

# EDUCATION AND EARNINGS IN NIGERIA, 1974–1992

Stephen L. Morgan and William R. Morgan

---

## ABSTRACT

This case study of earnings inequality across educational attainment categories and wage decline in metropolitan Nigeria demonstrates the value-added properties of three interrelated explanations—shifts in the supply of educated labor, shifts in the composition of demand across occupations and employment sectors, and changes in macroeconomic conditions and associated federal economic policy adjustments. Comparing earnings equations in 1974 and 1992 for two cohorts of 526 young adult males, we explain an apparent anomaly wherein: (1) rates of return on education remained stable within the public and private sectors, and (2) the rate of return on education across the entire labor market decreased because of the emergence of a relative earnings advantage for employment in the private sector. We argue that the absence of associated employment shifts across employment sectors reflects the government's traditional monopsony control of educated labor, the collectivist orientation of the extended family as the primary economic unit in Nigeria, and the indigenous patron-client welfare system. Implications of our findings for labor market theory and its application in developing countries are discussed.

---

Research in Social Stratification and Mobility, Volume 16, pages 3-26.  
Copyright © 1998 by JAI Press Inc.  
All rights of reproduction in any form reserved.  
ISBN: 0-7623-0279-8

## INTRODUCTION

Despite the growth of cross-national survey research in the study of social stratification, relatively few sociological surveys have been mounted in developing countries since the heyday of modernization theory. Empirical findings from the study of inequality and labor market processes in developing countries can contribute to the evaluation of general theories of social stratification, most of which are based on exogenous variation in socioinstitutional determinants (such as the “new structuralist” theories of labor market inequality advanced in the 1970s).

Sociological theory aside, development policy can also benefit from more fine-grained analysis of the patterns of social organization that form the causal background on which interventions are constructed. Parsimonious economic theory has failed to yield universally effective policy prescriptions, especially in sub-Saharan Africa. Mindful that macroeconomists and national governments dominate the definition of policy goals, sociologists can still influence how policy goals are pursued.

In this paper we present an analysis of the Nigerian labor market using data from two decades of its recent development. As sub-Saharan Africa's most populous nation, Nigeria reflects the successes and failures of the entire continent. Like Nigeria, most African nations experienced economic sustainability in the 1970s that, in hindsight, grew into relative prosperity as deep economic malaise gripped the continent in the mid 1980s. Before presenting the findings from our case study, we briefly review three general theoretical orientations toward the study of labor market inequality and assess their application to the study of labor markets in developing countries.

### Theories of Labor Market Inequality

Two paired presuppositions guide the sociological study of labor market inequality: (1) unequally rewarded labor market positions exist independently of the individuals who occupy them, and (2) allocation and selection processes into labor market positions are contingent on a broad array of socioinstitutional processes. This mode of study was elaborated in the 1970s (see Sørensen and Kalleberg 1981; Spilerman 1977) in response to the advance of “structureless” neoclassical explanations of labor market inequality within economics. As initially formulated in the theory of human capital (Becker 1964; Schultz 1961), these neoclassical explanations focused primarily on the characteristics of labor supply, attempting to explain all labor market inequality as the result of innate or acquired skill differences between individuals.<sup>1</sup>

Reexpressing classical conflict sociology with the aid of language developed by economists critical of human capital theory (e.g., Doeringer and Piore 1971), sociologists argued that observed patterns of inequality across labor demand structures—occupations, industries, and employment sectors—that cannot be

explained by observed individual skill differences are more than simply the results of omitted ability bias and/or short-run market imperfections. "New structuralist" sociologists and "new institutional" economists together argued for the independence of demand structures as sources of labor market inequality, proposing similar dual labor market characterizations—primary/secondary employment sectors, closed/open labor market positions, and protected/competitive jobs.<sup>2</sup>

Rather than debate the degree to which labor demand should be considered endogenous with respect to labor supply, a few scholars have argued for increased consideration of more fundamental social processes: bargaining, collective action, and the historical construction of legitimate action in the labor market. Following upon Granovetter and Tilly (1988), Tilly and Tilly (1994, p. 307) argue that labor markets are not "flat, homogeneous terrain" characterized by smoothly intersecting supply and demand curves but are instead "pitted, riven, and undulating, full of inequality, segmentation, segregation, conflict, and coercion." For these researchers, labor supply and demand are both contingent on more basic exogenous processes of societal interaction and cannot therefore explain anything by themselves. For Granovetter and Tilly (1988), labor market inequality is the result of ranking, sorting, discrimination, and performance exhibited by workers, capitalists, households, organizations, and governments. Thus, the recommendation of Tilly and Tilly (1994) to disregard supply and demand as useful analytic constructs is, paradoxically, similar in spirit to the neoclassical prescription to disregard occupations, industries, and employment sectors.

#### Application of Theory to the Labor Markets of Developing Countries

Formulated to explain economic growth in industrialized countries, human capital theory was swiftly transported to developing countries in order to justify large-scale human resource planning projects. For Nigeria, a number of schemes were proposed (Harbison and Myers 1964; Bowles 1969). Despite the supply-side emphasis of their theory, human capital researchers working in developing countries recognized the salience of labor demand structures, even before segmented labor market theories became popular explanations for inequality in the labor markets of industrialized countries. Harbison (1967, p. 174) wrote:

The typical developing country has a dual economy with a modern and a traditional sector. The modern sector consists of government activities including education, medium and large scale commerce, manufacturing, construction, public utilities and transportation, as well as plantations and commercial, cash crop agriculture.....The traditional sector lies for the most part outside of the market economy, and includes subsistence agriculture, small-scale traditional construction, primitive transportation, petty trade and barter, as well as some family-sized craft and cottage industries.

Despite his discrete conceptualization, Harbison (1967, p. 175) recognized that the boundary between the modern and traditional sectors is "more like a gradient than a cliff."

With modernization theory under fire and segmented labor market theory on the march, researchers affiliated with the International Labour Organization (ILO) renamed the "traditional" and "modern" sectors of human resource planning models the "informal" and "formal" sectors. In the much-cited ILO report on the Kenyan labor market (ILO 1972, p. 6), the urban informal sector was characterized by "ease of entry," "reliance on indigenous resources," "family ownership of enterprises," "small scale of operation," "labour-intensive and adapted technology," "skills acquired outside the formal school system," and "unregulated and competitive markets." In contrast, the formal sector, by restricting outside competition for positions through institutional barriers to entry, provided occupations with higher status, earnings, and job security. Thus, the urban formal sector, in theory, came to resemble in many ways the primary (closed or protected) employment sector of segmented labor market models developed for application in fully industrialized economies.

Subsequent empirical research on the informal sector has been limited to simple cross-sectional surveys and qualitative description, both sampled through selection on the dependent variable.<sup>3</sup> Despite the modest nature of this research, findings since the mid 1980s have begun to contradict some of the basic predictions of the dual urban labor market model, suggesting a more complex model is needed. Especially since the onset of the Third World debt crisis, first in Latin America and later in Africa, it has been noted that the real wages of formal sector employees are often lower than those of successful members of the informal sector (Charmes 1990; Mills and Sahn 1995). As a result, alternative definitions of the informal sector have been advanced (see Charmes 1990). Fields (1990, p. 69) has proposed that the informal sector should be divided into the "easy entry informal economy" and the "upper-tier informal economy." The conceptual confusion has led Castells and Portes (1989, p. 11) to argue that the informal economy should be treated "as a process, rather than as an object."

It has become increasingly clear that the impact on earnings and well-being of employment within a given sector varies over time and space for reasons not specified by the dual labor market model. As a result, the more parsimonious explanatory models furnished by supply-side neoclassical theories continue to dominate development policy.<sup>4</sup> For more than 20 years, George Psacharopoulos, an economist at the World Bank, has cataloged estimates of rates of return from across the world and published meta-analyses (e.g. Psacharopoulos 1994). His assemblages of data support the general conclusion that education is a profitable investment that provides private returns in earnings and societal returns in economic growth.

In addition to the derivation of policy proposals, Psacharopoulos has also used time series variation in his data to test opposing theories of labor market inequality. Based on declining rates of return in the 1970s in nine countries, Psacharopoulos

los (1989) argued that increases in the supply of educated labor generated a universal market response that decreased the wage premium for high levels of educational investment. He argued that this decline in rates of return invalidates segmented labor market theories of the education-and-earnings relationship and demonstrates the ultimate superiority of supply-side explanations for labor market inequalities and theories of educational attainment.

Despite the claims of Psacharopoulos, the independent impact of labor demand structures on inequality cannot be dismissed by an assumption of endogeneity. Such an assertion demands empirical investigation. From our perspective, the concept of an “informal sector” lacks a fundamental grounding in the empirical reality of any single labor market but has been a convenient and useful abstraction for simple comparative analysis. There are, however, other more basic demand-side structures whose impact on labor market inequality can and should be examined. Occupations, industries, and public and private employment sectors exist in the labor markets of developing countries in patterns analogous to those in Western industrialized societies.

## DATA AND METHODS

### Setting

With a population of nearly 100 million, Nigeria is the largest country in sub-Saharan Africa and an important area of focus for the study of international development. We are hopeful that someday there will be national labor market surveys in all developing countries. For now, there are none, and as a result, labor market analyses must be carried out within more limited sampling frames. For Nigeria, the most sensible choice for a metropolitan-based sample is the northern city of Kano—the second largest city in the country. The peculiarities associated with the port city and former capital, Lagos, can be avoided. This preference is analogous to choosing a Chicago-based sample over a New York-based sample for a study of labor market inequality in the United States.

Kano is the dominant urban center of northern Nigeria with a greater metropolitan population of more than four and a half million. Kano was established in the seventh century A.D. and has a detailed historical record dating from 999 A.D. (Hogben 1930; Fika 1978). Its economic prominence in West Africa dates from the fourteenth century when Kano's *Kurmi* market became the southern terminus of the trans-Saharan trade route. After the British colonial period from 1901 to 1960, Hausa-Fulani power brokers based in Kano have dominated Nigerian politics. Nigeria's emergence as a leading exporter of crude oil in the late 1970s brought increased public investment to Kano, especially in education and public sector employment. The world decline in oil prices in the early 1980s precipitated

a major economic crisis and subsequent austerity program that reversed the previous decade's prosperity.

### Kano Youth Survey, 1965–1992

The ongoing Kano Youth Survey (KYS) consists of random area samples of two cohorts of 17-year-old males interviewed in 1965 and 1979, and respectively reinterviewed as young adults in 1974 and 1992. Armer completed the first survey five years after Nigerian independence (Armer 1968, 1970; Armer and Youtz 1971). All 17-year-old males in a 20 percent area sample of Birnin, Kano—the traditional walled section of the city that is inhabited by the Muslim Fulani leadership and Hausa traders and craft workers—were interviewed by indigenous Hausa speakers. Social constraints prevented women from being included in the sample since most Hausa-Fulani women were married by the age of 15, and the official government acceptance of the practice of wife seclusion made their participation prohibitive.<sup>5</sup> In 1974 Armer located 401 of the 591 initial respondents and had them reinterviewed by indigenous Hausa speakers. In 1979, Morgan (Morgan and Armer 1988, 1991, 1992) surveyed a new sample of 17-year-old males drawn from the same 22 wards identified in the 20 percent area sample of 1965, and interviewed 632 respondents with indigenous Hausa speakers. In 1992, S. Morgan (1993) located 525 of the 632 original respondents to the 1979 survey, reinterviewed 276 of them with indigenous Hausa speakers, and collected educational and occupational attainment information on the others from ward heads and family members.

A series of standard data quality checks for sample bias proved negative. First, with respect to the impact of attrition in the two reinterview samples, we attempted a Heckman sample selection correction, compared socioeconomic background distributions of the full and reinterview samples of both cohorts, and compared respondents' education in the reinterview and relocated samples of the second cohort. Details of these analyses are appended.

Our second check addressed the impact of the sample's age structure. Given that respondents in the first cohort were 26 years old when interviewed and that those in the second cohort were 30 years old when interviewed, our findings have limited generalizability beyond the period of early labor market experience. With respect to whether the four-year age advantage of the second cohort translated into more aggregate years of labor market experience (and hence higher earnings for a given amount of education), we estimate that the net experience difference was only two and one half years, and actually favored the first cohort.<sup>6</sup> We therefore concluded that the cohort age difference would have a minimal bias on cohort comparisons of estimated returns. Analytically, of course, it would be preferable to assess the impact of a variable that measures years of labor market experience for each respondent, which we do not have. However, such a measure would have little validity in a society in which date of entry into the adult labor force is a prob-

lematic concept because formal apprenticeships and apprentice-like work experiences are widespread.

### Variables

**Occupation.** Respondents' self-reported current occupations in 1974 or 1992 were initially assigned detailed occupation codes based on standard U.S. census codes with appropriate additions for traditional occupations. For analysis, we assigned occupations to five groups—professional and clerical workers, teachers, traders, skilled workers, and unskilled workers—corresponding to Kano's traditional prestige hierarchy (Smith 1959; Armer 1968). The professional/clerical group contains civil servants of varying levels, clerical office workers, and managers in larger-scale business ventures and banks. Teachers are elementary and secondary school teachers and principals, all of whom were employed in government schools. Traders are self-employed businessmen who deal in commodities as variable as local crafts, laundry detergent, foreign currency, and imported stereo equipment. Skilled workers are traditional craftsmen—leather workers, blacksmiths, tailors—along with others employed in occupations for which specific training is required (e.g., automobile repair and carpentry). By contrast, unskilled workers are employed in occupations for which little training is required (e.g., laundry men, taxi and motorcycle drivers, and factory workers).<sup>7</sup>

**Earnings.** This variable is the adjusted average weekly income derived from each respondent's primary occupation, initially reported in the Nigerian currency (the naira).<sup>8</sup> For comparison with inflated 1992 levels, 1974 earnings were adjusted using a multiplier of 35.4 calculated from annual changes in the consumer price index reported by the International Monetary Fund (IMF 1964-92).

**Educational attainment.** This variable is years of primary, secondary, and post-secondary education completed by respondents (up to six, five, and six years, respectively).

**Private sector.** This dummy variable for employment sector indicates workers who were employed in the private sector. Workers who are either self-employed, employed in small partnerships, or employed by large, privately owned firms are coded one. The reference category, coded zero, is assigned to all public sector employees—those who work for federal, state, and local government ministries, government schools, or parastatal enterprises.

## FINDINGS

### Cohort Shifts in Education, Occupation, and Employment Sectors

We begin with an assessment of patterns among our explanatory variables in order to assess the impact on labor supply of the Nigerian government's mas-

**Table 1.** Characteristics of Respondents' Occupations in 1974 for the First Cohort and 1992 for the Second Cohort

Occupation	Mean Years of Education		Percentage of Cohort Sample		Percentage in Private Sector	
	1974	1992	1974	1992	1974	1992
Professional and Clerical Workers	9.2	13.9	20.5	41.7	14.9	14.6
Teachers	11.1	12.9	7.0	12.7	0.0	0.0
Traders	2.8	10.1	30.4	23.0	100.0	100.0
Skilled Artisans and Repairmen	2.9	8.7	23.3	11.0	84.9	87.2
Unskilled Laborers and Drivers	1.1	8.2	18.7	11.7	70.5	58.0
Cohort Total	4.4	11.6	100.0	100.0	65.7	45.4
Valid N	563		753		739	

sive program of educational expansion during the 1970s (Bray 1981; Ozigi and Ocho 1981). Reported in Table 1 are the mean years of education for respondents in each occupation, the distribution of each cohort across the five occupational categories, and the percentage in each cohort who are employed in the private sector. Teachers were the most highly educated occupational group in 1974, averaging more than 11 years for each teacher. In 1992 the average teacher had been schooled for almost 13 years. Increases in educational attainment for the other occupational groups are even more dramatic. Between 1974 and 1992, the means for professional and clerical office workers increased from nine years to nearly 14 years, making this the most highly educated occupational group in 1992. The average trader's education increased from three to 10 years. The average skilled worker's education increased from three to nine years, and the average unskilled worker's education increased from one to eight years.<sup>9</sup>

The demand for educated workers appeared to keep pace with increases in educational attainment. As shown in the second panel of Table 1, the proportion of the total occupational distribution in the high education occupations (teachers and professional/clericals) doubled from 27 percent to 54 percent. The third panel of Table 1 shows a corollary increase in total employment in the public sector, from one-third of the 1974 sample to 55 percent of the 1992 sample. While the share of public sector employment may seem abnormally high to researchers who analyze labor market patterns in fully industrialized countries, this breakdown is reasonable for developing countries and was predicted long ago by human resource planning experts (Blaug 1973; Harbison 1967). Based on a 1983 study at the IMF, Gelb, Knight, and Sabot (1991)

report that the median percentage of nonagricultural workers employed in the public sector was 44 percent across a sample of developing countries.

The third panel also shows that public sector employment was distributed unevenly across occupational groups but in the same general patterns in both cohorts. Approximately 85 percent of professional and clerical office workers were employed by the government in both cohorts.<sup>10</sup> All teachers were employed by the government, and all traders were self-employed or employed in small private partnerships. The proportion of skilled artisans and repairmen employed by the government was relatively low, at 15.1 percent for the first and 12.8 percent for the second cohort. The unskilled laborers and drivers who were employed in the public sector increased across cohorts from 29.5 percent to 42 percent. Overall, the third panel of Table 1 demonstrates that the distribution of employment across the public/private sector divide, net of overall changes in the prevalence of occupations themselves, remained fairly constant across cohorts.<sup>11</sup> In summary, compared to the first cohort of workers, the second cohort was both better educated and more likely to be employed in the high education occupations of the public sector.

#### A Misleading Supply-Side Model and a Simple Modification

Table 2 presents four OLS models of the rate of return on education, estimated with standard, Mincer-like human capital earnings functions (Mincer 1974; Willis 1986). Using the pooled sample of both cohorts, Model 1 is the regression of the natural logarithm of real weekly earnings on years of education, a cohort dummy variable, and a cohort by years of education interaction term. The coefficients for education and for the education-by-cohort interaction estimate the percentage rate of return on yearly investments in education for the first cohort in 1974 and the difference from this estimated rate of return for the second cohort in 1992. The cohort dummy coefficient is an estimate of the average difference in earnings opportunities across the two time periods net of education-related earnings differences between the two cohorts. Recall that years of labor force experience are roughly equalized within and across cohorts by the common age of respondents in each cohort and by the four-year lag in the timing of reinterviews for the respondents of the better-educated second cohort. As a result, labor market experience is not a measured variable in our analysis.

Given the information presented in Table 1—that both the supply of educated workers and the demand for them had increased across cohorts—one might expect to observe a moderate to high rate of return on education that is stable across cohorts. Instead, however, the coefficient estimates of Model 1 indicate that the rate of return on modern secular education of 6.4 percent in 1974 was 6.6 percent lower in 1992. In other words, the substantial 6 percent rate of return that was observed in 1974 disappeared by 1992. The cohort effect on earnings was nonsignificant, apparently indicating that net of differences related to the changing

**Table 2.** OLS Regression Coefficients of Logged Weekly Earnings on Years of Education, Employment Sector, and Occupational Group

Variables	1	2	3	4
<b>Cohort Main Effect</b>	-.004 (.158)	-.821*** (.218)	-1.105** (.387)	-1.426** (.430)
<b>Education:</b>				
Years of Education	.064*** (.010)	.058*** (.012)	.088*** (.016)	.082*** (.020)
by Cohort	-.066*** (.015)	-.026 (.017)	-.016 (.031)	.004 (.034)
by Private Sector			-.061** (.023)	-.058* (.024)
by Cohort			.010 (.038)	-.016 (.039)
<b>Employment Sector:</b>				
Private Sector		-.145 (.115)	.179 (.169)	.236 (.177)
by Cohort		.799*** (.159)	1.116** (.422)	1.060* (.449)
<b>Occupation:</b>				
Teachers				-.177 (.205)
by Cohort				.216 (.254)
Traders				-.269 (.187)
by Cohort				.862** (.276)
Skilled Artisans and Repairmen				-.017 (.176)
by Cohort				-.159 (.264)
Unskilled Laborers and Drivers				-.190 (.191)
by Cohort				.492 (.287)
Constant	5.32	5.45	5.21	5.32
R <sup>2</sup>	.109	.176	.191	.236
N	526	515	515	515

**Notes:** Reference categories are public sector, professional and clerical workers, and the first cohort. Standard errors are in parentheses. \* p < .05, \*\* p < .01, \*\*\* p < .001 (two-tailed test).

returns on education, there were no cohort differences in earnings on average. Since, however, the average return on education had dropped from moderate levels

to zero, the coefficient estimates of Model 1 may nonetheless parameterize a cohort decline in earnings.

Importantly, Model 1 and its findings are similar to those for nine other nations as summarized by Psacharopoulos (1989). He proposed that an oversupply of educated workers has caused a worldwide decline in returns on educational investment and possibly also an imbalance in the economies of those nations. Should Nigeria be added to the list?

An alternative interpretation which we prefer is that the model is underspecified. The "other things being equal" assumption of the simple supply-side model (Psacharopoulos 1989, p. 225) cannot be accepted without first exploring possible differences in the market responses of the public and private sectors. Model 2 of Table 2 adds a private sector dummy variable and a cohort-by-private-sector dummy interaction term to the independent variables included in Model 1.

In this respecification, the cohort main effect and cohort-by-sector interaction are large (and statistically significant). An initial, nonsignificant private sector effect on earnings became positive in the second cohort, in conjunction with an overall net drop in earnings for the 1992 cohort. The coefficient for years of education remains significant, the 5.8 percent rate of return being about the same as in Model 1, but now the education-by-cohort interaction is nonsignificant. In other words, this rate of 5.8 percent is the estimated average return across public and private sectors for both cohorts of workers. Taken together these reestimates permit the inference that the rate of return on education was indeed stable, once the model controls for a significant overall earnings decline across cohorts and for the private sector earnings advantage in the second cohort. In essence our findings indicate that while years of education increased earnings for both cohorts of workers, in the second cohort this was offset by the earnings decline in the public sector in which the most highly educated workers found employment.

#### A Less Parsimonious Model and a Fully Elaborated Demand-Side Model

Here we add further refinements that may more closely approximate the structural complexity of the labor market in modern Nigeria. Model 3 introduces two additional interaction terms to allow for the possibility that the returns on education may vary across sector, and that this sector difference in the returns on education could also vary by cohort. The reasoning is that, given that the more highly educated work force tends to be concentrated in the teaching, professional, and clerical positions of the public sector one might expect investment in education to matter more in the public sector. This was in fact the case. The significant  $-.061$  coefficient for the education-by-private-sector interaction term, coupled with the nonsignificant interaction for education by sector by cohort, indicates that in both cohorts educational investments had significant returns only in the public sector. Thus, the apparent absence of earnings returns for the second cohort indicated by Model 1 was the result of a decline in the earnings power of public sector posi-

tions. Once one effectively models this tendency, the unbiased estimated return on each additional year of education for public sector workers of both cohorts is 8.8 percent.

Model 4 of Table 2 is a second respecification of Model 2. In addition to the two sector and sector-by-cohort interactions with education, Model 4 includes dummy variables for occupational groups, with professional/clerical as the reference category, and associated interaction terms to model possible cohort variation in the net earnings power of these occupational groups. Model 4 thus allows for the possibility that cohort changes in the earnings power of one or more occupational groups, given their primary association with one or the other sector, could be one additional factor that helps to explain the cohort change in earnings patterns. Net of the other variables already in the equation and relative to the earnings of professional and clerical workers, there was a significant gain in earnings if one was a trader, but only in the second cohort. The estimates of the other variables already present in Model 3 changed only negligibly.

In summary, the models of Table 2 indicate that inflation-adjusted earnings for workers with the same characteristics declined substantially between 1974 and 1992. However, the rate of return on years of education within the public sector was unaltered by the overall erosion in public-sector wages between 1974 and 1992, and therefore remained at approximately 9 percent. If one intended to work in the public sector, educational training was still a good investment. In the private sector, education continued to provide no substantial earnings returns. Other factors not in the model determined one's earnings. Being a trader, however, was especially advantageous in the 1990s.

#### Structural Adjustment: An Explanation for Cohort Differences

Table 3 presents the median earnings of each occupational group for both cohorts. The new economic hardship confronting the better-educated second cohort is readily apparent. Across all occupations, the real median earnings in 1992 decreased to 69 percent of those for the first cohort in 1974. With the exception of traders, all occupations experienced real earnings erosion between cohorts. Skilled and unskilled workers in 1992 earned slightly more than two-thirds of what their counterparts earned in 1974. Professional and clerical workers earned only 46 percent, and teachers earned only 33 percent of their counterparts in the first cohort. As a result, the 1974 differentials in median earnings between these five occupational groups disappeared by 1992. By contrast, traders' median earnings jumped to 170 percent of their 1974 level, such that they earned almost double that of other occupational groups.<sup>12</sup>

At this point it is necessary to add a third tier to our supply-and-demand-side model construction and briefly describe the exogenous forces that generated these dramatic cohort and sector shifts in earnings opportunities. Such labor market instability would be atypical in a developed Western industrial economy. In the

**Table 3.** Median Weekly Earnings for the Respondents' Occupations in 1974 for the First Cohort and 1992 for the Second Cohort

Occupation	Median Weekly Earnings (in 1992 Naira)	
	1974	1992
Professional and Clerical Workers	354	163
Teachers	460	154
Traders	177	300
Skilled Artisans and Repairmen	248	175
Unskilled Laborers and Drivers	212	144
Cohort Total	248	173
Valid N	542	

early 1980s, a worldwide recession and sharp erosion in the price of crude oil resulted in balance of payments problems that exacerbated Nigeria's shortage of foreign exchange and increased the burden of debt servicing. In 1985 a national economic emergency was declared, and the nominal wages of civil servants were cut from 2 to 20 percent in an environment of rampant inflation. The following year, Nigeria's military government imposed a Structural Adjustment Program (SAP) to further reduce government spending. A central component of SAP was a devaluation of the Nigerian currency, and thus a further devaluation of the real earnings of salaried workers (Lubeck 1992; Olukoshi 1993). The public sector wage share of the national budget dropped from over 40 percent in 1985–1986 to under 20 percent in 1990–1991, despite no substantial reduction in the total number of civil servants (World Bank 1994, p. 122; see also Fashoyin 1993).

Nominal wage cuts for civil servants paled in comparison to the real wage cuts that resulted from nominal wage inflexibility in the face of rapid inflation. However, even in boom times, public sector workers failed to secure wage increases sufficiently large to keep their real wages in line with inflation. In the midst of petroleum-funded prosperity, Fajana (1979, p. 59) wrote:

Moreover, because the upward adjustments in wages under the prevalent wages policy have occurred mainly in a series of jumps, they have tended to be inflationary. The effect of announcing the periodic awards has been such that traders and market women have always increased the prices of their goods almost instantaneously with the wage increases.

With the deepening of Nigeria's economic crisis in the late 1980s, the real wages of civil servants fell further behind inflation even after the periodic adjustments that resulted from collective bargaining.

The wages of traders are not as "sticky" and adjust almost automatically with inflation. Because traders are only the middle men, they are able to maintain their real wages by charging the same commission for their services (as long as demand

for their goods remains sufficiently high). However, inflation also created new business opportunities for traders. Expansions in black market currency exchange and import/export business with Niger—a country with hard currency pegged to the French franc—resulted in real wage increases for some of Kano's most resourceful traders.

As a consequence, the inflation produced first by prosperity and later by debt crisis reduced the real wages of public sector employees. In this same environment, inflation raised the average real wages of less-educated traders. Thus even though the rate of return on education remained stable over this time period within employment sectors, the aggregate total returns on education, given the public sector positioning of highly educated workers, declined dramatically.

## DISCUSSION

Our major finding is the stability of within-sector rates of return on workers' educational investments and associated employment stability, despite dramatic instability in earnings differences across employment sectors. Given this dramatic change between sectors in wage incentives, why is it that the public sector remained the preferred arena for employment among the highly educated? More precisely, why did teachers, professionals, and clerical office workers continue to work in jobs that paid only 40 percent of their previous wage levels, whereas the number of traders did not increase despite a near doubling of their prior wage levels? It is certainly true that it would be foolish to surrender a traditionally higher-paying public sector job to gain temporarily higher wages in the volatile "informal" economy. Nonetheless, the relative wage decline for teachers, professionals, and clerical workers was simply too severe and long lasting for this to be a complete explanation. Even the standard social stratification interpretation—that workers are reluctant to trade prestige for earnings—is an insufficient explanation. Other factors account for this phenomenon.

### Constructed Monopsony

In Nigeria, the market for educated labor is dominated by one buyer: the government. According to standard economic theory, fewer workers should be hired at lower wages under monopsony than under competitive conditions. However, this prediction does not hold for our case because the Nigerian government is not a profit-maximizing firm in the traditional sense, and achieved its near-monopsony power by hiring many more workers than necessary to meet demand for its services (i.e., far beyond the point where the marginal cost of labor equals its marginal revenue).

The employment policy of the Nigerian government, in its various incarnations from democracy to military dictatorship, has placed legitimacy and political sta-

bility far ahead of economic rationality. Such a survival orientation is common among developing countries, especially those in sub-Saharan Africa (Bates 1981; Gelb, Knight, and Sabot 1991). Rapid educational expansion in the 1970s increased the supply of educated labor. Even before these plans were implemented, human resource planners warned of the looming employment problem. Harbison (1967, p. 181) estimated that "Nigeria's modern sector can absorb no more than one third of those who would aspire to find employment within it." The solution of the Nigerian government to this employment problem was to expand the public sector. As a result, the Nigerian government hired excess educated labor and eventually (perhaps unintentionally) gained control of its market price through monopsony power. When the oil boom ended, the value of the naira fell, and the burden of debt servicing overwhelmed the federal budget. The government had no choice but to implement an austerity program that slashed the nominal wages of public sector employees. In the absence of an alternative employer, educated workers could at least use their education to maintain their relative wage advantage within the public sector, however depressed their real wages had become.<sup>13</sup>

#### Collectivism and Structural Redundancy

The young men in our sample resided in large, polygynous, extended family compounds with multiple nuclear families headed by a *mai-gida* (patriarch and patron head of the patrilocal compound). In this living arrangement, earnings are shared to a large extent, and any single wage earner's shortfall is buffered by remaining available compound income. From this perspective, the extended family may be the appropriate economic unit of analysis.

Although we do not have data on the structure of the extended families of our respondents, it may also be that the employment decisions of individual members, particularly young men, are constrained by the family strategy of their *mai-gida*. Some sons may earn money for the family while others garner the prestige. Even if a *mai-gida* shifts labor away from the civil service to seemingly more remunerative positions in the trading economy, this might not increase total family earnings. Assuming that the main ingredient of success in trading is family connections in the marketplace, an additional trader in an extended family would be, in the language of network analysis, structurally equivalent and thus redundant.

#### Worldly Patronage and Sacred Worldviews

Another factor that contributed to workforce stability is the continuing strength in Nigeria of a collectivist patron-client system that mitigates individual hardship. Each worker has resources available outside the extended family in his patron-client network. At this early stage of their occupational careers, nearly all of these

young men are clients to one or another senior patron. They have the expectation that their loyalty will be rewarded, particularly in hard times.

Occupational immobility is also the result of the pervasive mixture of optimism and fatalism of the sacred worldview of most Nigerians. Although the respondents in our sample were Muslims, non-Muslim Nigerians are little different in the strength of their religious devotion relative to Western societies. The young men in our 1992 sample shared the national self-confidence that a new era of prosperity was within reach. Their faith in this prediction is tied to their Islamic conviction that man's destiny is shaped by God, who within the context of local ideology is the ultimate patron (Clarke and Linden 1984; Paden 1973). Hardship is a form of suffering that tests and thereby strengthens one's devotion to God. While nonmonetary work incentives are more or less important in all societies, we found in our Nigerian sample that this combination of patron support and sacred significance of devotion to one's job strengthened these workers' dispositions to remain in their depressed-wage jobs.

## CONCLUSIONS

### Generalizability of Findings to the Labor Markets of Other Developing Countries

Of the four main ingredients of the explanation presented above, at least the first two are common in developing countries across the world. Debt crisis and inflation have swept through nearly every developing country, first in Latin America in the 1970s and later in sub-Saharan Africa. In Latin America, however, the monopsony power of the government is not as strong, and public sector workers have been much more successful in negotiating automatic indexation clauses in their wage contracts (Agénor 1996). To the extent that the returns on education have declined in other developing countries, our explanation is more likely to hold for sub-Saharan African countries than Latin American countries. However, our main point is that macroeconomic conditions matter, and a different pattern may be part of a Latin American explanation.

Most sub-Saharan African countries experienced sharp economic decline in the 1980s and entered into similar austerity programs (World Bank 1994). Nigeria's austerity program was unique in decreasing its public sector wage bill more than any other country, but the policy of employment maintenance and wage decay instead of massive civil servant layoffs was favored by most governments of sub-Saharan African countries (Mills and Sahn 1995). Thus, the structural catalyst for a reversal of the wage structure that reduced total returns on education, as argued here, was common among at least the developing countries of sub-Saharan Africa.



The likelihood of encountering similar workforce stability amidst similar changes in wage structures in other developing countries depends on the universality of the sociocultural underpinnings of these societies. Clearly, in sub-Saharan Africa each nation has its own unique historical legacy, but a substantial number of these countries have comparable religious foundations upon which sacred devotion, patronage relations, and extended kinship patterns are based.

### General Labor Market Theory

The findings presented above suggest three conclusions that are relevant to the general theories of the labor market outlined in the introduction. Labor market analysis in whatever tradition must rigorously examine the potential independent impact of occupations, industries, and employment sectors on labor market outcomes. Only under rare conditions will a supply-side explanation fit empirical reality and provide a parsimonious explanation that is also correct. Particularly when there is much to be explained in a vibrant and volatile labor market, demand-side factors will be important.

However, demand-side structures alone can never provide complete explanations for labor market inequalities. Primary/secondary, closed/open, and formal/informal dualities are far too contingent on supply-side conditions and more basic exogenous political economy processes to provide generalizable explanations for labor market inequality. Labor market structures are often part of the story but never dominant enough to justify the exclusion of other factors. The professed superiority of the primary sector, by whatever name, is not an iron law.

Finally, ignoring supply and demand in order to rigorously elaborate political economy and bargaining processes is even more reckless than the neoclassical neglect of demand-side structures. Supply and demand represent the sellers and buyers of labor and thus provide the most flexible framework for labor market analysis. The elaboration of ultimately exogenous factors must be measured across some mechanistic variables (by definition, at least partly endogenous) if they are to be related to labor market outcomes. We could not have argued in this paper that inflation, monopsony, structural redundancy in extended families, worldly patronage, and sacred worldviews provide a sufficient explanation for changes in labor market inequality across differentially educated workers in Nigeria without relating these determinants to intersecting supply-and-demand market conditions.

## APPENDIX

Has nonrandom sample attrition created sample selection bias in the rate of return estimates reported in Table 2? We performed two tests to gauge the representative-

ness of the reinterview samples and then reestimated the earnings functions of Table 2 with robust regression techniques to reduce the impact of influential data points. None of these tests provided strong enough evidence of substantial bias to warrant presenting results in a form any more complex than OLS regression.

Using Heckman's lambda (1976) and a selection equation using a father's occupational status, estimates of selection bias in the regression equations reported in Table 2 were nonsignificant. As inferred from Little and Rubin (1987), however, weakly identified selection equations such as ours are at best an approximate test of selection bias. We therefore compared the distributions of socioeconomic backgrounds for young men in the baseline and reinterview samples, again using respondent reports of father's occupation in the baseline interviews to measure socioeconomic background.

The proportions with fathers who were professional or clerical workers were within two percentage points of the value for the full samples, and the proportions with fathers who held unskilled jobs or religious occupations were both within one percentage point. The small variations that did exist tended to be similar for the two cohorts (suggesting that small biases operated consistently over time) and thus could not explain any observed cohort differences. In both 1974 and 1992 sons of farmers were underrepresented (3.7 percent fewer than in the full 1965 sample; 4.8 percent fewer than in the 1979 sample). Many of these respondents as youth were temporary residents who had moved to Kano for Islamic training and thus were harder to track. Conversely, sons of traders and skilled craftsmen were overrepresented (3.6 percent more in 1974; 8.4 percent more in 1992) because they tended to reside in the stable neighborhoods surrounding the city's central market from which the original sample was drawn. Based on these checks, we found no evidence that selective sample attrition has biased our estimated rates of return.

We were unable to directly evaluate the argument that members of the full samples who were most economically successful, net of social background characteristics, might have moved away from Kano and thus out of the reinterview samples. We do know that Hausa-Fulani men from Kano rarely move to Lagos, the dominant urban center of southern Nigeria and the only other city likely to have high paying jobs equal to those available in Kano. Furthermore, for the second cohort we know that the participation rate for post-secondary education differed by only one percentage point between reinterviewed respondents and those not interviewed for whom we have complete informant reports of education level (an additional 208 cases).

Extending this argument that our Kano-based sample is more likely to include unusually successful traders than unusually successful professional and clerical workers, then among unusually successful respondents, workers with substantial educational training are more likely to have moved away from Kano and out of the reinterview samples. If this is the case, then our rate-of-return estimates are biased downward because education is negatively correlated with the error term. In other words, there may be too few individuals present in the reinterview samples who

**Table A1.** Robust Regression Coefficients of Logged Weekly Earnings on Years of Education, Employment Sector, and Occupational Group

Variables	1	2	3	4
<b>Cohort Main Effect</b>	-.116 (.128)	-.825*** (.170)	-1.153*** (.300)	-1.283*** (.324)
<b>Education:</b>				
Years of Education	.074*** (.008)	.071*** (.009)	.084*** (.013)	.088*** (.015)
by Cohort	-.069*** (.012)	-.029* (.013)	-.010 (.024)	-.006 (.025)
by Private Sector			-.035 (.018)	-.038* (.018)
by Cohort			-.012 (.029)	-.025 (.029)
<b>Employment Sector:</b>				
Private Sector		-.108 (.090)	.056 (.131)	.177 (.134)
by Cohort		.759*** (.124)	1.149** (.327)	.973** (.338)
<b>Occupation:</b>				
Teachers				-.187 (.155)
by Cohort				.232 (.191)
Traders				-.353* (.141)
by Cohort				.959*** (.208)
Skilled Artisans and Repairmen				.062 (.133)
by Cohort				-.121 (.199)
Unskilled Laborers and Drivers				-.017 (.144)
by Cohort				.215 (.216)
Constant	5.24	5.32	5.22	5.21
N	526	515	515	515

**Notes:** Reference categories are public sector, professional and clerical workers, and the first cohort. Standard errors are in parentheses. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$  (two-tailed test).

have both high levels of educational attainment and positive true error terms. Since we cannot create respondents, the only way to judge the importance of this potential source of bias is to reduce the influence of unusually successful respondents

who have low levels of educational attainment, and then recompute the rates of return.

We reestimated the earnings functions of Table 2 with alternative regression procedures that are more robust to extreme values (Berk 1990; Rousseeuw and Leroy 1987). Using STATA's routine for robust regression (*rreg*), Table A1 presents parameter estimates analogous to those reported in Table 2. In the calculation of these parameter estimates, the residuals from OLS regression models are first obtained. Then, cases are weighted (to the extent that extreme values are given weights as low as zero) in proportion to functions of the absolute values of their residuals in the iterative reestimation of the same models. For example, in the estimation of Model 4 for Table A1, 13 cases were given a weight of 0. Ten of these cases (eight traders, one skilled worker, and one unskilled worker) had values for logged earnings that were greater than two standard deviations above the mean, and the remaining three cases (two traders and one skilled worker) had values less than two standard deviations below the mean. Across all four models, the assigned weighting variables were weakly positively correlated with education (from .13 to .17) and weakly negatively correlated with logged earnings (from -.18 to -.27). Thus, the patterns of residuals from the models of Table 2 resulted in robust regression weighting schemes that sought to reduce the influence of cases with high earnings but low education.

In line with the speculation above, the robust regression parameter estimates suggest a slightly higher rate of return in the private sector than did the OLS estimates. However, the rate of return for public sector employees is similar. And for Models 3 and 4, as in their counterparts from Table 2, there is no substantial within-sector decline in returns between cohorts. The findings reported in Table 2 are not driven by overly influential data points. Even with robust regression estimates, rates of return are stable within employment sector, despite the emergence of a large earnings advantage for private sector employment in the second cohort.

## ACKNOWLEDGMENT

A preliminary draft of this paper was presented to the Research Committee on the Sociology of Education, the "Education, Economic and Social Structures" session chaired by Professor Aaron Benavot, at the International Sociological Association's XIII World Congress of Sociology, Bielefeld, Germany, July 1994. We are grateful for comments from session participants and audience members, as well as Salisu Abdullahi, John Goldthorpe, Mohammed Ismaila, Peter Marsden, Peter Meiksins, Aage Sørensen, Tony Tam, Donald Warwick, and Christopher Winship. Data collection in 1992 was supported by grants to S. Morgan from the Harvard Institute for International Development, Center for International Affairs, and Committee on African Studies. A return trip to Kano in 1994 to share the paper with Nigerian colleagues was funded by the Rhodes Trust while S. Morgan was at

Oxford University. None of these supporting agencies bear any responsibility for the conclusions contained herein.

## NOTES

1. Neoclassical explanations are considerably more sophisticated now. A new generation of labor economists, both faithful to and critical of neoclassical theory, has sought to explain the existence of interindustry wage differentials, recognized at least since Slichter (1950), as the result of rent sharing and/or the payment of efficiency wages (Katz and Summers 1989; see also Riveros and Bouton 1994 for a discussion relating these ideas to development research).

2. Fully elaborated theories of labor market segmentation continue to be developed (Eliason 1995; Taubman and Wachter 1986; Sakamoto and Chen 1991), but empirical support remains weak.

3. See Singer (1992) for a defense of the ILO's effort to document patterns of informal sector activity and for citations of its critics.

4. Nonetheless, macroeconomists have adopted the inspiration for split labor market theory and have built impressive mathematical models of the interactions between the rural, urban informal, and urban formal sectors (Agénor 1996; Rosenzweig 1988).

5. Frishman (1991) provides a review of current research on the status of contemporary Hausa-Fulani women based on ethnographic research and official government statistics.

6. The first cohort averaged seven fewer years of education (see Table 1), presumably spent working, and would have gained at most another half year if all those who were still educationally active at age 26 had studied continuously up to age 30.

7. Excluded from analysis were seven respondents who were farmers or *mallams* (Islamic instructors). Traditionally, these are separate occupational status groups and should not be assigned to the four groups used here. The absence of *mallams* from our samples and thus our analysis is a result of the age-restricted nature of each sample; men usually do not take up Islamic teaching until later in life. The lack of farmers is a result of interviews having taken place in the summer rainy season; migrant farmers would have been away from the city in villages tending to crops. To a lesser degree, urbanization and secularization trends in post-independence northern Nigeria also help account for the low representation of these occupations in our samples because their incidence in the population is reduced.

8. In the 1992 follow-up survey, Morgan (1993) also collected information on weekly earnings from a secondary occupation. Only 12 respondents reported any such income. Rates of return are not downwardly biased when "moonlighting" is ignored, because the propensity to moonlight does not appear to be related to educational attainment. Of the three professional and clerical office workers who claimed a secondary occupation, one was working in another clerical position, another was working as a trader, and the third was working as an unskilled laborer. Both teachers who listed a secondary occupation also were working as unskilled laborers. The sole trader to engage in a secondary occupation was working as a *mallam* (Islamic instructor). Of the five skilled artisans who reported secondary occupations, two claimed other work in professional or clerical positions, and the remaining three were working in other skilled occupations. Finally, the only unskilled laborer to report a secondary occupation was working on the side as a skilled artisan. In general, these patterns indicate that the vast majority of respondents derived their earnings from a single occupation. While our respondents may have other sources of income (e.g., from patrons and from family investments), our data suggest that moonlighting is not very common (contrary to the claims of many qualitative and theoretical studies of labor markets in developing countries).

9. The cohort increases in educational attainment are the results of both increased participation rates and increases in completed years by participants.

10. Thus, public sector employment is dominated by highly educated workers, and this helps explain why our sample includes approximately 10 percent more public sector employees than the

national averages reported by Gelb, Knight, and Sabot (1991). KYS respondents are more highly educated because they have had more opportunities for educational training than older labor market participants.

11. Note that the overall increase between cohorts in the proportion of young men employed by the government is the result of growth in the professional/clerical and teaching occupations that are predominantly in the public sector.

12. What would happen to earnings differences between occupational groups if in-kind benefits could have been included in the weekly earnings reported in Table 3? Given that such benefits usually accrue disproportionately to professional and clerical workers, we would expect the differences to widen in 1974 and show little change in 1992. The in-kind benefits that civil servants of the past enjoyed were simply no longer available in 1992.

13. Note the implication of this pattern for the theory of closed employment positions proposed by Sørensen (1977). In line with his proposal, the Nigerian government, as an employer with an internal labor market, had weak control of the distribution of rewards among employees (mostly because of civil service rules). However, the Nigerian government gained total control over the wages of all of the positions within its internal labor market by acquiring control over the closed/open position wage differential through monopsony power.

## REFERENCES

- Agénor, P.R. 1996. "The Labor Market and Economic Adjustment." *International Monetary Fund Staff Papers* 43: 261-335.
- Armer, J.M. 1968. "Intersociety and Intrasociety Correlations of Occupational Prestige." *American Journal of Sociology* 74: 28-36.
- \_\_\_\_\_. 1970. "Formal Education and Psychological Malaise in an African Society." *Sociology of Education* 43: 143-158.
- Armer, J.M., and R. Youtz. 1971. "Formal Education and Individual Modernity in an African Society." *American Journal of Sociology* 76: 604-626.
- Bates, R. H. 1981. *Markets and States in Tropical Africa*. Berkeley: University of California Press.
- Becker, G. 1964. *Human Capital*. New York: National Bureau of Economic Research, Columbia University.
- Berk, R.A. 1990. "A Primer on Robust Regression." Pp. 292-324 in *Modern Methods of Data Analysis*, edited by J. Fox and J.S. Long. Newbury Park, CA: Sage.
- Blaug, M. 1973. *Education and the Employment Problems in Developing Countries*. Geneva: International Labour Organization.
- Bowles, S. 1969. *Planning Educational Systems for Economic Growth*. Cambridge, MA: Harvard University Press.
- Bray, M. 1981. *Universal Primary Education in Nigeria: A Study of Kano State*. London: Routledge & Kegan Paul.
- Castells, M., and A. Portes. 1989. "World Underneath: The Origins, Dynamics, and Effects of the Informal Economy." Pp. 11-37 in *The Informal Economy: Studies in Advanced and Less Developed Countries*, edited by A. Portes, M. Castells, and L.A. Benton. Baltimore: Johns Hopkins University Press.
- Charmes, J. 1990. "A Critical Review of Concepts, Definitions and Studies in the Informal Sector." Pp. 10-48 in *The Informal Sector Revisited*, edited by D. Turnham, B. Salomé, and A. Schwartz. Paris: Development Center of the OECD.
- Clarke, P.B., and I. Linden. 1984. *Islam in Modern Nigeria: A Study of a Muslim Community in a Post-Independence State 1960-1983*. Mainz: Grunewald and Kaiser.
- Doeringer, P.B., and M.J. Piore. 1971. *Internal Labor Markets and Manpower Analysis*. Lexington: Heath Books.

- Eliason, S.R. 1995. "An Extension of the Sørensen-Kalleberg Theory of the Labor Market Matching and Attainment Process." *American Sociological Review* 60: 247-271.
- Fajana, O. 1979. "Wages and Manpower in Nigeria." Pp. 53-65 in *Manpower Supply and Utilisation in Ghana, Nigeria, and Sierra Leone*, edited by U.G. Damachi and K. Ewusi. Geneva: International Labour Organization.
- Fashoyin, T. 1993. "Nigeria: Consequences for Employment." Pp. 78-91 in *The Impact of Structural Adjustment on the Population of Africa*, edited by A. Adepoju. London: James Currey.
- Fields, G.S. 1990. "Labor Market Modeling and the Urban Informal Sector: Theory and Evidence." Pp. 49-69 in *The Informal Sector Revisited*, edited by D. Turnham, B. Salomé, and A. Schwartz. Paris: Development Center of the OECD.
- Fika, A.M. 1978. *The Kano Civil War and British Over-rule 1882-1940*. Ibadan: Oxford University Press.
- Frishman, A. 1991. "Hausa Women in the Urban Economy of Kano." Pp. 192-203 in *Hausa Women in the Twentieth Century*, edited by C. Coles and B. Mack. Madison: University of Wisconsin Press.
- Gelb, A., J.B. Knight, and R.H. Sabot. 1991. "Public Sector Employment, Rent Seeking and Economic Growth." *Economic Journal* 101: 1186-1199.
- Granovetter, M., and C. Tilly. 1988. "Inequality and Labor Processes." Pp. 175-221 in *Handbook of Sociology*, edited by N.J. Smelser. Newbury Park: Sage Publications.
- Harbison, F.H. 1967. "The Generation of Employment in Newly Developing Countries." Pp. 173-193 in *Education, Employment, and Rural Development: Report to the Kericho Conference, 1966*, edited by J.R. Sheffield. Nairobi: East Africa Publishing House.
- Harbison, F.H., and C.A. Myers. 1964. *Education, Manpower, and Economic Growth: Strategies of Human Resource Development*. New York: McGraw-Hill.
- Heckman, J.J. 1976. "The Common Structure of Statistical Models of Truncation, Sample Selection and Limited Dependent Variables and a Simple Estimator for Such Models." *Annals of Economic and Social Measurement* 5: 475-492.
- Hogben, S.J. 1930. *The Muhammadan Emirates of Nigeria*. London: Oxford University Press.
- International Labor Organization (ILO). 1972. *Employment, Incomes and Equality: A Strategy for Increasing Productive Employment in Kenya*. Geneva: ILO.
- International Monetary Fund (IMF). 1964-92. *International Financial Statistics*. Volumes 17- 45. Washington, D.C.: IMF.
- Little, R.J.A., and D.B. Rubin. 1987. *Statistical Analysis with Missing Data*. New York: Wiley.
- Lubeck, P.M. 1992. "The Crisis of African Development: Conflicting Interpretations and Resolutions." *Annual Review of Sociology* 18: 519-540.
- Katz, L.F., and L.H. Summers. 1989. "Industry Rents: Evidence and Implications." *Brookings Papers: Microeconomics*. Washington, D.C.: Brookings.
- Mills, B.F., and D.E. Sahn. 1995. "Reducing the Size of the Public Sector Workforce: Institutional Constraints and Human Consequences in Guinea." *Journal of Development Studies* 31: 505-528.
- Mincer, J. 1974. *Schooling, Experience and Earnings*. New York: National Bureau of Economic Research.
- Morgan, S.L. 1993. "Labor Market Change and Occupational Aspirations in a Turbulent Economy: Kano, Nigeria 1965 to 1992." Unpublished B.A. Thesis, Harvard University.
- Morgan, W.R., and J.M. Armer. 1988. "Islamic and Western Educational Accommodation in a West African Society: A Cohort-Comparison Analysis." *American Sociological Review* 53: 634-639.
- \_\_\_\_\_. 1991. "Structural Accommodation and Cultural Duality: The Northern Nigerian Education System." *International Education* 21: 41-48.
- \_\_\_\_\_. 1992. "Western versus Islamic Schooling: Conflict and Accommodation in Nigeria." Pp. 75-88 in *The Political Construction of Education*, edited by B. Fuller and R. Rubinson. New York: Praeger.

- Olukoshi, A. (ed.). 1993. *The Politics of Structural Adjustment in Nigeria*. London: James Currey.
- Ozigi, A., and L. Ocho. 1981. *Education in Northern Nigeria*. London: George Allen & Unwin.
- Paden, J.N. 1973. *Religion and Political Culture in Kano*. Berkeley: University of California Press.
- Psacharopoulos, G. 1989. "Time Trends of the Returns to Education: Cross-National Evidence." *Economics of Education Review* 8: 255-231.
- \_\_\_\_\_. 1994. "Returns to Investment in Education: A Global Update." *World Development* 22: 1325-1343.
- Riveros, L.A., and L. Bouton. 1994. "Common Elements of Efficiency Wage Theories: What Relevance for Developing Countries?" *Journal of Development Studies* 30: 696-716.
- Rosenzweig, M.R. 1988. "Labor Markets in Low-Income Countries." Pp. 713-62 in *Handbook of Development Economics*, edited by H. Chenery and T.N. Srinivasan. New York: Elsevier Science Publishers.
- Rousseeuw, P.J., and A.M. Leroy. 1987. *Robust Regression and Outlier Detection*. New York: John Wiley.
- Sakamoto, A., and M.D. Chen. 1991. "Inequality and Attainment in a Dual Labor Market." *American Sociological Review* 56: 295-308.
- Schultz, T.W. 1961. "Investment in Human Capital." *American Economic Review* 51: 1-17.
- Singer, H. 1992. *Research of the World Employment Programme: Future Priorities and Selective Assessment*. Geneva: International Labour Organization.
- Slichter, S.H. 1950. "Notes on the Structure of Wages." *Review of Economics and Statistics* 32: 80-91
- Smith, M.G. 1959. "The Hausa System of Social Status." *Africa* 29: 239-251.
- Sørensen, A.B. 1977. "The Structure of Inequality and the Process of Attainment." *American Sociological Review* 42: 965-978.
- Sørensen, A.B., and A.L. Kalleberg. 1981. "An Outline of a Theory of the Matching of Persons to Jobs." Pp. 49-74 in *Sociological Perspectives on Labor Markets*, edited by I. Berg. New York: Academic.
- Spilerman, S. 1977. "Careers, Labor Market Structures, and Socioeconomic Achievement." *American Journal of Sociology* 83: 551-593.
- Taubman, P., and M.L. Wachter. 1986. "Segmented Labor Markets." Pp. 1183-1217 in *The Handbook of Labor Economics*, edited by O. Ashenfelter and R. Layard. New York: Elsevier.
- Tilly, C., and C. Tilly. 1994. "Capitalist Work and Labor Markets." Pp. 283-312 in *The Handbook of Economic Sociology*, edited by N.J. Smelser and R. Swedberg. Princeton: Russell Sage Foundation.
- Willis, R.J. 1986. "Wage Determinants: A Survey and Reinterpretation of Human Capital Earning Functions." Pp. 525-602 in *The Handbook of Labor Economics*, edited by O. Ashenfelter and R. Layard. New York: Elsevier Science Publishers.
- World Bank. 1994. *Adjustment in Africa: Reforms, Results, and the Road Ahead*. New York: Oxford University Press.