wisdom on these sorts of questions.<sup>1</sup> This is true even though empirical tests of the theory are rare, and those that do exist often show inconsistent or even disconfirming results.<sup>2</sup>

Put simply, the thesis of industrialization posits a trend from particularistic to universalistic bases of achievement as societies develop. This means that the ties between social background and social achievement weaken, that social mobility increases, and that societies become generally more meritocratic. Some of the causal mechanisms seen as particularly important parts of this broad process include the increased rationalization of work, changes in inheritance laws, the growing size of the enterprise, and the rapid expansion of formal systems of education and training.<sup>3</sup> In one of the few systematic tests of the theory, Holsinger translated such arguments into three specific hypotheses:

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As the "level of development" rises:

- (1) the direct influence of father's upon son's occupational status will become weaker;
- (2) the direct influence of the son's education upon his occupational status becomes stronger;
- (3) the influence of parental status (father's education and occupation) upon the son's educational level becomes weaker.<sup>4</sup>

Holsinger assessed the validity of these hypotheses using data from Brazil, the largest country in Latin America and one of the most important developing countries in the world. Brazil presents an especially interesting case for examining industrialization theory. Its regional disparities are considerable, affording the opportunity to compare processes of social stratification in different socioeconomic contexts while avoiding the inevitable problems of data and measurement comparability that plague most international comparisons. Brazil's levels of development range from preindustrial sharecropping arrangements to highly industrialized and dynamic urban centers. These contrasts provide an exceptional setting for testing the thesis of industrialization.

By Holsinger's own admission, however, his data permitted only a tentative and initial test of his hypotheses. Using better and more recent data than Holsinger had available and using considerably more refined operations, we propose both to replicate and extend his work by reassessing the hypotheses given above. Our aim is not to discredit Holsinger's work, but rather to build on it to advance our understanding of industrialization and social stratification. We will begin by discussing Holsinger's study in some detail. We then explain how our study can improve upon his. Next, we present the results of our study. Finally, we indicate some future questions for this type of research.

### The Holsinger Study

To assess the hypotheses specified above, Holsinger analyzed data from four Brazilian cities. Based on the mean level of occupational and educational attainment in each city, he ranked them in terms of their level of development. In descending order, these cities were Sao Paulo, Rio de Janeiro, Belo Horizonte, and Volta Redonda. Holsinger's data, originally collected in 1959 and 1960 under the direction of Hutchinson, pertained to adult men.<sup>5</sup>

Holsinger's path analytic model contained five variables: father's education and occupation, and son's education, first occupation, and current occupation. Education was measured in terms of completion of school levels, with years of schooling assigned to each of four categories (primary, secondary, college, and other). Occupational status was measured on a scale of one (high) to six (low), using an index developed by Hutchinson.<sup>6</sup>

Holsinger estimated the basic Blau-Duncan model, in which son's education is expressed as a function of father's education and occupation; son's first occupation as a function of his own education and his father's status; and son's current occupation as a function of all preceding variables.<sup>7</sup> His analytic strategy was to estimate the model for each of his four Brazilian cities and to compare the standardized regression (i.e., path) coefficients across cities.

Holsinger's first hypothesis was that "as the level of development rises, the

direct influence of father's upon son's occupational status becomes weaker."<sup>8</sup> Holsinger confined his attention to son's first occupation, and his hypothesis was confirmed. Holsinger does not make clear why he does not use son's current occupation (rather than or in addition to first occupation) as a test of this hypothesis, but had he done so the evidence would have been much less conclusive. Specifically, intergenerational occupational inheritance in Rio de Janeiro is far higher than Holsinger's hypothesis would predict, and the first proposition seems less well supported than Holsinger claimed ( $B = 0.228$  for Rio de Janeiro, and  $0.087$ ,  $0.117$ , and  $0.325$  for Sao Paulo, Belo Horizonte, and Volta Redonda, respectively).

Second, Holsinger hypothesized that "as the level of development rises, the direct influence of the son's education upon his occupational status becomes stronger."<sup>9</sup> Holsinger, again looking at son's first occupation, interpreted his results here as "less convincing." He found a strong effect in the most-developed city, Sao Paulo ( $B = 0.570$ ) and about equal effects elsewhere ( $B = 0.433$ ,  $0.444$ ,  $0.444$ ).<sup>10</sup>

Again though, had Holsinger used son's current occupation to test this hypothesis, he may have been even less convinced of its validity. These results would have shown a large and roughly equal effect of son's education on current occupation in the three most developed cities ( $B = 0.490$ ) and a far smaller effect in Volta Redonda ( $B = 0.195$ ). This is only roughly in line with the second hypothesis and suggests that level of development and the size of this effect do not necessarily covary in any simple linear fashion.

Holsinger's third hypothesis was that "as the level of development rises, the influence of parental status upon the son's educational level becomes weaker."<sup>11</sup> He found no evidence for the validity of this proposition.

### The Present Study

Despite its obvious value, Holsinger's study was forced to rely on a rather restricted sample and on somewhat blunt operationalizations of variables. We feel we are in a position to remedy both of these problems. First of all, Holsinger used a relatively small sample of four urban areas in Brazil. While we agree that these cities are differentially developed, they do fail to represent the vast rural and/or agricultural component of the Brazilian population. As such, they leave much of the "industrialization thesis" unexamined. Further, all four cities are clustered in the relatively highly developed southeast of Brazil, leaving the poverty-stricken Northeast, the Amazon frontier, and the industrially heterogeneous "developing periphery" or "rimland" completely unrepresented. Thus, Holsinger's data represent neither Brazil's nonurban areas nor its urbanized areas outside of the South.

In contrast, the present analysis draws upon a large and nationally representative data set from Brazil. These data, the Pesquisa Nacional por Amostra de Domicílios (PNAD) survey, were collected in the third trimester of 1973 by the Brazilian Institute of Geography and Statistics (IBGE), which is functionally equivalent to the U.S. Census Bureau. The 1973 PNAD survey was especially designed to provide information on processes of social stratification in Brazil. The survey instrument contained a range of questions regarding the respondent's educational, occupational, and income career, as well as a number of questions concerning his or her social and demographic origins. Respondents were required by law to complete the survey and were also protected against the possibility that specific answers might be used



against them. The basic sampling unit was the household, and only noninstitutionalized individuals were sampled. Great care and expense were taken in the collection and compilation of the data; the quality of the data is exceptionally high, and the sample contains in excess of a quarter of a million respondents. We confine our attention in this analysis to working men aged 18-64. The sample is weighted to approximate national parameters.<sup>12</sup>

As we explained above, simply selecting cities constitutes an incomplete test of industrialization theory; therefore, we divided Brazil into five large socioeconomic regions, using a scheme constructed by Haller.<sup>13</sup> The first stage of Haller's regionalization procedure was to assemble data collected by IBGE on Brazil's 360 official microregions.<sup>14</sup> Microregions are groups of contiguous municípios, which are analogous to U.S. counties, and which are constructed to be as internally homogeneous as possible. This regionalization uses a range of indicators of socioeconomic development, yielding a scale of regional socioeconomic development based on principal components analysis.

These indicators, provided by IBGE from 1970 data, are commonly accepted measures of socioeconomic development. They include: (1) microregional involvement in manufacturing (as measured by the proportion of the economically active population employed in manufacturing); (2) microregional involvement in commerce (total value of commercial sales in commerce per capita); (3) microregional involvement in agriculture (total number of persons employed in agriculture per capita); (4) proportion of the population residing in households with a radio; (5) proportion of the population residing in households with a refrigerator; (6) proportion of the population residing in households with a television receiver; (7) proportion of the population residing in households with an automobile; and (8) proportion of the population who are literate.

All eight of these indicators loaded highly on a factor that could be quite unambiguously interpreted as a measure of socioeconomic development. They explained 74.5 percent of the common variance, and no additional interpretable factors were detected. A scale of microregional Socioeconomic Development (SED), with scores arbitrarily set at 0 and 100, was constructed to measure this factor. Using it, microregions were grouped into five large macroregions: the South, the South's Developing Periphery, the Old (or Outer) Northeast, the New (or Inner) Northeast, and the Undeveloped Amazon Frontier. Unlike previous regionalizations of Brazil, these macroregions frequently cross state boundaries, providing a more accurate representation of real regional differences.<sup>15</sup>

Although industrialization, development, and socioeconomic development are not necessarily equivalent concepts, the SED index summarizes the differences among macroregions quite satisfactorily regardless of which concept one cares to focus upon. The correlation between SED scores and electrical consumption per capita in 1970 ( $\log_e KWH/k$ ) is  $r = +0.8373$ , or in regression terms:  $SED = 2.55 + 27.43 \log_e KWH/k$ .<sup>16</sup> Partly because of this and partly because the SED already includes excellent measures of involvement in manufacturing and in agriculture, SED clearly measures what analysts normally mean by both economic development and industrialization. In addition to this, the SED macroregions quite patently vary in terms of industrialization. Twenty microregions are sufficiently involved in

manufacturing to be considered industrial centers. Of these, 17 are in the Developing South, the other 3 are in Outer Northwestern capitals. There are also quite a few areas of Brazil where large numbers of people are involved in modern agriculture. These are concentrated in the South, with quite a few in the South's Developing Periphery and the Northeast. In general, by most current meanings of industrialization and development, the five SED macroregions clearly describe major variations. Using the zero-to-100 scale, the median SED scores of the microregions in each SED macroregion are: Developed South, 78; the South's Developing Periphery, 54; the Undeveloped Amazonian Frontier, 32.5; the Unevenly Developed Old (Outer) Northeast, 31; and the Underdeveloped New (Inner) Northeast, 13. These areas may be described briefly as follows.

*The Developed South.* As we have seen, the Developed South is the most advanced region. It consists of Rio Grande do Sul, Santa Catarina, Parana, Sao Paulo, most of Rio de Janeiro, and the southern third of Minas Gerais. Most of the population and wealth are concentrated in this area. The region also assumes national leadership in industry, technology, and communications. Agriculture is far more capital intensive and mechanized here than elsewhere in Brazil. By any definition, this region is the heartland of Brazil.

*The South's Developing Periphery.* The Developing Periphery consists of Rondonia and Espirito Santo, plus parts of the states of Rio de Janeiro, Acre, Minas Gerais, Goias, and Mato Grosso. The region also includes the capital city of Brasilia. Much of this region separates the Developed South from the unevenly developed Northeast. The inclusion of the Northwestward extension of the Developing Periphery reflects the relatively high development of Rio Branco in eastern Acre and Porte Velho in the territory of Rondonia.

*The Old (Outer) Northeast.* This densely populated region is located on the northeastern coast of Brazil. It is comprised of all or parts of the states of Minas Gerais, Rio Grande do Norte, Paraiba, Ceara, Pernambuco, Alagoas, Sergipe, and Bahia. For the most part the region "retains a very high dependence on consumer industries linked to the processing of the agricultural and forest resources of the region."<sup>17</sup> It is not uniformly impoverished but is instead unevenly developed. Some state capitals in the region (Salvador, Recife, Fortaleza) are actually fairly highly developed.

*The New (Inner) Northeast.* This vast region is mostly inland from the Outer Northeast and is even more economically depressed and industrially underdeveloped. Poverty is nearly uniform throughout the region. It includes all of parts of the states of Pernambuco, Maranhao, Piaui, Ceara, Minas Gerais, Goias, Para, and Bahia. Population density is lower here than in the three previously described regions.

*The Undeveloped Amazon.* The Amazon region is composed of all or parts of the states of Acre, Amazonas, Para, Amapa, Mato Grosso, and Goias, and the federal territory of Roraima. While the first four of our five regions fit neatly into a hierarchy of socioeconomic development, this region does not. The region is characterized by a very low population density and very little industrialization. On the other hand, its extreme labor shortage seems to make wages in the region atypically high. The region appears to display many of the characteristics generally associated with frontiers.<sup>18</sup> Further, in the region's two largest states, Amazonas and Para, PNAD only sampled respondents in the large and important port cities of Manaus and Belem. Because of the many problems involved in analyzing the Amazon region of



Brazil, we drop it from all ensuing analyses in this paper. The region clearly merits a separate examination, and we shall here center our attention on the four unambiguously hierarchically ranked regions of Brazil. Table 1 presents various descriptive data on the regions, using information drawn from PNAD. On all status variables and on the more structural measures, the hierarchical ranking of regions is clear.

TABLE 1  
DESCRIPTIVE STATISTICS ON REGIONALIZATION SCHEME

Region	Father's Occupational Status	Education	Occupational Status of First Job	Occupational Status	Percentage Farm	Percentage Blue Collar	Percentage White Collar
New Northeast	3.65	1.70	3.07	6.41	73.7	16.7	9.3
Old Northeast	6.03	2.33	5.94	10.92	52.0	30.3	17.7
Developing Periphery	7.60	4.08	8.27	15.65	36.9	38.6	24.4
South	9.72	4.65	10.20	17.85	30.4	42.4	27.1

As noted above, the measurement of both educational and occupational status in the Holsinger study was of necessity rather blunt. Our data permit us a more detailed measure of education than Holsinger had. Whereas Holsinger had four categories of schooling, we have nine. We assign each category of educational attainment a plausible midpoint value in years of schooling. The following values we assigned: 0 = no formal schooling; 2.5 = elementary incomplete; 5 = elementary complete; 7 = first cycle incomplete; 9 = first cycle complete; 10.5 = second cycle incomplete; 12 = second cycle complete; 14 = university incomplete; 16.3 = university complete.<sup>10</sup>

Also, Holsinger used a scale of occupational status that included only six values. While this scale may have been adequate for its original purpose as a classification of occupations for use in mobility tables, it is less satisfactory as an interval measure in a path analytic framework. To rectify this, we derived a far more elaborate and complete procedure to scale occupational status.

Occupational status was measured as follows: PNAD asked respondents who were working what kind of occupation they held and how much income they made, in addition to asking about their level of educational attainment. We classified the responses to the occupational questions into the 82 second-level categories of the International Labor Office's International Standard Classification of Occupations (ISCO) scale. We further disaggregated a number of these categories to obtain even more homogeneous categories, eventually resulting in 94 categories. We then performed a multiple discriminant analysis to derive occupational status scores. This procedure serves to maximize the ordinary product-moment correlation between the series of 94 occupational dummies with a composite of the respondent's level of income and education. The resulting scores were then standardized into a 0-100 metric. This standardization has no effect on the scale's relationship with other variables, but merely facilitates their interpretation. Unpublished analyses have convinced us that these scores yield results consistent

with those produced by other plausible scaling procedures, and they faithfully represent the kinds of things that sociologists generally think of when they deal with occupational status.<sup>20</sup>

Unlike Holsinger, the PNAD data lack a measure of father's educational attainment. While this is unfortunate, it should not detract from the following analysis in any serious way.

## Results

Table 2 presents the structural equation model for each of the four Brazilian socioeconomic regions. We report standardized regression coefficients. Table 3, similar to Holsinger's table 4, sets out the tests of the hypotheses more systematically.

TABLE 2  
STANDARDIZED COEFFICIENTS FOR STRUCTURAL EQUATION MODEL  
FOR EACH OF FOUR BRAZILIAN REGIONS

REGION AND DEPENDENT VARIABLE	INDEPENDENT VARIABLES			
	Father's Occupation	Education	First Occupation	R <sup>2</sup>
<i>New Northeast</i>				
Education	0.392			0.154
First Occupation	.495			.245
First Occupation	.324	0.434		.404
Occupation	.364			.132
Occupation	.169	.495		.339
Occupation	.064	.355	0.324	.402
<i>Old Northeast</i>				
Education	.560			.314
First Occupation	.639			.409
First Occupation	.396	.434		.538
Occupation	.518			.269
Occupation	.182	.601		.517
Occupation	.064	.472	.297	.557
<i>Developing Periphery</i>				
Education	.482			.232
First Occupation	.525			.275
First Occupation	.294	.478		.451
Occupation	.451			.203
Occupation	.153	.619		.497
Occupation	.061	.502	.243	.530
<i>South</i>				
Education	.560			.314
First Occupation	.618			.382
First Occupation	.354	.472		.535
Occupation	.525			.276
Occupation	.192	.595		.519
Occupation	0.091	0.460	0.285	0.557



TABLE 3  
STANDARDIZED COEFFICIENTS FOR TESTS OF HYPOTHESES

Region	Father's Occupation on Son's First Occupation	Father's Occupation on Son's Current Occupation	Education on First Occupation	Education on Current Occupation	Father's Occupation on Son's Education
New Northeast	0.324	0.064	0.434	0.355	0.392
Old Northeast	0.396	0.064	0.434	0.472	0.560
Developing Periphery	0.294	0.081	0.478	0.502	0.482
South	0.354	0.091	0.472	0.460	0.560

Holsinger's first hypothesis dealt with the effect of father's occupational status on that of the son. Holsinger's expectation that this effect would decrease with development was confirmed when he looked at first occupation, but it was unsupported in the case of current occupation. Contrary to Holsinger, we detect no trend in the effect of father's occupation on the first occupation of his son. Instead, the ties of ascription are greatest in the poorly developed Old Northeast and least in the Developing Periphery. In the case of current occupation, intergenerational occupational inheritance seems to increase somewhat with development, although the two Northeastern regions do not differ. Unlike Holsinger, then, we find little grounds for accepting the first hypothesis.

Holsinger's second hypothesis was that development would strengthen the effect of education on occupation. He found at best mixed support for this proposition. Our analysis shows that the size of this effect differs by less than 10 percent between the two most and the two least developed regions of Brazil. We are unable to detect any clear trend when we examine the effect of education on current occupation. While education has its smallest effect in the least developed region, it varies little elsewhere in Brazil.

Finally, Holsinger hypothesized a decreasing effect of parental status on son's educational attainment. He found no evidence for this, and neither do we.<sup>21</sup> If anything, the effect may be larger in the most developed regions, although it is somewhat smaller in the Developing Periphery.

### Discussion

In general, we believe that our results indicate that even Holsinger's fairly guarded acceptance of the thesis of industrialization is premature. Few of the theory's predictions stand up well to empirical test, and many even seem to be contradicted.

What, then, do these results tell us about social stratification and socioeconomic development in Brazil? Returning to table 2, one of the most striking observations we can make is the extent to which the processes of status attainment in the Unevenly Developed Outer Northeast and the Developed South resemble one another. Although men in the Northeast do not on the average attain the same levels of educational or occupational achievement as do men in the South, the processes by which they attain their statuses are remarkably similar.

In contrast, processes of stratification operate somewhat differently in Brazil's impoverished Inner Northeast. In particular, education is not as easily translated into occupational success here as elsewhere in Brazil, while

the influence of first job on current job is a bit greater. Thus, men in Brazil's Inner Northeast are relatively unlikely to advance their careers through education, and they experience less career mobility once they have begun to work.

The South's Developing Periphery, that region banding the northern edge of the prosperous South and continuing out the western borders, displays a unique pattern of status attainment. Educational attainment is here less tied to family background than in the Outer Northeast or the South, but more so than in the Inner Northeast. First occupation depends to a lesser extent on father's occupation than it does elsewhere in Brazil, although this is not true for current occupation. Finally, the Developing Periphery has both relatively high occupational returns to educational attainment and relatively high intragenerational mobility. In short, stratification in the Developing Periphery seems to be governed by comparatively more meritocratic criteria than those operating in the more developed South and the Unevenly Developed Outer Northeast, but less so than in the underdeveloped Inner Northeast. Stratification processes, then, are clearly not related to level of socioeconomic development in any direct linear way, at least not in Brazil.

Of course, perhaps Brazil is atypical, and we would encourage others to examine these processes cross-culturally. Even if the industrialization thesis is confirmed elsewhere, though, we feel that our results demonstrate that specific features of specific societies transcend any general "logic" of industrialization, in ways that preclude any of the more sweeping claims of the industrialization thesis. The task now is to sort out the particular features of the process of development that influence the processes of social stratification.<sup>22</sup> While such theoretical work may lack the appealing generality of the industrialization thesis, it should bring us closer to understanding the relationship between socioeconomic development and the process of attainment.

If socioeconomic development per se, then, has little effect on processes of social stratification, what does? We would hypothesize that the structure of opportunities characterizing a particular society (or region within a society) may be important determinants of processes of allocation and selection. For instance, the fact that intragenerational mobility in the New Northeast is higher than elsewhere in the country is probably largely a consequence of the fact that there are fewer upper-status positions to be had in this region. Similarly, the dynamic (if heterogeneous) economy characterizing the Developing Periphery probably contributes to its relatively high level of intragenerational mobility.

In like fashion, the structure of opportunities created by the ability to migrate almost certainly conditions stratification processes. To the extent that individuals can migrate from the restricted-opportunity structure of the Northeast to the apparently more open Developing Periphery, the more mobile they are likely to be.

Similarly, educational attainment leads to different sets of opportunities in different regional contexts. Educational expansion in Brazil over the past few decades has been both rapid and uneven, with postsecondary and urban schools often being built more rapidly than elementary and rural schools.<sup>23</sup> The fact that most Brazilian institutions of higher education are still located in the more prosperous regions suggests that the opportunity structures related to education set regions off sharply from one another.

Finally, an adequate examination of the relationship between a given



structure of opportunities and processes of social stratification might have to tend to the effects of regional labor markets or industrial sectors as determinants of individual attainments. Some interesting work along these lines has been reported in Merrick's study of Belo Horizonte, where he demonstrates the influence of local institutional arrangements on socioeconomic achievements.<sup>14</sup> As this paper has shown, regional socioeconomic development per se has little influence on processes of social stratification. What is needed now is more attention to those characteristics of particular societies or regions that are consequential.

## NOTES

<sup>1</sup>Clark Kerr et al., *Industrialism and Industrial Man: The Problems of Labor and Management in Economic Growth* (Cambridge, MA: Harvard University Press, 1960); Donald J. Treiman, "Industrialization and Social Stratification," in *Social Stratification: Research and Theory for the 1970's*, ed. Edward O. Laumann (Indianapolis, IN: Bobbs-Merrill, 1970), pp. 237-34.

<sup>2</sup>Kenichi Tominaga, "Trend Analysis of Social Stratification and Social Mobility in Contemporary Japan," *The Developing Economies* 7 (December 1969): 471-98; Janice Currie, "Family Background, Academic Achievement, and Occupational Status in Uganda," *Comparative Education Review* 21 (February 1977): 14-28; Andrea Tyree, Moshe Samonov, and Robert W. Hodge, "Gaps and Glissandos: Inequality, Economic Development, and Social Mobility in 24 Countries," *American Sociological Review* 44 (June 1979): 410-24.

<sup>3</sup>Treiman, "Industrialization and Social Stratification," p. 221.

<sup>4</sup>Donald B. Holsinger, "Education and the Occupational Attainment Process in Brazil," *Comparative Education Review* 19 (June 1975): 271.

<sup>5</sup>Bertram Hutchinson, "Class Self-Assessment in a Rio de Janeiro Population," *American Latina* 6 (January-March 1963): 55-63. These data have also been analyzed by Sugiyama Iutaka and E. Wilbur Bock, "Determinants of Occupational Status in Brazil," in *Social Stratification and Career Mobility*, ed. Walter Muller and Karl Mayer (Paris: Mouton, 1973), pp. 213-22.

<sup>6</sup>Bertram Hutchinson, "The Social Grading of Occupations in Brazil," *British Journal of Sociology* 8 (June 1957): 176-89; idem, "Structural and Exchange Mobility in the Assimilation of Immigrants to Brazil," *Population Studies* 12 (November 1958): 111-20.

<sup>7</sup>Peter Blau and Otis Dudley Duncan, *The American Occupational Structure* (New York: Wiley, 1967).

<sup>8</sup>Holsinger, "Education and Occupational Attainment," p. 271.

<sup>9</sup>Ibid.

<sup>10</sup>Although Holsinger seemed to detect a trend between the least developed city of Volta Redonda and the next two cities of Rio de Janeiro and Belo Horizonte, we doubt that the difference between 0.433 and 0.444 is of any substantive importance.

<sup>11</sup>Holsinger, "Education and Occupational Attainment," p. 271.

<sup>12</sup>The weighting scheme is explained in David B. Bills, "Weighting the 1973 PNAD Sample to Estimate Multi-State and National Parameters," 1989.

<sup>13</sup>Archibald O. Haller, "A Socioeconomic Regionalization of Brazil," *Geographic Review* 72 (October 1982): 450-64.

<sup>14</sup>Sperdiao Faissol, "Regional Inequalities in Brazil" (Paper presented at Symposium on Socioeconomic Change in Brazil, Madison, Wisconsin, 10-15 May 1978); Michael Yoder and Glenn V. Fugitt, "Urbanization, Frontier Growth, and Population Redistribution in Brazil," *Luso-Brazilian Review* 16 (Summer 1979): 87-90.

<sup>15</sup>For instance, Janet D. Henshall and R. P. Momsen, Jr., *A Geography of Brazilian Development* (London: G. Bell and Sons, 1976).

<sup>16</sup>Original calculation from raw data provided by Electrobras through the help of Mr. Denilson Batista.

<sup>17</sup>John P. Dickenson, *Brazil* (Kent, England: Dawson-Westview, 1978).

<sup>18</sup>Martin T. Katzman, *Cities and Frontiers in Brazil: Regional Dimensions of Economic Development* (Cambridge, MA: Harvard University Press, 1977); Vianna Moog, *Bandeirantes and Pioneers* (New York: George Braziller, 1967); Otavio Guilherme Velho, "The State and the Frontier," in *The Structure of Brazilian Development*, ed. Nuema Aguiar (New Brunswick, NJ: Transaction Books, 1979), pp. 17-35.

<sup>19</sup>By the time the Brazilian educational system was restructured in 1971, practically all of our respondents would have completed their formal schooling, and those that had not are unlikely to have been affected in any serious way by the reform. Given both the age of our sample and the delays in implementing the 1971 reforms, there is no need to adjust for changes in the educational cycle. See Fay Haussman and Jerry Haar, *Education in Brazil* (Hamden, CT: Archon Press, 1978).

<sup>20</sup>David B. Bills and Daramea Godfrey, "The Socioeconomic Status of Occupations in Brazil" (Paper presented by Symposium on Social Mobility, Employment, and the Brazilian Income Distribution, Madison, Wisconsin, 23-26 July 1980).

<sup>21</sup>This finding is confirmed in David B. Bills, Mary B. Olson, and Archibald O. Haller, "Trends in Inequality of Educational Opportunity in Brazil: A Test of Two Competing Theories" (Paper presented at the 1980 annual meetings of the American Sociological Association, New York, September 1980).

<sup>22</sup>Treiman, "Industrialization and Social Stratification"; Tyree et al., "Gaps and Glissandos," 420-22.

<sup>23</sup>Haussman and Haar, *Education in Brazil*, chaps. 4-6.

<sup>24</sup>Thomas W. Merrick, "Employment and Earnings in the Informal Sector in Brazil: The Case of Belo Horizonte," *Journal of Developing Areas* 10 (April 1976): 337-54.