Urban Bias and Labor Market Inequality:
Trends in a Sub-Saharan Setting

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ABSTRACT

This paper examines the roots and trends in rural-urban inequality in labor market access in Cameroon. The paper advances previous studies in two ways: Conceptually, it expands beyond human capital and conflict perspectives and suggests attention to subtler influences rooted in the family. Methodologically, it examines these inequalities in historical perspective and it applies fixed-effects methods to examine the possible influence of unobserved features of families. Findings show a convergence in the occupational attainment prospects of rural and urban children over time. Consistent with other studies in Asia, I find no net bias against rural children in the labor market, once educational attainment is controlled for. Further, the rural-urban differences in educational attainment are not explained by variables that reflect bias or difference in ability, but rather by unmeasured characteristics of families. Together, these findings highlight the relevance of factors typically not included in analyses grounded in static conflict or consensus perspectives.

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Rural Parental Background and Prospects for Off-farm Employment:

Beyond Consensus and Conflict

Introduction

In many developing nations, the on-going urban transitions are intensifying competition for off-farm employment. The rapid growth in urban population and slow growth in the economy have fuelled high urban unemployment, often in excess of 30 percent (DHS 2006). Such unemployment rates raise concern about the prospects of vulnerable groups, and how effectively they can compete for off-farm employment at a time of shrinking opportunity. Among the presumed vulnerable groups, children with rural parental background deserve special attention. Many studies have found substantial rural-urban inequality in education and employment (Eloundou and Davanzo 2003; Moots 1976; Mehrotra, Vandemoortele and Delamonica 2000; Pattaravanich et al. 2005; UNCTAD 1997) but whether this inequality worsens over time and under difficult circumstances has not been fully explored. Indeed, important and unresolved questions remain about why these inequalities exist in the first place (Eastwood and Lipton 2000; Gugler 1982; Lipton 1977).

The purpose of this paper is to advance our understanding of the roots and trends in rural-urban inequality in developing countries. I argue that a full understanding requires some expansion beyond the current conceptual and methodological orthodoxy. At the conceptual level, the debate on the roots of rural-urban inequality has been dominated by the opposition between conflict and consensus perspectives. While this opposition is admittedly "simplistic" (Opal and Fey 2000), "naïve" (Blalock 1991), or "tired" (Brint 1998), and while many researchers have merged the two perspectives (Collins 1977; Weedon 2002; Wolbers 2000), data limitations have

often narrowed investigations to either human capital *or* urban bias/discrimination as alternative explanations for rural-urban inequality. To broaden the investigative focus beyond human capital and discrimination, I examine the possible influence of harder-to-measure or unmeasured processes associated with children and their families. At the methodological level, previous studies in developing countries have been hampered by reliance on cross-sectional regression. Although these methods are widely known to obscure temporal variation in both predictors and outcomes (Sørensen 1986), the scarcity of event-history data has prevented more detailed investigations in countries with weak data collection systems. This study uses appropriate event-history data and methods that overcome the limitations of previous research based on cross sectional evidence.

The analysis focuses on two specific questions about the employment prospects of rural children in a developing setting. First, what are the sources of rural-urban inequality in employment? Specifically, to what extent does this inequality reflect the influence of human capital, urban bias, or subtler processes operating at the family level? Second, how has this inequality changed across time and, more specifically, with shifting economic conditions?

This analysis focuses on Cameroon, a sub-Saharan country whose recent demographic and economic history illustrates the asymmetric urban transitions noted throughout the developing world in recent decades (Kasarda and Crenshaw 1991; Roberts 1989; UN 2004). These asymmetric transitions, which provide the substantive background for this study, are discussed in the next section. This is followed by a review of previous studies on rural-urban inequality as well as a discussion of this paper's intended contribution. The data and methods used are then described in detail. Finally, I present the findings followed by an interpretation of

their general implications for our understanding of contemporary rural-urban inequality in off-farm employment.

Background

Concern for rural-urban inequality in employment within developing countries can be understood against the backdrop of on-going urban transitions. By 2007, and for the first time in human history,[i] the majority of the world population will be urban, a watershed event that culminates nearly five decades of steady urbanization (UN 2004). While developed countries experienced similar transitions, the current experience of contemporary developing countries is more dramatic due to its rapid pace. The overall population growth in these countries is projected to average 2.3 percent between 2000 and 2030 (UN 2004). Despite higher rural than urban fertility, these countries have steadily urbanized as a result of annexation and conversion of rural areas into urban centers, as well as continued rural-to urban migration (Todaro 1997; UN 2004). Importantly, and unlike transitions in Western Europe and the US (Preston 1979; Williamson 1988), the movement of labor away from farms in many of today's developing countries occurs without commensurate growth in the off-farm economy. Such asymmetric transitions have raised concern about urban congestion and the economic adaptation of rural migrants (Beauchemin and Bocquier 2004; Todaro 1997). Prominent analysts have thus questioned whether or not the current growth of urban areas benefits residents or the larger society, noting that the size of these urban centers [is]:

> "*such that any economies of location are dwarfed by costs of congestion. The rapid population growth that has produced them will have far outpaced the growth of human and physical infrastructure needed for even moderately efficient*

economic life and orderly political and social relationships, let alone amenity for

their residents." (McNamara, cited in Todaro 1997: 7)

Figure 1 illustrates this asymmetric growth. Frame A maps world countries depending on their percentages of urban population (Y axis) and off-farm employment (X-axis), with cutoffs on both axes placed at the 50% mark. The figure thus divides world countries into four quadrants, including countries that are predominantly urban in residence and where most of the employment is off-farm (A), countries that are predominantly rural but with most of the employment off-farm (B), countries that are predominantly rural and most of the employment is on farm (C) and countries that are predominantly urban but most of the employment is on farm (D). Nearly one-half of the world nations fall into quadrant A, but only 2 Sub-Saharan nations are included in this quadrant. Instead, the majority of African countries lie within the C quadrant of rural and farm economies.

[Figure 1 about here]

To complement the static snapshot in Frame A, Frame B offers a more dynamic view, showing the percent change in off-farm employment (X axis) and in urban population (Y axis) over the last two decades.. This frame thus reveals the extent of asymmetry in national urban transitions. Countries that fall to the right of the diagonal have experienced faster growth in off-farm employment than in urban population, while the reverse is true for countries to the left of the diagonal. As this graph indicates, most sub-Saharan countries fall to the left, revealing an asymmetry noted in other studies (Kasarda and Crenshaw 1991; Roberts 1989; UN 2004). Sub-Saharan Africa nations have registered the fastest rates of urbanization (~2.5%) over the last four decades, compared to 1.5 percent in Central America, South and East Asia and 0.5 percent in South America (Kasarda and Crenshaw 1991; Opal and Fay 2000; Roberts 1989; UN 2004).

Over the same period and especially during the last two decades, many economies in Africa remained stagnant or weakened; the average GDP per capita in Africa fell at an annual rate of .66% between 1970 and 1995 (Opal and Fay 2000), resulting in increased competition for urban employment. Given this increased competition for employment, the bases of socioeconomic advancement in these countries become a relevant concern. Of specific concern in this study is whether children with rural parental background are inordinately disadvantaged under such a congested labor market.

Cameroon, the setting for this study, offers a good illustration of asymmetric urbanization. Over the last two decades, Cameroon's urban population grew by 17 percent, far outpacing its 3.5 percent growth in off-farm employment, resulting in urban congestion and increasing urban unemployment. While such trends are common (Figure 1), Cameroon is particularly interesting because its urbanization was accompanied by a severe economic downturn in the late 1980s and 1990s. This economic depression was triggered in part by a decline in price of its main exports (EIU 1998), and resulted in a decline in the per capita GNP, from US$ 750 in 1981 to US $490 in 1995 (World Bank 2000). Both this decline and some of the adjustment policies used in response, such as shrinking the public-sector labor force through layoffs, forced retirements, and a freeze on new appointments, raised urban unemployment. Recent DHS (Demographic Health Survey) statistics show urban unemployment rates of nearly 49 percent in 2004, with unemployment affecting all educational groups (DHS 2006).

Theoretical Perspectives

The debate on occupational attainment has been dominated by two contrasting perspectives, consensus and conflict, each reflecting a different emphasis on individual merit versus ascribed

characteristics and social reproduction (Blau and Duncan 1967; Brint 1998; Grusky 1994; Wheedon 2002). Rooted in functional sociological theory and human capital economic theory, consensus theories point to differences in individual's cognitive abilities as the source of differential outcomes (Blau and Duncan 1967; Squires 1977). They tend to regard inequality as functional for society and they emphasize the role of individual level characteristics, mostly human capital (Grusky 1994; Mincer 1974; Weedon 2002). Poverty reduction initiatives informed by this perspective emphasize training, and view "*human capital, and the capacity to work, are among the most important assets the poor possess.*" (IFAD 2001, p.*v*).

Conflict theorists, on the other hand, underscore the importance of bias, typically based on ascribed characteristics of individuals and discriminatory practices (Gugler 1982; Lipton 1977; Wheedon 2002). In this perspective, powerful groups construct and maintain a social structure that systematically discriminates against less powerful groups. Rural-urban inequality, in particular, is understood as stemming from domination and exploitation of the rural poor by urban elites. Some researchers, such as Lipton, view the rural-urban divide as the largest class conflict in the Third World because "*...the rural sector contains most of the poverty and most of the low cost sources of potential advance; but the urban sector contains most of the articulateness, organization and power*" (1977:13). Gugler developed this concept further, arguing that the reason that poverty persists is that urban elites transfer the majority of national resources to urban centers which become "the centers of power and privilege" (1982:188). By funneling resources to urban centers, the elites create spaces where they can use these resources to maintain power and privilege (Gugler 1982; Lipton 1977).

While the consensus/conflict distinction represents a powerful didactic scheme, it can also be simplistic in its description of rural-urban inequality. The rural/urban dichotomy obscures

the enormous diversity within both the rural and urban populations, as both sub-populations can have substantial diversity along ethnic, racial, and socioeconomic lines. In that light, the notion "urban bias" might be better conceptualized as "elite bias" in so far as it skews "resource provision to the rich and the elite, especially if the urban poor have limited access to these resources" (Fay and Opal 2000:9). Additionally, many studies in developing countries have recognized the intense and mutually-beneficial exchanges between rural and urban communities and families in sub-Saharan Africa. Children are often fostered from rural to urban areas (Akresh 2005; Case, Paxson, Ableidinger 2004; Isiugo-Abanihe 1985), urban families can send economic remittances to rural relatives (Adepoju and Mbugua 1997; Russell 1990; Reardon 1997; Schrieder and Knerr 2000) and rural communities have been argued to serve as an economic refuge for urban populations at the height of the economic crises that affected many African countries in the 1990s (Courade 1994; Englund 2002). For these various reasons, while I compare rural and urban populations in this analysis, I also recognize the importance of within-group variation. Indeed, the purpose of our analyses is to help understand rural-urban inequality and how it is affected by intrinsic and compositional characteristics of both sets of communities. Specifically, what about a rural background causes disadvantage? Is it differences in human capital, individual and family characteristics or subtler processes associated with harder-to-measure characteristics of individuals and their families?

Previous Studies

Previous empirical research has found individuals with rural backgrounds to be disadvantaged in education and employment. Pattaravanich et al. (2005) find that, in 1990, rural girls in northeast Thailand were over 9 times less likely to continue to upper secondary school than their urban

counterparts. They also found evidence for convergence in education: by 2000 the urban advantage had dropped by nearly 75 percent compared to 1990 levels. Mehrotra et al.(2000) find that in Benin, urban students are more than twice as likely as their rural peers to attend primary school. Such a finding may not be entirely surprising, as less than half of the education budget goes to rural areas, despite the fact that this is where over 60 percent of the population resides (Mehrotra et al. 2000). Their research also show an interaction effect between rural background and income- with "richest groups in rural areas achieving a gross enrollment rate of 50 per cent while the poor only manage 36 per cent" (Mehrotra et al. 2000:16). In Cameroon, the study setting, rural children in grades 6 are 2.2 times more likely to drop out of primary school than their urban counterparts. Only upon reaching high school, the odds of dropout for rural students become similar to those of their urban peers , as many rural students have already dropped out by this time and others are fostered into urban families (Eloundou and Davanzo 2003).

Other studies have examined differences in employment. Given the obvious difference in employment structure between rural and urban communities, the most relevant studies here are those investigating the economic adaptation of rural migrants to urban centers in developing countries. Many of these studies found little indication of a rural disadvantage (Goldscheider 1987; Kasarda and Crenshaw 1991; Koo 1976; Moots 1976). In 1987, Goldscheider's review of the literature suggests that migrants to urban areas are not "*conspicuously disadvantaged relative to the urban population except for the initial period subsequent to their arrival in the city*" (p. 683). Similarly, Moots found that migrants with rural backgrounds in Ankara, Turkey and Mexico City, Mexico were penalized for their rural background via educational attainment, but were not disadvantaged in the status attainment process once one accounted for their other background characteristics (Moots 1976). A few analysts have further recommended attention to

potential differences between formal and informal-sector employment, given the importance of the latter in many developing countries (Portes et al. 1989; Todaro 1997). Despite its relative lack of regulation (Portes et al. 1989), this sector is demographically and economically important. It comprises "a large number of small-scale production and service activities that are individually or family owned and use labor-intensive and simple technology" (Todaro 1997:13) and occupies a large share of the urban labor force in many developing countries (DHS 2006). Furthermore, this sector has been shown to support the formal sector by providing cheap basic services. Other research suggests that earnings in this sector, though precarious, can often compare favorably with earnings in the more formal sector, especially in countries that have undergone rapid economic liberalization (UNCTAD 1997).

Much of the rural-urban inequality in education and employment is a priori unsurprising in light of large differences in community and family resources (Hewitt and Montgomery 2001; Lassey, Lassey, and Jinks 1997; Lipton 1977; Macfarlane, Racelis, and Muli-Musiime 2000; Porter 2002) With regards to community resources, Hewett and Montgomery (2001) find "wide urban-rural gaps" in public service delivery. In sub-Saharan Africa, on average, only five percent of rural residents have access to electricity, as opposed to 88 percent of residents of cities with populations between 1 and 5 million (Hewitt and Montgomery 2001). Nearly 90 percent of rural households in this region lack access to electricity, water in the home, and flush toilets (Hewitt and Montgomery 2001). Similarly, rural background is associated with disadvantages in accessing health care. In Bolivia, the rural poor have the most restricted access to public health facilities, while in the Central African Republic "maternal child services congregated in cities and operated erratically in rural areas" (Hewitt and Montgomery 2001). Likewise, in Angola

only 13 percent of the government health staff works in rural areas, despite the fact that 65 percent of the population lives in these regions (UNDPHDR 2003).

Rural background additionally disadvantages individuals with respect to family income and size. Over 75 percent of the world's poor that live on less than $1 US per day reside in rural areas (IFAD 2001). Similarly, Sahn and Stiefl (2002) find that poverty rates in SSA countries are "substantially higher in rural than in urban areas" (p.10). While income inequality declined in a majority of nations[1] between 1950 and 1970, there has been a reversal in the trend over the past 20 years (Cornia 1999). Africa has experienced a slightly different trajectory, with an increase in income inequality in the 1950s and 1970s followed by a decline in inequality in the 1980s and 1990s. This decline has been attributed to the economic crises of the 1980s that impacted urban areas more than rural areas- leading to a process of "equalizing downwards" (UNCTAD 1997:109). Though rural income inequality may be declining, the UN Human Development Report found that " average land per capita among rural farmers in developing countries declined from 3.6 hectares in 1972 to 0.26 hectares in 1992—and stands to fall further by 2020" (p. 88). Not only do rural families experience disproportionate hardships with regards to income and resources, but this disadvantage is exacerbated by the fact that rural families tend to have more children, further diluting already limited resources (Ahn et al. 1998).

Despite these important differences however, causal inferences about the roots of rural-urban inequality in employment remain difficult. While it is plausible that the disadvantage of rural children could be attributable to limited resources, it may also be the case that subtler, unobservable differences at the family level play an important role. With regards to educational aspirations, which have been noted in previous research for their influential role in shaping socio-economic outcomes (Buchmann 2001; Buchmann and Dalton 2002; Spenner and

Featherman 1978; Teachman and Paasch 1998). Most relevant to our analysis is Teachman and Paasch's finding that while "nearly three quarters of the variation in educational aspirations lies between families… only a fraction of this variation can be explained by the standard indicators of family socioeconomic status (parental income and education)" (1998:704). Essentially, differences in educational aspirations are not fully tied to variation in traditional socioeconomic factors. While the importance of these unobserved family level factors has been documented in the U.S., measurement difficulties and the reliance on cross-sectional evidence has limited empirical estimation of these effects in developing countries.

Study Contributions and Hypotheses

This study's contributions to previous research on rural-urban inequality in employment are both conceptual and methodological. The main conceptual contribution is to expand investigation beyond the consensus/conflict debate and, instead, examine the possible influence of subtler processes rooted in the family and that reflect neither direct discrimination nor human capital. Such processes can include sociological processes associated with the formation of educational expectations, norms, and occupational aspirations, and how these shape education and labor market outcomes (Buchmann 2001; Buchmann and Dalton 2002; Spenner and Featherman 1978). Because these factors are harder to measure, they are often excluded from empirical analysis.

The main methodological features of this study are twofold. First, I examine the formation of rural-urban inequality within a detailed historical perspective that examines changes both across the life course and across historical time. The focus on life course variation makes it possible to look at how inequality emerges in the schooling system and the labor market, respectively. Within the labor market, I further distinguish between formal and informal sector

work, a distinction recommended by most analysts (Todaro 1997) but often overlooked empirically. The life course perspective also improves analysis by considering possible changes in the family and personal circumstances of children (Sorensen 1986; Eloundou-Enyegue and Williams 2006). The focus on historical variation makes it possible to consider possible change in the levels of rural-urban inequality, under the influence of economic or cultural change. If rural children are placed at the end of the employment "queue", their prospects could be inordinately sensitive to economic fluctuation. Their disadvantage would be minimal in prosperous times but expand during periods of poorer economic conditions. The second main methodological feature of the study is to examine the possible effects of unobserved features of families. While studies generally focus on standard, easy-to-measure factors, there are reasons to believe that other, harder-to-measure factors can be influential in determining individual educational and occupational attainment. In particular, unobserved features of families are likely to be influences in shaping educational aspirations and expectations (Teachman and Paasch 1998) and perhaps occupational attainment as well. Based on the above review, I hypothesize the following:

> *H1. Rural-urban inequality in occupational attainment is not fully explained by human capital or discrimination. Rather, other, harder-to-measure processes occurring at the family level are also influential.*
>
> *H2. Rural urban inequality has declined over time, especially during favorable economic conditions.*

Data and Measures

The study uses schooling and employment histories collected during 1998/99 in Cameroon. The generating survey, specifically designed to study demographic change including in schooling and employment, was based on a national representative sample of 3,369 women aged 15 or more. Using life history calendars, interviewers reconstructed full families including the life histories of these women and their partners, as well as the schooling and employment histories of their biological children, if any. The resulting child sample covered 11,590 "children," for whom interviewers had gathered detailed information about school progression, year by year, as well as employment outcomes after school completion. Because their mothers covered a wide age range, the resulting sample of children permits the study of schooling and employment transitions over a period of nearly four decades. The children's histories were used to generate an event-history dataset that was further subdivided into two subsets focusing on schooling and employment histories, respectively. Records in these subsets consist of person-years and each child can contribute multiple records as long as s/he remained within the risk set. The schooling subset includes person-years from school entry until school exit, survey year, or death, whichever occurred first. It covers a total of 52,909 person-years. The employment subset includes person-years from the time of school exit till survey year or death, whichever occurred first. The subset covers 21,336 person-years. Together these data span a lengthy time period, from 1959-1999, and they can be used to examine rural-urban inequality in education and employment, as well as how this inequality changes over time. Table 1 shows the summary statistics for the main variables in the analyses.

[Table 1 about here]

The main dependent variables are schooling and employment. Given the event-history perspective, I focus on annual schooling and employment; more specifically, analyzing school

exit and employment status. School exit is measured dichotomously and is coded 1 for years during which a child experiences a terminal school exit (whether dropout or graduation), given that s/he enrolled in school at the beginning of the school year. Years of continued enrollment are coded 0. A few students experience temporary exits, after which they eventually return to school. In such cases, the corresponding person-years were not included in the analysis. It may be difficult to determine whether an exit is terminal or not for those children who exited school a few years prior to the survey year. In such cases, the determination was based on whether these students were planning to return to school.

Likewise, employment is measured dichotomously by current employment status (1=employed in the off-farm sector, whether formal or informal sector of the economy, with unemployment/farming as reference category). I further explore differences across employment sectors by modeling a formal employment variable that distinguishes among those working in the formal sector of the economy (1) and those working in the informal sector (0). Altogether, I model three outcomes, including school exit, off-farm employment, and formal employment. I examine rural-urban inequality in these three outcomes and examine the effects of hypothesized influences as described in the section below.

The main independent variable in this analysis is rural parental background. This variable is measured dichotomously by whether or not the child's mother resided in a rural area during the index year. Rural areas are defined as locations with populations of less than 2,500 or administrative headquarters. Whereas cross-sectional studies measure rural parentage at one point in time, the longitudinal data allows consideration of time-variation in rural parentage.

Analyses

Given the annual structure of the study data and the dichotomous nature of the outcomes, I use discrete-time logistic regression to model the influences of human capital, urban bias, unmeasured processes, and historical and economic trends in rural-urban inequality for schooling, off-farm employment, and formal employment, respectively. The early estimates are generated using generalized estimating equations (GEE)[ii] but later analyses apply fixed-effect models (using the PHREG procedure in SAS) in order to control for unobserved characteristics of families. The first set of analyses is designed to investigate the roots of rural-urban inequality, while a second set examines the historical trends in these inequalities.

The roots of rural-urban inequality

The analyses of the roots of rural-urban inequality proceed in four steps. First, I estimate the gross rural-urban inequality. Then I try to explain it, looking specifically on the influences of human capital, urban bias, and other hard-to-measure processes.

Step 1: Estimating the gross rural-urban inequality. The first series of models are designed to capture gross rural-urban inequality in each of the three study outcomes. As such, these models control only for the most basic correlates. In the case of schooling, these controls include grade level and maternal birth cohort. In the case of employment, they include the duration since school exit and its square term (Mincer 1974). After estimating the magnitude of the gross rural-urban inequalities, I use a process of gradual elimination in an attempt to uncover the roots of these inequalities.

Step 2: Testing the human capital explanation. To test whether the gross inequality is attributable to differences in human capital between rural and urban children, Model II (hereafter referred to as human capital model) further controls for a set of variables that reflect human capital. Overall, the human capital thesis will receive support if the gross rural-urban inequality

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is entirely eliminated by inclusion of human capital variables. In the case of employment, these variables include educational attainment (measured by the highest grade level achieved, and assumed to have a curvilinear effect) and schooling performance (measured by the average grade repetition rate of the child during his/her school career). In estimating the risk of school exit, the human capital variables include measures of individual ability. We consider one measure of demonstrated ability, specifically whether the child repeats the current grade and if so, whether this is a multiple repeat. In addition, we consider an indicator of ability/drive that was not measured directly from the survey but that can be inferred from the child's schooling experience. This variable, labeled "inordinate ability" reflects the unlikelihood that a child with a specified socio-demographic profile (constructed based on sex, family SES, family size, family structure) will still be enrolled in school. Specifically, schooling life tables were used to estimate the school survivorship chances of children with various sociodemographic profiles . The child's inordinate ability is then inferred by comparison with the expected school survivorship for an average child with his/her sociodemographic characteristics. A child who remains in school at a grade where the probability (p) of school survivorship in his/her reference group is very low will therefore be considered unusually driven or able. The value 1-p is used as a simple indicator of unusual ability. It varies between 0 and nearly 1, with higher numbers representing greater ability.

Step 3: Testing a compositional explanation. A wide array of individual and family characteristics, not related directly to either human capital,, can affect the education and employment outcomes. Control for these characteristics is also useful to assess their specific effects and separate these from the influences of human capital and urban bias. These compositional variables include characteristics of children (sex, age, rank in birth order) and

their families (sibship size, family SES, mother's marital status, sibling employment, and fosterage opportunities).

Step 4: Testing the "urban bias" explanation. Even if observed characteristics of individuals and families do not explain the gross rural-urban difference, this difference may still be accounted by other, harder-to-measure, influences of families. If one could control for such influences and still find a net rural-urban difference in outcomes, then the thesis of urban bias receives greater credence. Conversely, if the rural urban inequality were to disappear, then this would suggest the importance of the unobservable factors. The challenge then is to control for all these unobserved family factors. The approach used here was to estimate a family fixed-effect model, using the PHREG procedure in SAS (Allison 1995). This procedure, which essentially indexes every single family, makes it possible to assess the effects of fixed characteristics of families, even though it cannot specify the exact features of families responsible for the estimated family effects.

Trends in rural-urban inequality

A second set of models explores the trends in rural-urban inequalities, focusing on the effects of historical time and economic conditions, respectively. I use the fixed-effects model specified in step IV in the previous section but add variables that measure trend, economic conditions, and their interactions with rural parental background. The trend variable measures the number of decades since 1959. Macroeconomic conditions are measured by the log of GNP per capita for the index year. Significant interactions between trend and rural background variables will indicate historical change in rural-urban inequality. How this historical change is affected by

inclusion of macro-economic variables will further elucidate whether the historical change in rural-urban inequality was attributable to changing economic circumstances.

<div align="center">**Findings**</div>

The Roots of Rural-urban Inequality

Table 2 presents findings about the roots of rural-urban inequality, focusing on schooling, non-farm employment, and formal-sector employment. The first models in this table (labeled "gross bias") display the gross rural-urban inequality in education and occupational attainment, controlling only for the most basic correlates[iii]. Consistent with previous studies, I find a gross disadvantage in school continuation. Overall, the odds of a child with rural parental background dropping out of school are about twice those of urban children. The results in Table 2 indicate no gross rural effect in accessing paid employment. However, as can be seen in the formal employment component, this finding reflects failure to discern between formal and informal labor markets. If one focuses on the odds of securing formal-sector employment, then the annual odds of employment are about 30 percent lower among children from a rural background than they are among other children. Such odd ratios are quite large in substantive terms, especially if they are compounded over many years. Over a ten year period for instance, these odd-ratios translate into odds of formal sector employment that are 35 times higher for individuals with urban background, relative to those with rural background. In sum, large inequalities are found in education as well as in accessing formal employment between rural and urban children. Beyond documenting this inequality, the next task is to explain it more fully in terms of the relative influences of human capital, compositional characteristics of children, net bias (disadvantage) against rural children, and intangible characteristics of families.

[Table 2 about here]

Human capital. Under a consensus perspective, occupational outcomes are expected to be largely resultant of one's ability and educational attainment. Thus, one's educational attainment would largely depend on individual and ability, rather than family resources or other ascribed characteristics. In turn, one's occupational attainment would depend on educational attainment and performance within the school system. First, I examine the influence of human capital variables and find most to have the expected influence.[iv] The key question, however, is whether these human capital variables account for the gross rural-urban inequality found in Model 1. In other words, is the gross-rural urban inequality found in the first series of models eliminated once one controls for human capital? One can answer this question by comparing the rural background effects in the gross bias models, with those in the second series of models, labeled "human capital" . The findings for schooling show that the effect of rural background becomes smaller (O.R. decline from about 2.2 to 1.6) but remains statistically significant and substantively important. Similarly, control for human capital does not affect the rural-urban inequality in overall employment (O.R. changes from 0.96 to O.97 and remains non-significant,). On the other hand, control for human capital does affect the inequality in formal employment in this model, the effect of rural background variable becomes statistically insignificant even if the magnitude of the rural coefficient itself does not change considerably (O.R.= .4 to O.R.= .3 ns). Overall, these findings suggest that much of the inequality experienced by rural children in accessing formal employment can be attributed to their lower educational attainment. Conversely, gross rural-urban inequality in educational attainment is not fully explainable by differences in human capital. The question thus remains as to whether this inequality in education stems from family composition, urban bias, or unobserved family level factors.

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Compositional Factors. The third series of models, labeled "compositional" in Table 2, examine the influence of compositional characteristics. Controlling for these characteristics is important as rural children differ from urban children in terms of socio-demographic attributes and family resources. As shown in table 1, only 10 percent of rural children reside within high SES families, as opposed to 52 percent of urban children. Similarly, rural children have, on average, a greater number of siblings. Conversely, urban children are more likely to reside with a single mother and are less likely to have siblings who are working. Can such differences alone explain the gross gap observed in the occupational attainment of rural versus urban children?

The results from the compositional models suggest that this is not the case. Controlling for the compositional characteristics[v] does not reduce the rural-urban gap in education (O.R.=1.94). Findings are slightly different for paid employment formal employment. With respect to paid employment, the effect of rural background increases only slightly when control is made for individual and family characteristics (from O.R.=.97 ns to O.R.=1.01 ns), though these values are not statistically significant. For the formal employment model, the introduction of individual and family controls causes the impact of rural background to decline slightly and (O.R.=.73 ns and O.R.=.69 ns). In essence, any rural-urban gap in occupational attainment in this setting is explained only partially by differences in the compositional characteristics of the pool of rural and urban children. Overall, compositional differences do not account for the rural-urban gap in education but they tend to reduce somewhat the net difference in formal employment outcomes, after children have completed their education.

Urban bias. The next step is to examine the possible effects of urban bias. Urban bias is inferred if statistical evidence shows a net rural-urban difference even after adjusting for all

human capital and compositional differences, including unmeasured characteristics of families. The study results do not show evidence of urban bias in employment because all of the gross rural-urban inequality is either non-existent (as in the case of paid sector employment) or explained by human capital (as in the case of formal sector employment).

The most interesting findings here pertain to school attainment. Findings show that upon adjusting for all these characteristics, the rural-urban difference in educational attainment disappears (O.R.=1.94 to H.R.=1.03 ns). Since both the human capital and compositional models showed that neither of these factors fully explain for the gross-inequality, the more likely explanation has to do with family characteristics that are not fully measured in this study and that are also generally not easy to measure in other studies. These influences are discussed in the next section.

Unobserved family influences. While researchers often analyze the influences of many individual, family and community factors in occupational attainment, they also recognize that some influential factors are often omitted from the analyses or cannot be easily measured (Cameron and Heckman 1998; Teachman and Paasch 1998). To capture the influence of these unobserved family factors in shaping rural-urban inequality, I compare compositional models to the last series of models, labeled "urban bias" . As shown in Table 2, no additional variables are included. Rather, I shift from standard logistic regression to a family fixed-effect model that controls for all unobserved differences across families. Any change in rural-urban inequality between the compositional and urban bias models would thus reflect the influence of unobserved fixed family factors. Whereas significant rural-urban inequality is found before control for family fixed effects (O.R.=1.9), these inequalities disappear once control is made for these

family fixed effects. In sum, some unobserved characteristics of families, rather than differences in human capital or family composition, appear to explain rural urban inequality in schooling.

Overall, rural-urban inequality in occupational attainment appears to be created as follows: First, rural and urban children differ markedly in their educational attainment. These differences do not appear to be fully accounted by differences in human capital or urban bias per se but rather by hard-to-measure influences of families. In turn, human capital is influential in shaping labor market outcomes after schooling. Not only are more educated individual more likely to be employed in the off-farm sector but one's schooling performance (as indicated by limited grade repetition) is associated with higher odds of formal-sector employment. Adjusting for human capital, inequality in formal employment disappears. Thus, the roots of inequality in accessing formal sector employment appear to reside in educational attainment, as would be suggested by a consensus perspective. However, the inequality in educational attainment itself does not purely reflect individual merit, and is instead the result of unmeasured family level characteristics.

Trends in rural-urban inequality

Table 3 displays historical and economic trends in rural disadvantage for education, paid employment and formal employment. While I show only the coefficients of interest, basic and compositional controls were included in these models. With regards to education, indicates that the variables capturing the general passing of time (trend and trend* rural background) are not significantly related to changes in the likelihood of school dropout. However, once I add economic context in Model 2, I find evidence of a significant relationship between the interacted rural background and historical and economic terms. Over time, the likelihood of dropout is

declining for rural children (O.R. = .73), suggesting convergence in educational inequality. However, inequalities do tend to increase during prosperous economic times, with rural children being more than twice as likely as their urban counterparts to leave school (HR=2.07).[1] In essence, urban children benefit from prosperous times or they suffer more from periods of economic reversals.

[Table 3 about here]

Conversely, with regards to paid and formal employment, I find evidence of divergence over time. When considering the historical context alone, the interaction term (trend* rural background) is significant for both paid (H.R= .61) and formal sector (H.R. = 50) employment, thus suggesting increasing rural disadvantage over time. When considering paid employment as a whole, rural children were advantaged early in the study period, and have become slightly disadvantaged only as recently as 1995. However, in the case of formal sector employment, rural children have faced a decreasing likelihood of finding work since the early 1980s. Thus it appears that rural children, regardless of their education levels, are being funneled into informal sector employment. For all employment sectors, macroeconomic conditions appear to have little bearing on an individual's likelihood of accessing either paid or formal employment.

CONCLUSIONS

The findings in this study confirm the presence of significant rural-urban inequality in education and occupational attainment in developing countries but they also offer new insights about the reasons for, and trends in these inequalities. With respect to reasons, inequality in occupational attainment appears to form as follows: First, consistent with a consensus perspective and previous empirical literature, rural children experience little disadvantage in accessing

employment, and any disadvantage they do face is the result of lower levels of human capital attainment among rural children (Koo 1976, Moots 1976, Goldscheider 1987, Kasarda and Crenshaw 1991). Yet much of the inequality in education itself is fully accounted by neither differences in human capital or urban bias per se but rather by hard-to-measure influences of families.

With respect to trends, the inequality between urban and rural children in education has not only narrowed over time but does not appear to worsen during hard economic times. Instead, we find a pattern suggestive of the downward equalization suggested by other studies on this subject (UNCTAD) or even by studies that have examined the changes in gender inequality in education during economic downturns in sub-Saharan Africa (Lloyd and Hewett 2004). When considering paid employment as a whole, rural children have faced a slight increase in disadvantage in the most recent years, but on whole this finding is consistent earlier evidence from Asia and Latin America that fails to corroborate the thesis of an overarching trend of marginalization of rural children in urban labor markets (Goldscheider 1987; Kasarda and Crenshaw 1991; Koo 1976; Moots 1976). Nevertheless, rural children have experienced a decreasing likelihood of finding work in the formal sector. Regardless of their education levels, rural children are being funneled into informal sector employment. This channeling of rural children to the informal sector is leading to the creation of a defacto lumpen proletariat. Further evidence is needed to investigate whether rural children occupy special niches within this informal sector. Additionally, the evidence from Cameroon also suggests that the trend in access to employment among rural children were not a spontaneous by-product of macroeconomic conditions. In fact, macro-economic conditions appear to have little influence on the rural-urban gap.

The convergence in schooling along rural-urban lines mirrors one that has been observed along gender lines (UN 2004). While some researchers have found evidence for a recent decline in enrollments in SSA (DeRose and Kravdal *forthcoming*), others have found confirmation of continued expansion of these enrollments (Lloyd et al. 1994). It is important to note however that convergence in enrollments can hide possible differentiation in school quality, and these may become increasingly important in Africa (Boyle 1996; Buchmann 2001). It is remarkable that rural-urban inequality in schooling is exacerbated by negative macroeconomic conditions. Rural children are more likely than their urban counterparts to exit school during economic downturns. This fact suggests that rural gains in education are not a mere by product of economic growth, but instead likely achieved because of purposive government policies of "decentralization" and recent decisions to wave tuition in public primary schools that may further reduce inequality in enrollments (Dervarics 2004). Also noteworthy is the role of education NGOs and village associations in building rural schools. Cameroon ranks third in sub-Saharan African in terms of registered NGOs (Sakabe 2004) and, within the region, it has a relatively low percentage of students dropping out because of distance to a school is particularly low in the region (DHS 2006). As these structural barriers break down, the schooling inequalities between rural and urban children, especially at the lower levels of schooling, will increasingly depend on family background factors, such as SES and size, as well as the influence of the unobserved family level characteristics.

Overall, the study makes the following methodological and conceptual contributions. Methodologically, the study suggests the value of distinguishing between the sub processes of educational and occupational attainment, since the levels and determinants of inequality vary greatly across these two. Likewise, it warrants differentiating between formal and informal sector

outcomes, as rural children appear to be less disadvantaged within the informal sector. Given the heterogeneity of both the informal and formal sectors, studies could in fact go beyond the simple formal/informal dichotomy examined here. The study also warrants attention to the historical dynamics of rural-urban inequalities and their sensitivity to macro-economic conditions.

More importantly, the study warrants a conceptual expansion beyond the habitual focus on human capital and urban bias and beyond classic, easily-measured, factors. While much of the difference in employment within the formal sector is traceable to differences in educational attainment, the educational differences themselves are difficult to explain within the dominant consensus or conflict perspectives; neither differences in ability nor discrimination account for the inequality in schoolings. Rather, unobserved characteristics of families play an important role in shaping rural-urban inequality.

The importance of these unobservable family level characteristics is documented in related research that found that parental income and education could only explain a portion (~40%) of the variance in educational aspirations (Teachman and Paasch 1998). As previous research has established the influential role that expectations and aspirations play in educational and occupational attainment (Buchmann 2001; Buchmann and Dalton 2002; Spenner and Featherman 1978), it is perhaps unsurprising that the unobservable family level factors play a critical role in the likelihood of school dropout among rural children. Though this data set does not permit the identification of the specific nature of these harder to measure characteristics, I suggest a handful of plausible factors, including subtler sociological processes of aspirations formation as discussed above, as well as cultural capital, and educational resources of the household. Bourdieu's (1977) conceptualizes cultural capital as knowledge of the elite culture and its relevant social cues that is employed more frequently by members of higher status

groups. This cultural capital leads to greater likelihoods of educational successes and serves as a mechanism to reproduce inequality (Bourdieu 1977). Another plausible option may be the educational capital of the household. Children residing within households with greater educational resources (such as newspapers and books), as well as those with more highly educated members, are more likely to succeed academically (Mercy and Steelman 1982; Teachman 1987). In conclusion, future research to investigate the precise nature and roots of these unobservable factors would prove useful not only for researchers, but for policymakers seeking to address this documented inequality.

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i The exact timing of this turning point is a subject of contention, but most analysts place it between 2004 and 2007.

ii The GEE estimation was conducted using the GENMOD procedure in SAS and chosen due to the fact that my data are clustered (individuals residing within households) and this estimation can provide accurate coefficients and robust standard errors in light of this clustering. For more information on GEE estimation see Allison (1999) and Norton et al. (1996).

iii For the education models, these controls include grade level and mother's birth cohort. For the employment models, basic controls include duration since school exit and its squared term. Tables including these variables are available in the appendix.

iv With respect to schooling, while the individual ability/drive score is not negatively correlated with the risk of school dropout as expected [O.R. 3.7], a child's grade repeat status does have the expected effects. Adjusting for other influences, children who repeat their current grade are more likely to exit school (O.R.= 3.2) and multiple grade repeat further multiply the odds of school dropout by about 3.2. With respect to paid employment, one's educational attainment is associated with higher odds of paid employment (linear O.R.=1.53; quadratic effect=0.99 ns), and while the schooling performance variable does not act in the expected direction (O.R.= .86) it is not significant (note however that this effect becomes significant after adjusting for other variables in models 3 and 4). Interestingly, schooling performance is quite important in attaining formal-sector employment (O.R.=4.45 ns).

v Most control variables affect school dropout as expected. Examination of Model 3 in Table 2 indicates that the risk of school dropout is greater at higher levels of education, though

occasionally declining after "threshold years",), and among older children (O.R.=1.09), females (O.R.=1.47), and children from larger families (O.R.=1.06). Dropout risks are lower for later-born (O.R.=0.91), high SES (O.R.=0.55), or out-fostered (O.R.=0.69), children. While one expects pupils from single mothers to be at higher risk, this factor was not significant. Perhaps as Chernikovsky (1985) suggested, female-headed households are more child-oriented and this overcomes their limited resources. Moreover, having an employed sibling did not significantly boost a child's education outcomes either.

The control variables in the employment models follow similar patterns. With regards to paid employment, females (O.R.=.38) and those higher in the birth order (O.R.= .85) experience disadvantage in seeking paid employment, while older children (O.R.= 1.15) and those with another sibling currently working experience a vast advantage (O.R.= 4.26), perhaps indicating the presence of a network effect. Interestingly, fosterage status, number of siblings, SES status, and residing in a female headed household are all not significantly related to the likelihood of finding paid employment. In Table 4 one can see that, conditioned on finding paid employment, females are further disadvantaged in accessing the formal sector (O.R.= .35) while individuals from larger families have a slight advantage (O.R.=1.13).

Figure 1. Stage and symmetry in urban transitions, world countries ~ 1999
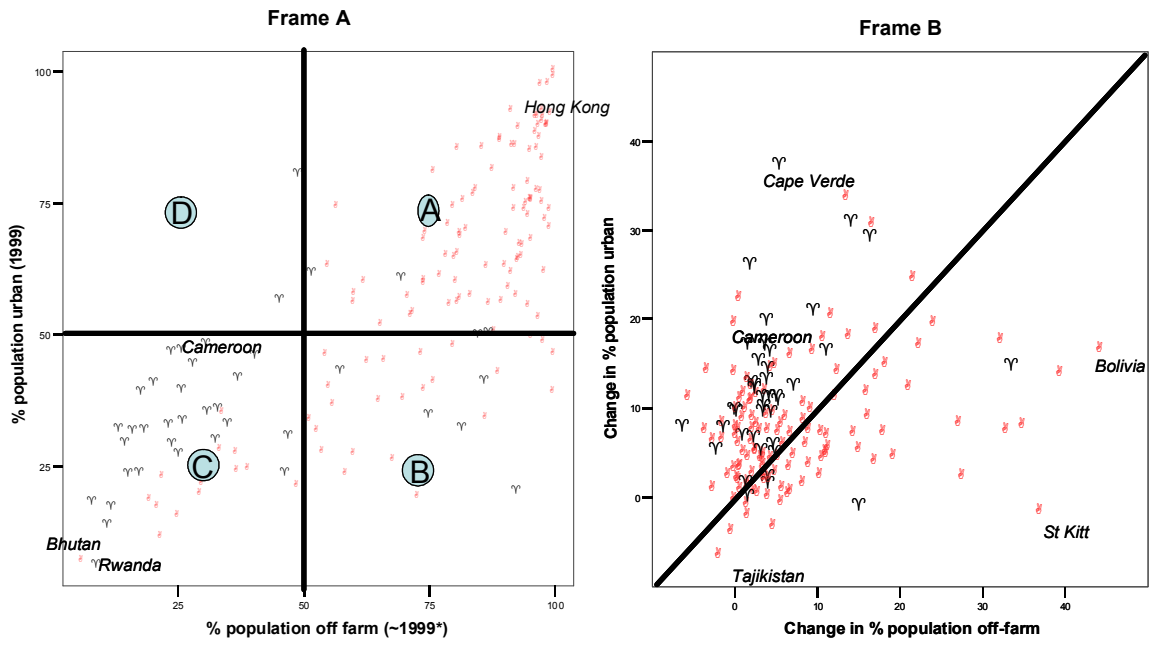
Data Source: DHS 2006
Note: ? indicates sub-Saharan African country.

TABLE 1. Summary Statistics

	ALL CHILDREN			RURAL CHILDREN			URBAN CHILDREN		
	Mean	S.D.	Min/Max	Mean	S.D.	Min/Max	Mean	S.D.	Min/Max
DEPENDENT VARIABLES									
Schooling									
Dropout event (1=Child exited school)*	0.04	0.20	0/1	0.05	0.22	0/1	0.02	0.15	0/1
Employment									
Employed (All paid employment)*	0.28	0.45	0/1	0.27	0.44	0/1	0.35	0.48	0/1
Employed (In formal sector)*	0.15	0.36	0/1	0.14	0.35	0/1	0.19	0.39	0/1
Unemployed*	0.72	0.45	0/1	0.73	0.44	0/1	0.65	0.48	0/1
RURAL BACKGROUND (1=Mother is rural)*	0.66	0.47	0/1						
HUMAN CAPITAL VARIABLES									
Inordinate Ability (1= Positively Selected)*	0.14	0.20	0/9	0.16	0.22	0/9	0.12	0.18	0/9
Child repeats current grade*	0.29	0.45	0/1	0.31	0.46	0/1	0.26	0.44	0/1
Child repeats for more than one grade*	0.05	0.22	0/1	0.06	0.23	0/1	0.05	0.21	0/1
Educational attainment (Maximum grade attained)	7.02	2.95	0/17	6.74	2.73	0/17	8.06	3.48	0/17
Schooling Performance (Mean grade repetition)	0.73	0.14	.3/1	0.72	0.15	.3/1	0.75	0.13	.4/1
CONTEXTUAL VARIABLES									
Historical trend (Years since 1955/10)	3.15	0.96	0/4.4	3.12	0.98	0/4.4	3.20	0.93	0/4.4
Log GNP per capita*	6.43	0.61	4.61/7.02	6.41	0.63	4.61/7.02	6.47	0.58	4.61/7.02
COMPOSITIONAL VARIABLES									
Child is female	1.49	0.50	1/2	1.48	0.50	1/2	1.50	0.50	1/2
Child's age*	11.93	9.94	0/60	12.94	10.23	0/60	9.97	9.03	0/60
Rank in birth order	3.65	2.54	1/18	3.89	2.66	1/18	3.18	2.22	1/18
Child is fostered out (1= Fostered)*	0.04	0.19	0/1	0.04	0.20	0/1	0.03	0.17	0/1
Any sibling working (1= One or more sibling working)*	0.15	0.35	0/1	0.18	0.38	0/1	0.09	0.29	0/1
Mother is single*	0.08	0.26	0/1	0.05	0.22	0/1	0.13	0.33	0/1
Number of sibling*	5.18	2.61	0/15	5.42	2.65	0/15	4.71	2.45	0/15
Socioeconomic status (1= High SES)	0.24	0.43	0/1	0.10	0.30	0/1	0.52	0.50	0/1
BASIC CONTROLS									
Maternal cohort (1=1950s, 2=1960s, 3=1970s,	2.48	1.10	1/4	2.32	1.08	1/4	2.79	1.07	1/4
Duration since school exit*	24.58	178.27	-41/1999	26.88	190.32	-41/1998	15.53	119.14	-7/1999

* Indicates a time-varying covariate

Table 2. Roots of Rural-Urban Inequality

MODELS:	Gross Inequality (1)		Human Capital (2)		Compositional (3)		Urban Bias (4)	
STATISTICAL ESTIMATION:	General Estimating Equations (GEE)						Fixed Effect Models	
	Est.	Odds Ratio	Est.	Odds Ratio	Est.	Odds Ratio	Est.	Hazard Ratio
Schooling								
RURAL BACKGROUND	0.78	2.18 ***	0.45	1.56 ***	0.66	1.94 ***	0.03	1.03
HUMAN CAPITAL VARIABLES								
Inordinate ability			1.31	3.69 **	-0.83	0.44	0.35	1.42
Child repeats current grate			1.16	3.18 ***	1.06	2.88 ***	1.27	3.57 ***
Child repeats for more than one grade			1.16	3.18 ***	1.01	2.74 ***	1.27	3.56 ***
COMPOSITIONAL VARIABLES								
Child is female					0.38	1.47 ***	0.57	1.77 ***
Child's age					0.09	1.09 ***	0.13	1.14 ***
Rank in birth order					-0.09	0.91 ***	-0.12	0.89 ***
Child is currently fostered out					-0.37	0.69 ***	-0.35	0.71 **
Number of siblings					0.06	1.06 **	0.11	1.12 **
Family has high SES					-0.61	0.55 **	0.03	1.03
Mother is single					-0.14	0.87	-0.86	0.42
Child has at least one sibling working					-0.05	0.95	-0.14	0.87
Intercept	-7.15		-7.72		-8.82			
-2 Log Likelihood	14141.52		10989.07		10923.26		7433.12	
Paid Employment								
RURAL BACKGROUND	-0.04	0.96	-0.03	0.97	0.01	1.01	0.22	1.24
HUMAN CAPITAL VARIABLES								
Educational attainment			0.43	1.53 ***	0.17	1.19	0.18	1.20 ***
Educational attainment squared			-0.01	0.99	-0.01	0.99	-0.01	0.99 ***
Schooling performance			-0.15	0.86	2.66	14.28 **	3.51	33.40 ***
COMPOSITIONAL VARIABLES								
Child is female					-0.96	0.38 ***	-1.17	0.31 ***
Child's age					0.14	1.15 ***	0.20	1.22 ***
Rank in birth order					-0.16	0.85 ***	-0.20	0.82 ***
Child is currently fostered out					-0.35	0.71	-1.43	0.24 **
Number of siblings					-0.01	0.99	0.08	1.08
Family has high SES					-0.13	0.88	-0.26	0.77
Mother is single					-1.12	0.33	-0.88	0.42
Child has at least one sibling working					1.45	4.26 ***	1.41	4.11 ***
Intercept	-1.69		-4.29		5.57			
-2 Log Likelihood	25242.22		22965.37		19414.32		12745.07	
Formal Employment								
RURAL BACKGROUND	-0.36	0.70 **	-0.31	0.73	-0.36	0.69	-0.93	0.40
HUMAN CAPITAL VARIABLES								
Educational attainment			0.12	1.12	-0.13	0.88	-0.73	0.48 ***
Educational attainment squared			0.00	1.00	0.01	1.01	0.04	1.04 ***
Schooling performance			1.49	4.45	2.87	17.70	6.82	916.15 ***
COMPOSITIONAL VARIABLES								
Child is female					-1.06	0.35 ***	-2.01	0.14 ***
Child's age					0.07	1.08	0.11	1.12 *
Rank in birth order					-0.09	0.92	-0.27	0.76 ***
Child is currently fostered out					-0.06	0.94	###	
Number of siblings					0.13	1.14 *	-0.16	0.85
Family has high SES					0.43	1.54	1.10	3.01 **
Mother is single					-0.21	0.81	###	
Child has at least one sibling working					###		19.35	2.53E+08
Intercept	0.25		-2.25		-2.01			
-2 Log Likelihood	8927.23		8185.47		7660.33		2601.07	

indicates that coefficient was dropped due to modeling problems; *p < = .05, **p < = .01, ***p < = .001

Table 3. Trends in Rural-Urban Inequality						
MODELS:		**Historical** (1)			**Historical and Economic** (2)	
STATISTICAL ESTIMATION:		**Fixed Effect Models**				
	Est.	Hazard Ratio		Est.	Hazard Ratio	
Schooling						
RURAL BACKGROUND	0.11	1.12		-3.67	0.03	**
HUMAN CAPITAL VARIABLES						
Inordinate ability	0.37	1.44		0.30	1.35	
Child repeats current grate	1.27	3.57	***	1.28	3.59	***
Child repeats for more than one grade	1.27	3.57	***	1.27	3.57	***
CONTEXTUAL VARIABLES						
Historical change						
Interaction of rural residence & historical trend	-0.03	0.98		-0.31	0.73	**
Historical trend (Years since 1955/10)	-0.01	0.99		0.15	1.16	
Economic context						
Interaction of rural residence & GNP per capita				0.73	2.07	**
Log GNP per capita				-0.33	0.72	
-2 Log Likelihood	7433.05			7415.81		
Paid Employment						
RURAL BACKGROUND	1.99	7.30	***	0.86	2.37	
HUMAN CAPITAL VARIABLES						
Educational attainment	0.19	1.21	***	0.19	1.21	***
Educational attainment squared	-0.01	0.99	***	-0.01	0.99	***
Schooling performance	3.49	32.82	***	3.49	32.69	***
CONTEXTUAL VARIABLES						
Historical change						
Interaction of rural residence & historical trend	-0.50	0.61	***	-0.55	0.58	***
Historical trend (Years since 1955/10)	-0.08	0.92		-0.02	0.98	
Economic context						
Interaction of rural residence & GNP per capita				0.19	1.21	
Log GNP per capita				-0.20	0.82	
-2 Log Likelihood	12705.09			12703.25		
Formal Employment						
RURAL BACKGROUND	1.31	3.70		6.96	1055.75	
HUMAN CAPITAL VARIABLES						
Educational attainment	-0.69	0.50	***	-0.71	0.49	***
Educational attainment squared	0.04	1.04	***	0.04	1.04	***
Schooling performance	6.67	788.02	***	6.69	804.69	***
CONTEXTUAL VARIABLES						
Historical change						
Interaction of rural residence & historical trend	-0.69	0.50	**	-0.74	0.48	**
Historical trend (Years since 1955/10)	-0.39	0.68		-0.38	0.68	
Economic context						
Interaction of rural residence & GNP per capita				-0.83	0.44	
Log GNP per capita				0.25	1.29	
-2 Log Likelihood	2483.51			2479.57		

$*p <= .05, **p <= .01, ***p <= .001$

APPENDIX

Appendix Table 1. Rural-Urban Inequality in Schooling

| | General Estimating Equations (GEE) | | | | | | | | | Fixed Effect Models | | |
| | Model 1 | | | Model 2 | | | Model 3 | | | Model 4 (FE) | | |
	Est.	Odds Ratio		Est.	Odds Ratio		Est.	Odds Ratio		Est.	Hazard Ratio	
RURAL BACKGROUND	0.78	2.18	***	0.45	1.56	***	0.66	1.94	***	0.03	1.03	
HUMAN CAPITAL VARIABLES												
Inordinate ability				1.31	3.69	**	-0.83	0.44		0.35	1.42	
Child repeats current grade				1.16	3.18	***	1.06	2.88	***	1.27	3.57	***
Child repeats for more than one grade				1.16	3.18	***	1.01	2.74	***	1.27	3.56	***
COMPOSITIONAL VARIABLES												
Child is female							0.38	1.47	***	0.57	1.77	***
Child's age							0.09	1.09	***	0.13	1.14	***
Rank in birth order							-0.09	0.91	***	-0.12	0.89	***
Child is currently fostered out							-0.37	0.69	***	-0.35	0.71	**
Number of siblings							0.06	1.06	**	0.11	1.12	**
Family has high SES							-0.61	0.55	**	0.03	1.03	
Mother is single							-0.14	0.87		-0.86	0.42	
Child has at least one sibling working							-0.05	0.95		-0.14	0.87	
BASIC CONTROLS												
Grade level												
Primary												
Grade 1	ref			ref			ref			ref		
Grade 2	1.22	3.39	***	1.58	4.85	***	1.36	3.90	***	1.39	4.02	***
Grade 3	1.84	6.27	***	2.05	7.76	***	1.73	5.65	***	1.79	5.96	***
Grade 4	2.35	10.54	***	2.68	14.66	***	2.26	9.60	***	2.46	11.74	***
Grade 5	2.81	16.67	***	2.84	17.05	***	2.62	13.74	***	2.80	16.46	***
Grade 6	4.42	82.84	***	4.12	61.72	***	4.05	57.56	***	4.46	86.60	***
Junior secondary												
Grade 7	3.43	30.84	***	3.33	27.94	***	3.44	31.16	***	3.96	52.46	***
Grade 8	3.72	41.20	***	3.51	33.38	***	3.73	41.88	***	4.27	71.56	***
Grade 9	3.71	40.80	***	3.19	24.37	***	3.54	34.57	***	4.03	56.52	***
Grade 10	4.62	101.14	***	3.67	39.39	***	4.10	60.62	***	4.64	103.34	***
Senior secondary												
Grade 11	3.75	42.37	***	3.15	23.33	***	3.64	37.97	***	4.21	67.33	***
Grade 12	4.27	71.69	***	3.13	22.80	***	3.59	36.18	***	4.10	60.41	***
Grade 13	4.53	92.69	***	3.27	26.24	***	3.70	40.32	***	4.23	68.98	***
Post secondary												
Grade 14	3.67	39.26	***	2.7	14.93	***	3.08	21.80	**	3.67	39.43	***
Grade 15	4.06	58.21	***	3.22	25.01	***	3.66	38.87	***	4.25	70.34	***
Grade 16	-5.5	0.00	***	4.53	92.36	***	4.79	120.09	***	5.47	238.35	***
Grade 17	5.18	176.85	***	3.37	29.10	**	4.00	54.45	***	5.16	174.29	***
Mother's birth cohort												
Before the 1940s	ref			ref			ref			na	na	na
1940-49	0.76	2.14	***	0.72	2.06	***	0.82	2.26	***	na	na	na
1950-59	0.63	1.87	***	0.57	1.76	***	0.69	2.00	***	na	na	na
1960+	0.39	1.48	***	0.39	1.47	***	0.41	1.50	**	na	na	na
Intercept	-7.1			-7.7			-8.82					
-2 Log Likelihood	14141.52			10989.07			10923.26			7433.12		

*p <= .05, **p <= .01, ***p <= .001; *ref* indicates reference group; *na* indicates that variable not included due to modeling choice

Appendix Table 2. Rural-Urban Inequality in Paid Employment										
	General Estimating Equations (GEE)							Fixed Effect Models		
	Model 1			Model 2			Model 3		Model 4 (FE)		
	Est.	Odds Ratio		Est.	Odds Ratio		Est.	Odds Ratio		Est.	Hazard Ratio	
RURAL BACKGROUND	-0.04	0.96		-0.03	0.97		0.01	1.01		0.22	1.24	
HUMAN CAPITAL VARIABLES												
Educational attainment				0.43	1.53	***	0.17	1.19		0.18	1.20	***
Educational attainment squared				-0.01	0.99		-0.01	0.99		-0.01	0.99	***
Schooling performance				-0.15	0.86		2.66	14.28	**	3.51	33.40	***
COMPOSITIONAL VARIABLES												
Child is female							-0.96	0.38	***	-1.17	0.31	***
Child's age							0.14	1.15	***	0.20	1.22	***
Rank in birth order							-0.16	0.85	***	-0.20	0.82	***
Child is currently fostered out							-0.35	0.71		-1.43	0.24	**
Number of siblings							-0.01	0.99		0.08	1.08	
Family has high SES							-0.13	0.88		-0.26	0.77	
Mother is single							-1.12	0.33		-0.88	0.42	
Child has at least one sibling working							1.45	4.26	***	1.41	4.11	***
BASIC CONTROLS												
Duration since school exit	0.14	1.16	***	0.17	1.19	***	0.01	1.01		0.00	1.00	
Duration since school exit squared	0.00	1.00	***	0.00	1.00	***	0.00	1.00	***	-0.01	1.00	***
Intercept	-1.69			-4.29			5.57					
-2 Log Likelihood	25242.22			22965.37			19414.32			12745.07		

*p <= .05, **p <= .01, ***p <= .001

Appendix Table 3. Rural-Urban Inequality in Formal Employment												
		General Estimating Equations (GEE)								Fixed Effect Models		
		Model 1			Model 2			Model 3			Model 4 (FE)		
		Est.	Odds Ratio		Est.	Odds Ratio		Est.	Odds Ratio		Est.	Hazard Ratio	
RURAL BACKGROUND		-0.36	0.70	**	-0.31	0.73		-0.36	0.69		-0.93	0.40	
HUMAN CAPITAL VARIABLES													
	Educational attainment				0.12	1.12		-0.13	0.88		-0.73	0.48	***
	Educational attainment squared				0.00	1.00		0.01	1.01		0.04	1.04	***
	Schooling performance				1.49	4.45		2.87	17.70		6.82	916.15	***
COMPOSITIONAL VARIABLES													
	Child is female							-1.06	0.35	***	-2.01	0.14	***
	Child's age							0.07	1.08		0.11	1.12	*
	Rank in birth order							-0.09	0.92		-0.27	0.76	***
	Child is currently fostered out							-0.06	0.94		###		
	Number of siblings							0.13	1.14	*	-0.16	0.85	
	Family has high SES							0.43	1.54		1.10	3.01	**
	Mother is single							-0.21	0.81		###		
	Child has at least one sibling working							###			19.35	2.53E+08	
BASIC CONTROLS													
	Duration since school exit		0.02	1.02		-0.04	0.96		-0.03	0.97		-0.08	0.93	
	Duration since school exit squared		0.00	1.00		0.00	1.00		0.00	1.00	*	0.00	1.00	**
Intercept		0.25			-2.25			-2.01					
-2 Log Likelihood		8927.23			8185.47			7660.33			2601.07		
### indicates that coefficient was dropped due to modeling problems; *p < = .05, **p < = .01, ***p < = .001												

Appendix Table 4. Trends in Rural-Urban Inequality in Schooling						
		Model 1			Model 2	
		Historical Trend			Historical & Economic Trend	
	Est.	Hazard Ratio		Est.	Hazard Ratio	
RURAL BACKGROUND	0.11	1.12		-3.67	0.03	**
HUMAN CAPITAL VARIABLES						
Inordinate ability	0.37	1.44		0.30	1.35	
Child repeats current grade	1.27	3.57	***	1.28	3.59	***
Child repeats for more than one grade	1.27	3.57	***	1.27	3.57	***
CONTEXTUAL VARIABLES						
Historical change						
Interaction of rural residence & historical trend	-0.03	0.98		-0.31	0.73	**
Historical trend (Years since 1955/10)	-0.01	0.99		0.15	1.16	
Economic Context						
Interaction of rural residence & GNP per capita				0.73	2.07	**
Log GNP per capita				-0.33	0.72	
COMPOSITIONAL VARIABLES						
Child is female	0.57	1.77	***	0.58	1.78	***
Child's age	0.14	1.15	***	0.13	1.14	***
Rank in birth order	-0.11	0.90	*	-0.12	0.89	**
Child is currently fostered out	-0.35	0.71	**	-0.34	0.71	**
Number of siblings	0.12	1.12	**	0.12	1.13	**
Family has high SES	0.03	1.03		0.01	1.01	
Mother is single	-0.87	0.42		-0.90	0.41	
Child has at least one sibling working	-0.14	0.87		-0.18	0.84	
BASIC CONTROLS						
Grade level						
Primary						
Grade 1	ref			ref		
Grade 2	1.39	4.02	***	1.39	4.03	***
Grade 3	1.79	5.96	***	1.77	5.88	***
Grade 4	2.46	11.73	***	2.45	11.60	***
Grade 5	2.80	16.42	***	2.79	16.26	***
Grade 6	4.46	86.23	***	4.45	85.41	***
Junior secondary						
Grade 7	3.95	52.15	***	3.94	51.54	***
Grade 8	4.26	71.01	***	4.25	70.08	***
Grade 9	4.03	56.02	***	4.02	55.86	***
Grade 10	4.63	102.28	***	4.63	102.60	***
Senior secondary						
Grade 11	4.20	66.54	***	4.20	66.97	***
Grade 12	4.09	59.68	***	4.11	60.72	***
Grade 13	4.22	68.14	***	4.25	70.18	***
Post secondary						
Grade 14	3.66	38.95	***	3.70	40.59	***
Grade 15	4.24	69.34	***	4.30	73.59	***
Grade 16	5.46	234.90	***	5.52	249.58	***
Grade 17	5.14	171.09	***	5.17	176.23	***
Mother's birth cohort						
Before the 1940s	na			na		
1940-49	na			na		
1950-59	na			na		
1960+	na			na		
-2 Log Likelihood	7433.05			7415.81		
*p < = .05, **p < = .01, ***p < = .001						

Appendix Table 5. Trends in Rural-Urban Inequality in Paid Employment	Model 1 Historical Trend			Model 2 Historical & Economic Trend		
	Est.	Hazard Ratio		Est.	Hazard Ratio	
RURAL BACKGROUND	1.99	7.30	***	0.86	2.37	
HUMAN CAPITAL VARIABLES						
Educational attainment	0.19	1.21	***	0.19	1.21	***
Educational attainment squared	-0.01	0.99	***	-0.01	0.99	***
Schooling performance	3.49	32.82	***	3.49	32.69	***
CONTEXTUAL VARIABLES						
Historical change						
Interaction of rural residence & historical trend	-0.50	0.61	***	-0.55	0.58	***
Historical trend (Years since 1955/10)	-0.08	0.92		-0.02	0.98	
Economic Context						
Interaction of rural residence & GNP per capita				0.19	1.21	
Log GNP per capita				-0.20	0.82	
COMPOSITIONAL VARIABLES						
Child is female	-1.19	0.31	***	-1.18	0.31	***
Child's age	0.24	1.28	***	0.24	1.28	***
Rank in birth order	-0.09	0.91	*	-0.09	0.91	*
Child is currently fostered out	-1.43	0.24	**	-1.43	0.24	**
Number of siblings	0.07	1.08		0.07	1.08	
Family has high SES	-0.03	0.97		-0.04	0.96	
Mother is single	-1.05	0.35		-1.10	0.33	
Child has at least one sibling working	1.45	4.25	***	1.45	4.27	***
BASIC CONTROLS						
Duration since school exit	0.00	1.01		0.01	1.01	
Duration since school exit squared	-0.01	1.00	***	-0.01	1.00	***
-2 Log Likelihood	12705.09			12703.25		
*p < = .05, **p < = .01, ***p < = .001						

Appendix Table 6. Trends in Rural-Urban Inequality in Formal Sector Employment						
	Model 1				Model 2	
	Historical Trend				Historical & Economic Trend	
	Est.	Hazard Ratio			Est.	Hazard Ratio
RURAL BACKGROUND	1.31	3.70			6.96	1055.75
HUMAN CAPITAL VARIABLES						
Educational attainment	-0.69	0.50 ***			-0.71	0.49 ***
Educational attainment squared	0.04	1.04 ***			0.04	1.04 ***
Schooling performance	6.67	788.02 ***			6.69	804.69 ***
CONTEXTUAL VARIABLES						
Historical change						
Interaction of rural residence & historical trend	-0.69	0.50 **			-0.74	0.48 **
Historical trend (Years since 1955/10)	-0.39	0.68			-0.38	0.68
Economic Context						
Interaction of rural residence & GNP per capita					-0.83	0.44
Log GNP per capita					0.25	1.29
COMPOSITIONAL VARIABLES						
Child is female	-2.05	0.13 ***			-2.04	0.13 ***
Child's age	0.18	1.20 ***			0.18	1.20 ***
Rank in birth order	-0.05	0.95			-0.05	0.95
Child is currently fostered out	###				###	
Number of siblings	-0.18	0.84			-0.16	0.86
Family has high SES	1.13	3.11 **			1.15	3.15 **
Mother is single	###				###	
Child has at least one sibling working	19.67	3.49E+08			20.34	6.80E+08
BASIC CONTROLS						
Duration since school exit	-0.05	0.95			-0.05	0.95
Duration since school exit squared	0.00	1.00 **			0.00	1.00 **
-2 Log Likelihood	2483.51				2479.57	
### indicates that coefficient was dropped due to modeling problems, *p < = .05, **p < = .01, ***p < = .001						