**FROM SCHOOL TO WORK: A HISTORICAL OVERVIEW OF THE GAINS TO SUB-SAHARAN WOMEN IN EDUCATION AND PAID EMPLOYMENT**


## ABSTRACT

In the last two decades, women in sub-Saharan Africa have registered substantial gains in education. Despite extensive documentation, it remains unclear whether these advances have translated into labor market outcomes as well. We combine DHS data from 22 countries with detailed family histories from Cameroon to examine women's employment gains over 30 years. We distinguish formal from informal sector employment in examining the relative influences of:

Women's gains in human capital
Discrimination within the household
Discrimination within the labor market
Macroeconomic conditions

The analyses test competing theories about the formation of inequality: human capital, conflict theory, and cultural bias. We use discrete-time logistic regression models to estimate the risk of unemployment, adjusting for fixed effects of families. The preliminary results suggest that gains in education have led to some gains in both formal and informal work for sub-Saharan African women, especially, under favorable economic conditions, yet important gaps remain.


## INTRODUCTION

Gender inequality in employment is commonly explained by either difference in human capital or gender bias. While the first theory leads us to expect greater gains in women's employment as education levels increase, the latter leaves open the possibility that African women could continue to be marginalized in the labor market, in spite of the large gains registered in education over the last two decades. So far, little research exists on how gains in women's education in Africa have translated into gains in employment. The few existing studies report mixed findings, and are cross sectional. This limits our understanding of the precise sources of the inequality and how it has changed over time and under different structural and broad economic conditions. Thus, important questions remain insufficiently addressed. How are African women currently represented in the labor market? How does this representation vary across different community contexts and over time? What factors explain historical changes or cross-community variations in the representation of women in the labor market? Using longitudinal event history data spanning several decades from Cameroon in central Africa and community level DHS data from 20 sub-Saharan countries with repeat surveys to examine change, we specifically explore trends in the effects of the following factors:

1. **Human capital**
    - Educational attainment of individual women versus community-level influences. For example, do community/contextual conditions have an effect on women's labor market outcomes over and beyond the individual characteristics of women?

- Generational gains in education e.g. how do gains in one generation of women a) affect the next generation of women and b) their progeny: daughters/sons?

2. **Discrimination**
   - Differentiating discrimination within the household from discrimination within the labor market, is there any evidence of gender discrimination in accessing the labor force once one adjusts for key determinants of employment and fixed effects of family?

3. **Macroeconomic conditions**
   - How has the net gender effect (if any) changed over time and under different economic conditions?

**BACKGROUND AND SETTING**

Worldwide, women's labor force participation rates have increased, but the gender gap has not closed. All developing regions (with the exception of East Asia and transition economies) still show a female-to-male participation ratio lower than 0.8 (ILO 2004). Additionally, the most recent "Global Assessment of Employment Trends for Women 2004" (ILO 2004), report that women are less likely to be engaged in regular paid work, more likely to be in agricultural work (for economies with a high share of agriculture), and earn less than men for the same work. Based on these findings, the report concludes that *[ ]* "*women have a higher share in the number of the working poor in the world…a share of 60 percent.*" This implies that women constitute the majority of individuals whose earnings cannot lift them out of poverty.

While these global assessments are useful, they hide regional and sub-regional variations. A cross regional picture by Berger (2002) show that, for sub-Saharan Africa, employment and GDP have grown by 2.2 and 2.3 per cent respectively during the 1990s. He also shows an estimated unemployment rate of 4.9 per cent in 2000 and labor productivity growth of 0.09 per cent in 1990-2000, and 46 percent for the share of the working poor in total employment in 1998. These figures suggest that while Sub-Saharan Africa's growth process is employment-intensive, the jobs created are mainly within the informal and less productive sector. Like the global situation, Berger warns that the nature and structure of employment opportunities in SSA are not capable of eradicating poverty in the region. He further warns that with current trends, the region will experience a rise of 7.4 percent in unemployment rate in 2010 with 26 million people unemployed: twice more than the 1990s level, with the informal sector absorbing new labor entrants, in particular women. Thus, the assumption that women enjoy employment benefits parallel to their education may not hold. Against this background, an important policy question is "will African women's employment behavior, characterized by lower participation rates relative to men and pervasive overrepresentation in less profitable informal work, lift them out of poverty?

The study setting is Cameroon, a sub-Saharan country with a striking imbalance between education and employment. While Cameroon occupies an intermediate position among African countries in terms of educational and fertility indicators (DHS 2006), its female employment record is relatively low. Further, an abrupt economic crisis that swept

the country between the late 1980s and early 1990s following an economic boom has led to a tightening of labor market prospects among other policy adjustment measures (Eloundou-Enyegue 1997; Eloundou-Enyegue and Davanzo 2003; Noumba 2002). Such economic setbacks and the ensuing policy responses facilitate an examination of the influence of variation in the macroeconomic environment on women's employment opportunities.

## PREVIOUS STUDIES

There is paucity of empirical research on the relationship between women's education and employment in Africa. This African gap is best illustrated by Pande et al.'s review (2005) on the employment returns to female education in developing countries. Out of the 32 employment-related studies reviewed, only three papers (Appleton et al. 1990; Aromolaran 2002; Glick and Sahn 1997) focus on SSA. In addition to these three studies, the present study has identified three others using African data (Naude and Serumaga-Zake 2001; Siphambe 2000; Vijverberg 1997).

Much of the African evidence claims a persistent gender inequality in employment due to women's lower educational attainment but the evidence is inconsistent. While some authors point to discrimination within the labor market, others (Appleton et al. 1999; Glick and Sahn 1997) cast doubt on this proposition. These authors contend that African labor markets are the "*least discriminatory in the world"* and women's poorer employment prospects relative to men is because they are less endowed by parents and society alike with education. Such lower economic gains to education further imply that women may be less motivated than men to seek employment but also to acquire schooling (Appleton et al. 1990; Kingdon 1998), reproducing the inequality over time. The literature from other developing regions is also conflicting. Consistent with the arguments of Appleton et al. (1990) and Glick and Sahn (1997) but contradicting the evidence supporting the human capital perspective, Kingdon (1998) asserts that the gender earnings gap, only meagerly dependent on education, is mostly a function of labor market discrimination.

Our paper will advance literature in this area by looking at the relative influences of human capital and discrimination, both in the household and in the labor market. More importantly, it will examine how these various factors have evolved over time, under changing economic conditions.

## CONCEPTUAL AND METHODOLOGICAL ISSUES

A common critique of the human capital perspective is its overemphasis on individual attributes at the expense of family factors (Kingdon 1998). Because the social context can facilitate or limit employment options, this study concurs with Kingdom and recognizes conceptualizations beyond the individual/family level. Recent reviews (King and Mason 2001; Pande et al. 2005) have questioned the presumed benefits of educational transitions, and whether these, alone, can foster gains in women's status. Studies (DeRose and Kravdal 2005; Kravdal 2000; Kravdal 2002) increasingly underscore the importance of community effect factors[1]. A fundamental argument throughout this study is that both

[1] DeRose and Kravdal's proposition, while it focuses on fertility, is instructive. It proposes that through *social learning* (the direct transfer of knowledge and attitudes by communication and observation), s*ocial influence (*imitation of behavior for social acceptance), and *indirectly* through the *greater resources*

individual and community-level factors matter. A woman's employment options may depend on the education of other women net of her education.[2]

The study also recognizes the importance of contextual and temporal variation. Unfortunately, the cross sectional nature of the existing analyses using African data has limited historical analysis. Previous research has also drawn attention to un-measured yet potentially influential factors in analyses of social phenomena (Beise and Voland 2002; DeRose and Kravdal 2005; Giroux 2006).[3] The analyses in this study acknowledge and attempt to address these conceptual and methodological concerns as discussed in the section that follows.

## STUDY HYPOTHESES

The study will advance knowledge on this topic by examining changes in women's employment as it is affected by education. It advances the existing literature in three ways. First it covers the effects of both individual and community-level gains. Second, it examines women's employment longitudinally, over a 2-3 decade period marked by rapid transformations in economic conditions. Finally, it addresses the influence of discrimination, in the household, schools, and labor markets: We will test several hypotheses about changes in these forms of discrimination and how they contribute to trends in women's employment.

## DATA AND METHODS

---

available in a setting endowed with a large proportion of educated women, aggregate education can influence an individual's fertility over and beyond her education.

[2] A mechanism through which aggregate education may influence employment rates is through positive group norms. For instance, a community with a high proportion of educated women may be more receptive to women's education, employment, and changing roles. This in turn, can lead to the creation of more employment opportunities, increased demand for women's labor, and consequently, a narrowing of the gender inequality. Such progress in women's economic gains and reduced discrimination in the labor market will likely boost girls' education (Buchmann, C. and D. Brakewood 2000) through parental perceptions of greater benefits to female schooling, ultimately leading to women's improved position in society. However, these beneficial consequences may not occur without an enabling socio-cultural milieu (King and Mason 2001; Pande et al. 2006). Another mechanism is through aggregate effects of education, which may be associated with beneficial consequences for women, including reduced across and within gender differentiation. The analyses therefore make a distinction between the roles of women as individuals and the more institutionalized forms of gender inequality. On the other hand, aggregate education can also have depressing effects. A woman residing in a community endowed with a well-educated female population may be confronted with stiff competition for decent occupations, and perhaps with a reduced availability of non-working relatives or non-educated women as substitutes for childcare.

[3] These unmeasured but potentially important factors can include individual and community perceptions of and attitude toward schooling and women's position in the wider society; their educational, occupational, and life aspirations and ambitions; norms and values that shape parental demand for daughters' education; and reinforcing or hindering group/societal norms toward women's education and employment. Similarly, the demand for women's labor; attitudes toward and commitment of employers toward gender equity; and how economic institutions reward women's education across the divergent occupational sectors in SSA, can affect women's employment behavior. But they are also hard to measure across communities, not to mention countries.

The study will combine data from DHS and from a national demographic survey fielded in 1998/99 in Cameroon. The data, specifically designed to study demographic change, was collected on women aged 15 years or more. Using life history calendars, detailed socio-demographic information on these women and their partners, including schooling and employment histories were generated. The resulting data set contains 135098 observations (i.e. person-years) with schooling and employment samples covering 50475 and 23451observations respectively. The children's histories were used to generate an event-history employment data set, updated annually, that contains schooling, marriage, fertility, and employment records, as well as records on background information relevant to this study. The records consist of person-years, with each child contributing multiple records provided s/he is not censored. In the case of the schooling records, a child is observed from school entry and becomes censored at death, school exit, or survey year. Observations for the employment record begin from school exit until survey year or death, whichever occurred first. The generated histories, providing annual life transitions of men and women spanning across over four decades (1955, the baseline year to 1999, the survey year) permit linking schooling achievements and employment activity and a comprehensive study of the gains to education for women's employment and economic well being under diverse socio-economic conditions.

Most studies that examine the labor market gains to African women's education have relied on data from one or few countries (Appleton et al. 1990; Cohen and House 1993; Glewwe 1991; Glick and Sahn 1997; Naude and Serumaga-Zake 2001; Siphambe 2000; Vijverberg 1997). The study also employs DHS data. The Demographic and Health Surveys (DHS) program conducts nationally representative and comparable demographic data on developing countries with country replications across several periods. We take advantage of such replications to examine trends in the benefits of women's education within the labor market in 22 African countries. All the variables, both dependent and independent, are measured at the regional/provincial (hereafter community) level. Using communities within countries rather than countries as the unit of analysis increases the final sample size in addition to separating community from country variations in the outcomes and predictors. For indicators including GNP that are available at the national rather than regional level, national averages obtained from the Population Reference Bureau (PRB) database (PRB 2006) were applied to all communities within a country. Combining these two different data, through a process of cumulative validation, enhances precision in the interpretations and understanding of the relationships under investigation. Such an approach also allows us to assess the generalizability of the Cameroon findings to rest of the region, thereby facilitating the identification of policy factors for promoting African women's greater labor force participation.

***Variables.*** The main dependent variable is employment. We first measure overall employment status, without any distinction between occupation sectors. It is measured by current paid employment activity in any sector and coded as "1" if currently employed and "0" if unemployed, engaged in agricultural activity or unpaid family-work, and the reference category. The remaining analysis differentiates between formal and informal occupation sectors. Thus, conditional on being employed in paid work, the second outcome models formal employment activity (coded as "1") against employment in paid informal work, coded as "0" and the reference category. The main independent variable

is gender, used to explore the gender inequality in these outcomes and to test the study hypotheses.

## METHODS OF ANALYSIS

Two sets of estimations are conducted on each of the two employment outcomes. The first set uses logistic regression with generalized estimating equations (GEE), which under the SAS framework specifically employs the GENMOD procedure. The analytical models estimate a woman's probability of getting employed against a man's in each of the two outcomes as a function of her human capital, her community human capital and resources, and cultural bias based on her gender. The analyses progresses in a series of four nested models that sequentially test the two alternative perspectives commonly used in explaining the gender inequality in employment as well as the sensitivity of the outcomes to historical and broad economic trends. Because GENMOD does address bias arising from within family clustering but not the unobserved fixed effects of family, the final models generated under GENMOD are re-estimated using the PHREG procedure, which adequately handles fixed family and community factors (Allison 1995).[4] This permits a comparison of the GEE estimates with the PHREG estimates to establish the extent to which failure to adjust for unobserved effects can influence the substantive conclusions of the study. Finally, the second set of analyses estimates two additional models using the PHREG procedure to examine how historical and different economic trends have influenced the gender inequality in employment outcomes.

## PRELIMINARY FINDINGS

A preliminary set of analyses using only individual level human capital measures have already been conducted. The results of this analysis are presented in tables 1 through 4. These tables also indicate the covariates included in the analyses. Future analyses will: (1) Repeat the microanalysis but with an additional community measure for human capital and a rural-urban distinction; (2) Conduct a macro analysis using repeat data from 20 DHS countries to examine temporal changes in these countries and to facilitate a meaningful comparison with the findings obtained from the longitudinal microanalysis; (3) Analyze qualitative data from Cameroon to complement findings from the longitudinal assessment as well provide explanations for issues important but unanswered by the quantitative analysis. These issues include the perceptions of women themselves, their families, and the community on a wide range of issues including: role expectations, aspirations, benefits of women's education, women's work life and experiences, existence of employer discrimination or otherwise, religion and women's work, as well as implications of increases in aggregate women's education.

[4] The PHREG procedure under SAS adequately controls for fixed effects (i.e. unobserved heterogeneity). It also performs hazard modeling for causal analysis and conveniently allows the incorporation of covariates in the models.

**Table 1. Gender inequality in schooling**

| | Schooling (Dropout event) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | GENERAL ESTIMATING EQUATIONS (GEE) | | | | | | | | FIXED EFFECTS MODELS (PHREG) | | | |
| | Model 1 | | | Model 2 | | | Model 3 | | | Model 4 | | |
| | B | O R | | B | O R | | B | O R | | B | H R | |
| **Cultural bias** | | | | | | | | | | | | |
| Gender: female | 0.117 | 1.12412 | *** | 0.248 | 1.3 | *** | 0.31 | 1.359 | *** | 0.610 | 1.840 | *** |
| **Human capital** | | | | | | | | | | | | |
| Repeats current grade | | | | 1.154 | 3.17 | *** | 1.06 | 2.875 | *** | 1.27 | 3.57 | *** |
| Repeats more than once | | | | 1.162 | 3.19 | *** | 1.01 | 2.751 | *** | 1.27 | 3.57 | *** |
| Innate ability | | | | 2.676 | 14.5 | *** | 0.41 | 1.51 | | 1.60 | 4.97 | # |
| **Individual/Household composition** | | | | | | | | | | | | |
| Mother resided in rural area during index year | | | | | | | 0.53 | 1.706 | *** | -0.09 | 0.92 | |
| Child's age | | | | | | | 0.09 | 1.09 | *** | 0.13 | 1.14 | *** |
| Child's rank in birth order | | | | | | | -0.09 | 0.91 | *** | -0.12 | 0.89 | *** |
| Child is currently fostered out | | | | | | | -0.39 | 0.68 | *** | -0.37 | 0.69 | *** |
| Number of siblings | | | | | | | 0.06 | 1.059 | * | 0.09 | 1.10 | # |
| Family has high SES | | | | | | | -0.48 | 0.617 | *** | 0.11 | 1.12 | |
| Mother is single | | | | | | | -0.23 | 0.792 | | -1.02 | 0.36 | |
| Child has at least one sibling in formal sector | | | | | | | -0.05 | 0.95 | | -0.15 | 0.86 | |
| **Basic Controls** | | | | | | | | | | | | |
| Grade level | | | | | | | | | | | | |
| Grade 0 | | | | Ref | | | Ref | | | Ref | | |
| Grade 1 | | | | 0.46 | 1.58 | | 0.2561 | 1.29 | | | | |
| Grade 2 | | | | 1.834 | 6.26 | *** | 1.54 | 4.677 | *** | 1.35 | 3.84 | *** |
| Grade 3 | | | | 2.2 | 9.03 | *** | 1.89 | 6.596 | *** | 1.68 | 5.38 | *** |
| Grade 4 | | | | 2.709 | 15 | *** | 2.38 | 10.84 | *** | 2.28 | 9.78 | *** |
| Grade 5 | | | | 2.901 | 18.2 | *** | 2.61 | 13.54 | *** | 2.56 | 12.98 | *** |
| Grade 6 | | | | 4.099 | 60.3 | *** | 3.90 | 49.56 | *** | 4.11 | 60.77 | *** |
| Grade 7 | | | | 2.551 | 12.8 | *** | 3.09 | 21.92 | *** | 3.11 | 22.44 | *** |
| Grade 8 | | | | 2.768 | 15.9 | *** | 3.29 | 26.96 | *** | 3.39 | 29.56 | *** |
| Grade 9 | | | | 2.459 | 11.7 | *** | 3.02 | 20.58 | *** | 3.11 | 22.36 | *** |
| Grade 10 | | | | 2.962 | 19.3 | *** | 3.51 | 33.46 | *** | 3.68 | 39.48 | *** |
| Grade 11 | | | | 2.292 | 9.89 | *** | 2.96 | 19.21 | *** | 3.12 | 22.62 | *** |
| Grade 12 | | | | 2.289 | 9.87 | *** | 2.86 | 17.42 | *** | 3.00 | 20.02 | *** |
| Grade 13 | | | | 2.372 | 10.7 | *** | 2.92 | 18.55 | *** | 3.09 | 22.00 | *** |
| Grade 14 | | | | 1.816 | 6.14 | ** | 2.27 | 9.648 | ** | 2.50 | 12.18 | ** |
| Grade 15 | | | | 2.349 | 10.5 | *** | 2.81 | 16.69 | *** | 3.09 | 21.91 | *** |
| Grade 16 | | | | 3.664 | 39 | *** | 3.9146 | 50.1 | *** | 4.32 | 75.12 | *** |
| Grade 17 | | | | 2.503 | 12.2 | *** | 3.09 | 21.99 | *** | 4.02 | 55.63 | *** |
| Cohort 1 | | | | 0.69 | 2 | *** | 0.8134 | 2.26 | *** | 0 | . | |
| Cohort 2 | | | | 0.545 | 1.72 | *** | 0.6942 | 2 | *** | 0 | . | |
| Cohort 3 | | | | 0.358 | 1.43 | * | 0.408 | 1.5 | ** | 0 | . | |
| Cohort 4 | | | | 0 | | | 0 | 1 | | | | |
| **Intercept** | -3.362 | | *** | -8.13 | | *** | -5463 | | *** | | | |
| | -8731 | | | -6545 | | | -5463 | | | 7429 | | |

The notations ***, **, *, and # indicate significance at the <0.001, 0.001, 0.01, and 0.05 levels, respectively.

**Table 2. Gender inequality in access to paid (I.e. informal and formal) employment**

| | Paid Employment | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | GENERAL ESTIMATING EQUATIONS (GEE) | | | | | | | | | FIXED EFFECTS MODELS | | |
| | Model 1 | | | Model 2 | | | Model 3 | | | Model 4 | | |
| | B | O R | | B | O R | | B | O R | | B | H R | |
| **Cultural bias** | | | | | | | | | | | | |
| Gender: female | -1.00 | 0.37 | *** | -0.89 | 0.41 | *** | -0.97 | 0.38 | *** | -1.19 | 0.31 | *** |
| **Human capital variable** | | | | | | | | | | | | |
| Maximum grade attained | | | | 0.19 | 1.21 | *** | 0.33 | 1.39 | ** | 0.40 | 1.50 | *** |
| Maximum grade [c] | | | | 0.00 | 1.00 | | -0.01 | 0.99 | | -0.01 | 0.99 | *** |
| Mean grade repetition | | | | | | | | | | | | |
| **Household composition** | | | | | | | | | | | | |
| Child is married | | | | | | | 0.07 | 1.08 | | 0.08 | 1.09 | |
| Child has a child | | | | | | | 0.05 | 1.05 | | 0.09 | 1.09 | |
| Mother resided in rural area during index year | | | | | | | -0.02 | 0.98 | | 0.19 | 1.20 | |
| Child's age | | | | | | | 0.05 | 1.05 | | 0.08 | 1.08 | *** |
| Child's rank in birth order | | | | | | | -0.16 | 0.85 | *** | -0.21 | 0.81 | *** |
| Child is currently fostered out | | | | | | | -0.39 | 0.68 | | -0.90 | 0.41 | ** |
| Number of siblings | | | | | | | -0.01 | 0.99 | | 0.08 | 1.08 | # |
| Family has high SES | | | | | | | -0.11 | 0.89 | | -0.21 | 0.81 | |
| Mother is single | | | | | | | -0.86 | 0.42 | | -0.96 | 0.38 | |
| Child has at least one sibling in formal sector | | | | | | | 1.47 | 4.35 | *** | 1.45 | 4.26 | *** |
| **Controls** | | | | | | | | | | | | |
| Duration of unemployment | | | | 0.37 | 1.45 | *** | 0.10 | 1.11 | | 0.13 | 1.14 | *** |
| Duration of unemployment [c] | | | | -0.01 | 0.99 | *** | 0.00 | 1.00 | *** | -0.01 | 0.99 | *** |
| **Intercept (constant)** | 0.263 | 1.3 | | -2.8919 | 0.055 | *** | -3.13 | 0.044 | *** | | | |

The notations ***, **, *, and # indicate significance at the <0.001, 0.001, 0.01, and 0.05 levels, respectively.

**Table 3. Gender inequality in access to formal employment**

| | Formal Employment | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | GENERAL ESTIMATING EQUATIONS (GEE) | | | | | | FIXED EFFECTS MODELS (PHREG) | | |
| | Model 1 | | | Model 2 | | | Model 3 | | |
| | B | O R | | B | O R | | B | H R | |
| **Cultural bias** | | | | | | | | | |
| | -1.44 | 0.24 | *** | -1.17 | 0.31 | *** | -1.78 | 0.17 | *** |
| **Human capital** | | | | | | | | | |
| Maximum grade attained | | | | 0.28 | 1.33 | # | 0.25 | 1.29 | *** |
| Maximum grade [c] | | | | 0.00 | 1.00 | | 0.01 | 1.01 | |
| Mean grade repetition | | | | | | | | | |
| **Household composition** | | | | | | | | | |
| Child is married | | | | | | | 0.0365 | 1.04 | |
| Child has a child | | | | | | | -0.0177 | 0.98 | |
| Mother resided in rural area during index year | | | | | | | -0.154 | 0.86 | |
| Child's age | | | | | | | -0.0216 | 0.98 | |
| Child's rank in birth order | | | | | | | -0.3985 | 0.67 | *** |
| Child is currently fostered out | | | | | | | -1.1671 | 0.31 | ** |
| Number of siblings | | | | | | | -0.05 | 0.95 | |
| Family has high SES | | | | | | | 0.00 | 1.00 | |
| Mother is single | | | | | | | 0.00 | | |
| Child has at least one sibling in formal sector | | | | | | | 8.32 | 4117 | *** |
| **Controls** | | | | | | | | | |
| Duration of unemployment | | | | 0.18 | 1.20 | *** | 0.15 | 1.16 | *** |
| Duration of unemployment [2] | | | | 0.00 | 1.00 | *** | 0.00 | 1.00 | *** |
| **Intercept (constant)** | 0.0272 | | | -3.0604 | | *** | | | |

The notations ***, **, *, and # indicate significance at the <0.001, 0.001, 0.01, and 0.05 levels, respectively.

**Table 4. Trends in gender inequality**

| | Model 1 Historical | | | Model 2 Economic | | |
|---|---|---|---|---|---|---|
| | **Schooling** | | | | | |
| | B | H R | | B | H R | |
| **Cultural bias** | | | | | | |
| Gender: female | 1.42946 | 4.176 | *** | 2.48935 | 12.053 | ** |
| **Human capital variables** | | | | | | |
| Repeats current grade | 1.27612 | 3.583 | *** | 1.27778 | 3.589 | *** |
| Repeats more than once | 1.27268 | 3.57 | *** | 1.27563 | 3.581 | *** |
| Innate ability | 1.66121 | 5.266 | # | 1.69774 | 5.462 | # |
| **Macroeconomic conditions** | | | | | | |
| Trend | 0.29928 | 1.349 | | 0.08894 | 1.093 | |
| Trend*Sex | -0.2568 | 0.774 | *** | -0.1762 | 0.838 | |
| Log GNP | | | | 0.50899 | 1.664 | |
| Log GNP*Sex | | | | -0.2019 | 0.817 | |
| | **Paid employment** | | | | | |
| | B | H R | | B | H R | |
| **Cultural bias** | | | | | | |
| Gender: female | -2.24069 | 0.106 | *** | -1.3923 | 0.2485 | # |
| **Human capital variables** | | | | | | |
| Maximum grade attained | 0.13 | 1.14 | *** | 0.13195 | 1.1411 | *** |
| Maximum grade ² | -0.00565 | 0.994 | *** | -0.0057 | 0.9943 | *** |
| Mean grade repetition | | | | | | |
| **Macroeconomic conditions** | | | | | | |
| Trend | -0.88 | 0.42 | *** | -0.9092 | 0.4028 | *** |
| Trend*Sex | 0.30 | 1.35 | *** | 0.3209 | 1.3784 | *** |
| Log GNP | | | | -0.1408 | 0.8687 | |
| Log GNP*Sex | | | | 0.16352 | 1.1776 | |
| | **Formal Employment** | | | | | |
| | B | H R | | B | H R | |
| **Cultural bias** | | | | | | |
| Gender: female | -3.06864 | 0.05 | *** | -6.06 | 0.00 | ** |
| **Human capital variables** | | | | | | |
| Maximum grade attained | 0.26322 | 1.30 | *** | 0.26607 | 1.3048 | *** |
| Maximum grade ² | 0.00561 | 1.01 | # | 0.00541 | 1.0054 | # |
| Mean grade repetition | | | | | | |
| **Macroeconomic conditions** | | | | | | |
| Trend | -1.23292 | 0.291 | *** | -1.2002 | 0.3011 | *** |
| Trend*Sex | 0.35885 | 1.432 | ** | 0.3421 | 1.4079 | ** |
| Log GNP | | | | -1.2002 | 0.3011 | *** |
| Log GNP*Sex | | | | 0.3421 | 1.4079 | ** |

The notations "***", **", *", and # indicate significance at the <0.001, 0.001, 0.01, and 0.05 levels, respectively.

**BIBLIOGRAPHY**

Allison, P.D. 1995. Survival Analysis Using the SAS System: A Practical Guide, Cary, North Carolina: SAS Institute Inc.

Appleton, S.P. C.P. Horsnell. 1990. "Gender, Education, and Employment in Cote d'Ivoire. Social Dimensions of Adjustment in Sub-Saharan Africa." Working Paper No. 8. The World Bank, Washington, D.C.

Aromolan, A. 2002. "Private Wage Returns to Schooling in Nigeria: 1996-1999. New Haven, Yale University.

Beise, J. and E. Voland. 2002. "A Multilevel Event History Analysis of the Effects of Grandmothers on Child Mortality in a Historical German Population (Krummhörn, Ostfriesland, 1720-1874)." MPIDR Working Paper WP 2002-023.

Berger, S. and C. Harasty. 2002. "World and Regional Employment Prospects: Halving the World's Working Poor by 2010." Employment Paper 2002/38. Employment Strategy Department. International Labour Organization.

Buchmann, C. and D. Brakewood. 2000. "Labor Structures and School Enrollments in Developing Societies: Thailand and Kenya Compared." Comparative Education Review 44(2):175-204.

Cohen, B. and W.J. House. 1993. "Women's Urban Labor Market Status in Developing Countries: How Do Well Do They Fare in Khartoum, Sudan?" Journal of development Studies 29:461-83.

DeRosse, L.F. and O. Kravdal, 2005. "The Effects of Educational Reversals on First Births in sub-Saharan Africa: A Dynamic Multi-level Perspective." Paper Delivered at the Population Association of America Annual Meeting, Philadelphia, Pennsylvania.

DHS 2006. Demographic and Health Surveys StatCompiler. 2006. ORC, Macro. Accessed February 2006. Available on line at http://www.measuredhs.com.

Eloundou-Enyegue, P.M. 1997. *Demographic Responses to Economic Crisis in Cameroon: Fertility, Child Schooling, and the Quantity Quality Trade off.* PhD Dissertation, Pennsylvania State University.

Eloundou-Enyegue, P.M., N. Maurice, O. Richard, V.P. Onguene, S. Bahoken, J. Tamukong, M. Mbangwana, J.E. Evina, and C.M. Djongoue. 2004. "Access to Schooling and Employment in Cameroon: New Inequalities and Opportunities." SAGA Working Paper. Strategies and Analysis for Growth and Access. Cornell and Clark Atlanta Universities.

Eloundou-Enyegue, P.M. and J.S. DaVanzo. 2003. "Economic Downturns and Schooling Inequalities: Cameroon 1987-95." Population Studies 57(2):183-97.

Giroux, S.C. 2006. “Competing for Off-Farm Employment in a Developing Setting: Beyond Consensus and Conflict.” M.Sc. Thesis. Cornell University.

Glewwe, P. 1991. “Schooling, Skills, and the Returns to Government Investment in Education: An Exploration Using Data from Ghana.” Living Standards Measurement Study Working Paper No. 76. The World Bank, Washington, D.C.

Glick, P. and D. Sahn. 1997. “Gender and Education Impacts on Employment and Earnings in West Africa: Evidence From Guinea.” Economic Development and Cultural Change, 45(4): 793–823.

ILO 2004. “Global Employment Trends for Women 2004.” International Labor Organization. Available on-line at http://www.ilo.org/GET2004/DOWNLOAD/trendsw.pdf .

Kingdon, G.G. 1998. “Does the Labor Market Explain Low Female Schooling in India?” *Journal of Development Studies* 35(1):39-65.

King, E.M. and A.D. Mason 2001. *Engendering development: Through Gender Equality in Rights, resources, and Voice.* A World Bank Policy Research Report. Oxford, Oxford University Press.

Kravdal, O. 2000. “A Search for Aggregate-Level Effects of Education on Fertility, Using Data from Zimbabwe.” *Demographic Research.* Available on-line at http://www.demographic-research.org/Volumes/Vol3/3.

Kravdal, O. 2002. “Education and Fertility in sub-Saharan Africa: Individual and Community Effects.” Demography 39:233-51.

Noumba, I. 2002. “The Labor Market in Cameroon: Recent Developments.” GRAPES-Research and Analysis Group on Economic and Social Policies**.**

Pande, R., Malhotra, A., and C. Grown. 2005. “Impact of Investments in Female Education on Gender Equality.” Paper Prepared for Presentation at Session 3: Schooling, XXV IUSSP International Population Conference, Tours, France.

PRB 2006. Population Reference Bureau. Accessed February 2006. Accessed February 2006. Available on line at http://:www.prb.org.

Thurow, L.C. 1972 “Education & Economic Equality.” Public Interest No. 28, Summer 1972.