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Employment Choice and Mobility in Multisector Labor Markets:

Theoretical Model and Evidence from Ghana

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Abstract

This paper examines employment choice and occupational mobility using data from Ghana. In a model that incorporates capital market failure, credit constrained individuals draw self-employment capital from family asset. The empirical findings validate the predictions of the theoretical model. The data shows very low rates of mobility across sectors and that workers in family enterprise are the most mobile while self-employed workers are the least mobile. I find no robust evidence that wage earnings ease liquidity constraints. The findings suggest that both liquidity and skill transferability constraints are important for mobility.

Keywords: Employment Choice; Mobility; Multisectoral Labor Markets; Self Employment

JEL Classifications: J01, J21, J24, N37, O12, O17

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1. Introduction

Economic mobility is an important phenomenon that sometimes means different things in different contexts. Because employment income is the most important component of personal and household income, especially in developing countries, analysis of economic mobility typically focuses on the labor market. In the unified (or textbook) labor market context mobility simply means higher income. In the dual labor market context, mobility may involve moving from the rural sector to the urban sector or from the non-wage sector to the wage sector particularly in societies where a significant portion of the workforce is engaged in non-wage employment. However, in most developing societies, the non-wage sector is not homogeneous but internally partitioned on the basis of production process and wage determination. Thus, mobility could also refer to transition within the non-wage sector. The multisector nature of labor markets in less developed countries makes economic mobility an important indicator of economic development; any hindrance to workers' mobility across sectors would clearly be interpreted as a sign of uneven sectoral development.

The literature on employment choice and mobility is dominated by two-sector models where individuals choose between paid employment and self employment, and workers typically transit from the former to the latter (Evans and Jovanovic 1989; Hurst and Lusardi 2004; Buera 2009). Because these models assume that in equilibrium labor markets always clear and individuals can always find paid employment whenever they want, they do not provide sufficient analytical insights into non-clearing labor markets. In addition, these models assume that individuals seek self employment because they can either earn higher income or enjoy better working conditions. In contrast, the majority of self employment activities in low income countries arise as backups when individuals are unable to secure paid employment. These differences have important policy implications. For instance, based on the two-sector model, existing literature suggests credit constraint as the only limit to self employment and higher labor productivity. In the model that is analyzed in this paper, work experience could also limit mobility due to the risk of failure of self employment and non-marketability of experience across sectors. A wage worker would hesitate to enter self employment not only

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because of the risk of temporary loss of wages in the event that self employment fails[2], but because of the possibility of permanent loss of wages associated with uncertainty of returning to paid employment. In addition, a worker that begins with self employment might have a hard time obtaining paid employment if his self-employment experience is not marketable in paid employment in settings where inter-sectoral technology gaps are substantial.

Unlike the previous literature described above, this paper examines a labor market that is partitioned into paid employment, self-employment and family enterprise sectors. The empirical analysis is based on a theoretical model and uses data from Ghanaian household surveys to examine employment choice and intersectoral mobility. The model and empirical findings emphasize the overarching importance of education premium in paid employment and the influence of family size and wealth on employment choice. In terms of mobility, the results show that workers in self-employment are the least mobile and, in particular, those in apprenticeship-led enterprises are trapped in low-wage activities while workers engaged in family enterprise are the most mobile. There is no evidence that paid employment earnings importantly ease liquidity constraints when transiting into self-employment. Taken together, the results suggest that it is not sufficient to pay attention to liquidity constraint; policymakers must also pay attention to skills and the ease of marketing them across sectors.

The remainder of the paper is structured as follows. Section 2 reviews the literature and existing models, and discusses their shortcomings. Section 3 lays down the model and its implications. Section 4 describes the setting, data and the variables, and presents descriptive statistics. Section 5 constructs the empirical model and its estimates. Section 6 summarizes the findings, and section 7concludes with important policy implications and key recommendations.

2. Literature Review

A study of labor markets in developing countries began with the dual labor market model advanced by Lewis (1954). In a two-sector economy comprising a rural subsistence sector and an urban capitalist sector, workers, regardless of their levels of skills, prefer employment in the capitalist sector relative to the subsistence sector. The presence of the two sectors creates a

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[2] Kihlstrom and Laffont (1979) suggest that aversion to the risk of failure in self employment could deter individuals with high degree of risk aversion from becoming self employed.

duality in the sense that a worker with a given level of skills can earn different wages depending on the sector in which he is employed. Intersectoral labor mobility and employment choice is therefore driven by the urban premium. The structure was soon modified by those who argued that the two-sector model designed in the pre-independence era was inadequate to describe the labor markets after the independence movements of the late 1950s and early 1960s. At that time, a large number of people who were previously restricted to the rural areas in the 1950s found their ways to the urban areas, an episode that led to widespread urban unemployment and underemployment.

Todaro (1969) contended that Lewis' model, where unskilled workers migrate directly from low productivity rural jobs to high productivity urban industrial jobs, was not compatible with the evidence. He expanded the model to include an urban traditional sector where unskilled rural migrants in search of urban industrial jobs spent a certain period of time before they eventually obtain their desired employment in the modern sector. Ranis and Stewart (1999) expanded Todaro (1969)'s three-sector model to include an urban modernizing sector. Their primary aim was to explain the Asian export-led growth and employment expansion that lasted into the 1980s. In their model, unskilled rural migrants can find jobs in the formal sector, work in the urban modernizing sector, or engage in the urban traditional sector while seeking employment in the formal sector. They argue that subcontracts from the formal to the informal sector engineered expansion of the urban modernizing sector which subsequently absorbed workers from the urban traditional sector. The urban modernizing sector which they labeled as the V-sector was the main source of employment growth that accompanied the growth of exports.

The above literature classifies employment by sectors from a migration viewpoint. Researchers in this area place more emphasis on the aggregate movement of workers from rural to urban sectors and less on the nature of activities that people were engaged in, the types of skills that individuals possessed, and the earnings generation processes. However, a more recent literature summarized by Fields (2005) has begun to show the importance of these issues. The literature documents changes in urban sectors in developing countries in ways that represent dramatic shifts from previous literature. In this new framework, the urban sector is

shown to be home to at least four types of workers. The first type of worker is unskilled, essentially shut out of the skill-driven formal paid employment sector and is not seeking a job in that sector.[3] The second type of worker is the semi-skilled or skilled worker who is probably seeking a job in the formal sector but spends his time waiting for an opportunity, which is unlikely to arrive. As the waiting time is prolonged, this worker eventually creates his own employment or work in a family enterprise. The third type of worker is the one who decides to work for his own enterprise. This worker is comparable to paid employees but instead chose to put his entrepreneurial skills to work and be his own master. The fourth type of worker differs slightly from the third worker in the sense that he has had some experience in the formal sector but left the formal sector due to retrenchment, retirement or employer's bankruptcy.

Researchers have adopted different classifications of urban employment sectors. In departing from the well-known informal versus formal classifications that have dominated the literature since Hart (1971) invented the informal sector, Fields (1975) classified urban sectors into a "murky" and a modern sector. Subsequently, Fields (1990) adopted the "easy-entry", "upper-entry" and formal classifications and Stewart (1999) adopted the "traditional," "modernizing" and formal urban sectors. These classifications are particularly adopted to describe the nature of employment, that is, the perceived quality of activity and the level of income.

Household and labor surveys in developing countries have often adopted classifications that depart from the conventional literature and thus provide contextual distinctions between sectors in terms of production processes and earnings determination. These classifications are usually based on ownership of the enterprise that employs the worker. In a typical questionnaire, individuals are asked a variant of the question: "who do you work for?" Based on the response, a worker is classified as wage employee if he works outside of his family in exchange for a wage; self employed if he works in an enterprise owned by himself; and a family

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[3] The jobs that unskilled workers perform in the formal sector firms are typically outsourced to entrepreneurs in the informal sector. It has become almost impossible to find cleaners, gardeners and drivers on the payroll of large firms since the late 1990s. Although large firms are the end-users of the services provided by unskilled workers, their earnings and conditions of employment are not better than those of other unskilled workers engaged in the non-wage sector. In some instances they are actually worse-off.

employee if he works on the family farm or in an enterprise that belongs to a member of his family.

The wage sector is an aggregate of all the wage-paying jobs. The common characteristic of employment in this sector is that the production processes are well defined, jobs have already been created, and employers seek to match workers' characteristics to job requirements while workers sell their labor to employers. In this sector, both education and experience are rewarded with monetary payoff. The self employment sector is the sphere of activities where the employer (or entrepreneur) is also the employee. There is no pre-existing job but the entrepreneur has to create the job to which he thereafter sells his labor. Conditional on skills, ability to create a job depends on access to enterprise capital. While some of the workers in this sector are self-employed by choice, others are self employed as a necessity because they are unable to obtain paid employment. The third sector is the family farm or family enterprise sector which is the sphere of agricultural and non-agricultural activities that rely on family labor. Although self-employment and family enterprise sectors are both non-wage sectors, they differ in two ways from the perspective of the worker. First, a production process already exists in the family enterprise sector (either on the farm or a non-farm enterprise) but not in the self-employment sector. Second, individuals earn their full product in self-employment while earnings in family enterprise are best described as average products[4].

The clear distinction between sectors with respect to ownership, production and wage determination processes allows direct links between labor market dynamics and economic development. For example, because the family is home to residual labor, the extent to which individuals report themselves as family workers may be a better measure of unemployment or underemployment than the official rates suggest[5]. Differences in the rates at which family and self employment respond to paid employment wages may be indicative of the nature of labor

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[4] The view that earnings in family enterprises are best described as average product was first expressed by Lewis (1954). Although individuals have different levels of skill and productivity, everyone involved in the family sector earns an equivalent of the average product that does not reflect individual endowment of education or ability. Compared to marginal product, average product is lower for some workers and higher for other workers. In fact, family enterprise workers pay routine taxes that are equal to the difference between marginal product and average product.

[5] Relating the concept to the OECD countries, Blanchflower (2000) suggests that the extent to which individuals report themselves as family workers may reflect the welfare system in the country.

market rigidity. Because most workers in the family sector do not earn wages and the sector is the primary source of labor, inelasticity of family sector employment to paid employment wages may indicate the extent of structural unemployment[6]. On the other hand, inelasticity of self employment to paid employment wages may highlight other issues; the interpretation depends on the composition of the sector by "choice" entrepreneurs and "necessity" entrepreneurs. Wages may not increase enough to induce the former group of workers to seek paid employment, and the latter group of workers may suffer from non-marketability of experience[7]. Increased rates of inter-sectoral mobility would reflect balanced technological progress.

3. A Model of Individual Employment Choice

I draw on Evans and Jovanovic (1989) and postulate a new model that describes the choice of new entrants to the labor market, paying attention to differences in sectoral wage determination processes. In addition to new entrants, I analyze transitions between sectors among the employed taking initial experience into consideration in the empirical section. Unlike Evans and Jovanovic (1989) which analyze a two-sector model, I divide the labor market into three sectors. Each worker arrives in the market with an observable level of education z and possesses an innate ability θ. I follow the tradition of Lucas (1978) and analyze the model assuming a fixed distribution of ability in the population. In the model, ability plays a key role in sorting individuals into sectors; an increase in the threshold of ability required for wage employment implies that fewer individuals will obtain wage employment. At any given time, an individual is employed in one of the three sectors.

Due to the payoff to experience and education in the wage sector, individual earnings are given by:

$$w = z^\alpha x^\beta \theta^\tau \xi \tag{1}$$

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[6] Structural unemployment refers to unemployment that arises from mismatch between workers' skills and the skills sought by employers, or location of workers in a different part of the country than jobs.
[7] Because their experiences are not considered relevant for the jobs available, these workers are less appealing to employers in comparison with peers who have the same type of education.

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where z reflects the level of education; x is one plus accumulated experience as a wage worker; θ captures the unobservable component of wages that reflects individual ability; and ξ is a disturbance or a shift factor that is constant across individuals. In order to reflect the actual way in which the labor market works, I measure education by the highest level of certification attained rather than the number of years the individual has been in school. The parameter α measures returns to education, β measures the payoff to experience and τ reflects returns to unobserved ability. At present, I make no distinction between private and public employment.

In the self-employment sector, individual earnings are determined by

$$\omega = z^{\sigma} k^{\delta} \theta^{\pi} \epsilon, \tag{2}$$

where k represents the amount of capital invested in the enterprise, z is a measure of education, and ϵ is a disturbance or a shift factor relevant to self-employment that is independent across entrepreneurs. $\theta,$ the entrepreneurial ability component of the wage function, affects the total product as well as the marginal product of capital (Jovanovic, 1982). Our specification of self employment earnings departs from previous models where output does not depend on education but is a linear function of entrepreneurial ability. Instead, the current model emphasizes complementarity between innate ability and schooling in the income generation process.[8] We also depart from existing models in terms of assumption about the capital market. Whereas individuals can borrow capital in those models, we assume there is no market for self-employment capital.[9] As a result, capital invested in self-employment is derived from family assets[10]. Thus the main constraint faced by the entrepreneur is given by

$$k \leq A \tag{3}$$

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[8] The human capital literature recognizes the potential correlation that exists between an individual's education or skills and his unmeasured ability. It is implausible that innate ability alone summarizes all the productive skills an individual acquires through education that may be productive in self employment, neither is it plausible to assume that the level of education an individual attains summarizes his ability. Existence of complementarities between observed education and unobserved ability is arguably plausible.

[9] For example, see Evans and Jovanovic (1989)

[10] Most self-employment activities rely on personal savings, family assets and informal gifts from friends and social networks for startup. Although the sum of capital from these sources is best described as "social" capital, we abstain from using that term because of its special place in the development economics literature. For analytical convenience, we sum these as family capital.

where A represents family assets. Equation (3) implies that capital invested in self-employment enterprise or household production cannot exceed family assets.[11] Given the constraint (3) and self employment earnings equation (2), individual earning in family enterprise is given by

$$\varpi = \lambda(n)(A - k)^\gamma \varepsilon \qquad\qquad (4)$$

where n represents family size, λ reflects output sharing that depends inversely on family size, γ reflects the productivity of capital employed in family enterprise, and ε represents a disturbance factor. Family size exerts two opposing effects on individual earnings: a positive effect through contribution to output and a negative effect through the size of family group sharing output. However, while marginal contribution of family size to output diminishes, marginal contribution to the workforce sharing output does not. As a result, average product diminishes and wage decreases as family size increases.

Given these descriptions, the production processes and earnings determination vary from one sector to another. Returns to education differ between paid employment and self-employment sectors, and this is reflected by the parameters α and σ respectively. The difference between the two parameters $(\alpha - \sigma)$ measures the premium that an individual with a given education would earn in paid employment relative to self employment. This premium would vary by education level. Similarly, the difference $(\pi - \tau)$ measures the premium accruing to unmeasured ability in self employment relative to paid employment, which also varies by the level of ability.[12]

I make the fundamental assumption that the labor market does not clear; there always exists excess labor supply to the wage employment sector. In this setting, the paid employment sector is unable to offer employment to everyone who would like to work at the going wage. Consider a cohort of new entrants to the labor market. An individual who is not employed in the wage sector could enter self employment or family enterprise. However there are

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[11] It does not matter analytically whether k is taken as capital invested in self employment or capital invested in household enterprise. Only the restriction matters.

[12] Lucas (1978) and Blau (1985) presented models of sorting into entrepreneurship and wage labor on the basis of returns to individual ability. Workers with low levels of ability sort themselves into wage labor whereas individuals with high ability sort into entrepreneurship or become employers. It must be that ability premium in self employment is positive for high ability individuals and negative for low ability individuals.

individuals who would choose to remain unemployed and continue searching for wage employment rather than accept other types of employment. In some sense the choice made by these individual is to either remain unemployed or work elsewhere. However, it is plausible that individuals who choose unemployment and job search share common characteristics with those who gain employment although they may have lower endowment of innate ability on average. Indeed, within a given cohort, the set of workers that are in wage employment at a point in time may obtain their jobs after spells of unemployment that may vary across individuals. Because this paper seeks to identify the characteristics that make an individual likely to be employed in a sector, we treat paid employment as the choice of such individuals. Our reasoning is that initial unemployment and continued search, which results in a match thereafter, is an active choice by these individuals.

Given competition and cohort effects, let the ease of obtaining wage employment be measured by $\mu \leq 1$ where low values reflect tightening of the paid employment sector. We associate $\mu = 1$ with a clearing wage employment market and associate lower values with greater degrees of excess labor supply to wage employment. Thus, when faced with the option of entering other sectors or continued search for wage employment, the individual compares his expected wage in paid employment, which is μw, to earnings from alternate sectors. A low value of μ makes it less likely that an individual will choose unemployment over, for instance, self employment. Based on earnings comparison, an individual is indifferent between paid employment and self employment when $\omega = \mu w$, that is

$$\theta^{\pi} z^{\sigma} k^{\delta} \epsilon = \mu z^{\alpha} x^{\beta} \xi \theta^{\tau} \tag{5}$$

To simplify the decision process, an expression for k can be derived from the family enterprise earnings function as

$$k = A - \left(\frac{\varpi}{\lambda(n)\varepsilon}\right)^{1/\gamma}. \tag{6}$$

I substitute the expression for k into equation (5) to obtain an equilibrium condition determining the threshold level of ability as:

$$\theta^{\pi-\tau} = z^{\alpha-\sigma} \left(A - \left(\frac{\varpi}{\lambda(n)\varepsilon} \right)^{1/\gamma} \right)^{-\delta} \mu x^{\beta} \xi / \epsilon \qquad (7)$$

Since the right hand side of equation (7) does not depend on θ, the equation provides an explicit solution to equation (5). In the empirical section, I will estimate employment choice conditional on education. In anticipation of this, I rewrite equation (7) as a conditional function. To proceed, I first remove the exponent of z to obtain

$$\theta^{\frac{\pi-\tau}{\alpha-\sigma}} = z \left[\left(A - \left(\frac{\varpi}{\lambda(n)\varepsilon} \right)^{1/\gamma} \right)^{-\delta} \mu x^{\beta} \xi / \epsilon \right]^{\frac{1}{\alpha-\sigma}} \qquad (8)$$

I define the left side of the equation as $h(\theta)$ where the exact form of the function is conditional on the parameters $(\alpha - \sigma)$ and $(\pi - \tau)$. The right side of the equation can be written as zy where $y = \left[\left(A - \left(\frac{\varpi}{\lambda(n)\varepsilon} \right)^{1/\gamma} \right)^{-\delta} \mu x^{\beta} \xi / \epsilon \right]^{\frac{1}{\alpha-\sigma}}$. When the equation is re-written conditional on z, the right hand side depends only on y. The corresponding effect on the left side is that z is now included in the conditioning set along with the education and ability premia. Hence, equation (8) can be expressed as:

$$h(\theta | z, \alpha - \sigma, \pi - \tau) = \left[\left(A - \left(\frac{\varpi}{\lambda(n)\varepsilon} \right)^{1/\gamma} \right)^{-\delta} \mu x^{\beta} \xi / \epsilon \right]^{\frac{1}{\alpha-\sigma}} \qquad (9)$$

where h is a function of ability conditional on level of education, education premium and ability premium. Equation (9) can be described as a probability function because it describes the likelihood that an individual chooses a particular employment sector.

I assume that returns to education are permanently higher in paid employment than in self employment, so that the education premium is always positive, that is, $\alpha - \sigma > 0$. However, the sign of the ability premium is determined by labor market conditions. In a clearing labor market, returns to individual ability are higher in self employment than in paid employment; hence individuals with high ability have incentives to be self employed. In this

case, $\pi - \tau > 0$ and h is an increasing function of θ. This assumption is implicit in Evans and Jovanovic (1989) model.

However, the opposite case $(\pi - \tau < 0)$ might hold true as well. Such a case occurs in non-clearing labor markets where returns to ability are higher in paid employment than in self employment. In non-clearing markets, employers typically subject job candidates to various tests[13] in order to extract signals of each candidate's ability. These tests are usually administered after applicants are screened on the basis of the preferred educational qualification. Because of this type of job rationing, individuals with the highest abilities are often drawn into paid employment.[14] In line with the assumption made in this section that the labor market is non-clearing, the remainder of this paper is based on the assumption that $\pi - \tau < 0$ and therefore h is a decreasing function of θ.

As it follows from equation (9), education premium in paid employment can be identified as the primary determinant of employment choice in the model. Conditional on everything else, increase in education premium $(\alpha - \sigma)$ reduces the right side and reduces the left side in equilibrium. Since h is a decreasing function of θ, increase in education premium is associated with increase in the threshold level of ability at which individuals enter paid employment. Given an ability distribution in the population, fewer people will obtain wage employment. Consequently, the likelihood for a representative worker to become self employed increases with the education premium. It also follows from equation (4) that payoff to education is lowest (modeled as zero) in family enterprise. As a result, increase in education premium also increases the likelihood that a representative worker is employed in a family enterprise.

The intuition behind all these can be put as follows: high education premium pulls more workers into seeking paid employment, creating excess supply of workers in the sector. Due to job rationing, it could be said that increase in education premium reduces the likelihood that a representative worker would obtain paid employment. In this case, unemployed workers who

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[13] These tests include written and oral examinations as well as placing candidates in "situation rooms" and examining how individuals respond to situations.
[14] Although high-ability individuals in paid employment may be more likely to transit into self employment, they nonetheless remain in paid employment for the first few years of their careers.

want to work immediately are left with the option of either self employment or working in the family sector. The odds of self employment increases relative to employment in family enterprise when there are credit markets from which individuals can borrow. In the absence of such market, constrained workers have to draw capital from the family for self employment or remain as family workers.

Conditional on returns to capital in self employment, an increase in returns to capital in family enterprise (increase in γ) reduces the right side of (9) and on balance increases the threshold level of ability above which individuals choose wage-employment. As a result, more workers choose self employment. To state it more generally, more workers choose non-wage employment. Two things happen as capital becomes more productive in family enterprise. First, less capital will be needed in family enterprise (see equation 3) and hence more capital is available for self-employment. Alternatively, surplus generated by family enterprise trickles into self employment capital. Second, increase in γ is associated with high wage in the family enterprise sector, which induces more workers to enter the family enterprise. Similar conclusions can be drawn with respect to family assets. In effect, increase in family asset reduces supply of labor to the paid employment sector[15].

3.1 Empirical Model

Equation (7) is used to derive the empirical model. Conditional on educational attainment, individual employment choice is determined by ability rent $(\pi - \tau)$, which is an unmeasured characteristic of the labor market, and education rent $(\alpha - \sigma)$, which is measurable. Other determinants are family asset (A), experience (x), family size (n), and sectoral shift factors such as $\mu, \xi, \varepsilon,$ and $\epsilon.$ I include parental occupation in the model in order to capture the potential influence of family employment history on individual employment choice. I account for sectoral shift by using data collected over an interval of seven years (1991/1992

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[15] This model contrasts with previous models of employment choice in an important respect. Instead of choosing capital input and borrowing from the capital market to augment family assets when they are lower than the optimal level, a self employed individual depends solely on family assets to operate the enterprise. In this case, it is appropriate to believe that the choice of the level of capital invested in self-employment will be derived from the level of family assets and associated opportunity costs rather than from a maximization process.

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and 1998/1999) and introducing a dummy variable representing the last year of survey into the reduced-form equation.

I estimate multinomial probability model of employment choice among paid employment, self employment, and the family enterprise sector which covers family farm and non-farm enterprises. While it is possible that some workers engage in two or more forms of employment at the same time, I take the activity in which they spend most of their time as their primary employment. I exclude unemployment from the choices because in the absence of formal unemployment benefits, open unemployment is very low as these individuals are likely to be reported as family enterprise employees. This exclusion may lead to specification bias in the estimates; I estimate robust standard errors that corrects for such potential bias.

Given a dependent variable with N nominal (non-ordered) categories, the multinomial logit model compares the probability that a sampled element belongs to each of $N-1$ categories to the probability that it belongs to an omitted (or reference) category. Denoting the reference category as r, then for $n = 1,2,\ldots,N$, the model estimates

$$\ln\frac{P(Y_i = n)}{P(Y_i = r)} = \alpha_n + \sum_k \beta_{nk} X_{nk}$$

where Y_i is employment choice of an individual, β_{nk} measures the effect of a variable X_k on the log of odds that a sampled individual will choose employment type n relative to employment type r., Notice that r is the omitted category.

For simplicity, I transform the estimates using the equation $b_{nk} = e^{\beta_{nk}}$ in order to obtain direct relative risks. Increases in a value of a regressor with relative risk $b_{nk} < 1$ make it less likely that an individual will choose type-n employment relative to type-r employment. Simply put, in that case, the variable indexed by k sorts individuals into type-r employment relative to type-n. I estimate the model separately for new entrants and existing workers, and among existing workers, I estimate the model separately for transition from paid employment, from self employment and from family enterprise.

The error term is not shown in the above model. In the original random utility model that underlies the multinomial logit model, it is assumed that the disturbance terms are

independent and homoscedastic[16]. While this assumption is usually not satisfied, failure to do so in this exercise is not due to correlation between unobserved ability and regressors[17]. If unmeasured ability within education level induces bias into the coefficient estimates for each category of the dependent variable, then computation of coefficients for non-omitted categories relative to the omitted category will offset potential the bias.

4. Data

I use data from Ghana Living Standard Surveys (GLSS) conducted in 1991/1992 and 1998/1999 named GLSS3 and GLSS4, respectively. The intervening period between the surveys coincide with the completion of the structural adjustment program which began in the late 1980s. As a result of reduced government expenditure, privatization, economic recession or a combination of these factors, there was dramatic decline in employment in the public sector and significantly large group of workers were retrenched. Most of these workers found employment in self employment and the family sector. New entrants to the labor market were increasingly rationed out of wage employment, leading to expansion of the non-wage sectors.

I use levels of education instead of years of education in the model. Individuals with no education or primary education, as well as those who left school before reaching middle school are classified into the pre-Basic Education Certificate (pre-BECE) category. Because the BECE or alternatively the Middle School Leaving Certificate (MSLC) is the terminal level of education attainment for the majority of the Ghanaian population, I let the category stand alone. This

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[16] Following Green 2002, pp.721, disturbances are assumed to be independently and identically distributed with type I extreme value (Gumbel) distribution of the form $F(\varepsilon_{ij}) = exp(-e^{-\varepsilon_{ij}})$. This is the assumption of Independence of Irrelevant Alternatives (IIA) that is attached to the model. Interpreted with respect to the structure of the decision function, the assumption states that adding or deleting a choice category does not affect the estimated coefficients for remaining categories. However, It has been noted that this assumption is unrealistic in most applications. In this paper, this assumption is violated out of necessity as the absence of one type of employment should affect the likelihood of choosing another type. The alternative model, the multinomial probit model, proves more cumbersome and difficult to deal with. Notwithstanding, the estimates I report are estimated based on robust standard errors. Doing this naturally limits the ability to test the IIA assumption.
[17] Given the potential correlation between education and ability, the model is estimated for categories of educational attainment so that any remaining concerns rest only on ability effects within education levels. That is, using variations in observable regressors to determine individual choice of employment leaves open the possibility that within-education level estimates may be biased by variations in unmeasured ability.

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category constitutes 52% of the sample I use in this analysis. Individuals who attained education levels higher than BECE level are classified into the post-BECE category[18].

Other regressors included in the equation are easily measured in the data with the exception of education premium. To obtain a measure for this variable, I first estimate an earnings equation from the data. I estimated a regression of log wages on log age, log experience, education levels, an urban dummy and region dummies.

The section of the data covering employment and time use collects labor earnings information from all adults aged 15 and above who reported having engaged in some activity during the period covered by the survey. The 1998/1999 data does not explicitly collect data on experience. Due to the importance of experience in the earnings regressions, I am only left with the 1991/1992 data for this purpose. Because education premium can change over time, the use of estimates from 1991/1992 data for 1998/1999 amounts to extrapolation that may introduce a weakness into the remaining empirical models.

I estimate regressions of earnings separately for individuals in paid employment, self employment and family enterprise, and present the regression estimates in Table 1. As expected, older people earn higher wages than younger people, and this appears to be consistent across sectors. The results regarding the experience effect is also expected, given the different earnings functions. While earnings in paid employment and family enterprise both rise with experience, earnings in self-employment do not. This finding is consistent with the way self employment has been modeled in the literature. Compared to an individual with no education, returns to a BECE education level is highest in self-employment: 18.37 percent (in log earnings) in paid employment, 24.20 percent in self employment and 15.40 percent in family enterprise.

However, compared to an individual with no education, returns to post-BECE education level are highest in paid employment: 65.8 compared to 56.45 percent in self employment and 31.15 percent in family enterprise. In terms of returns to marketable education, these

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[18] This classification also takes into account structural factors that affect returns to education in Ghana. The BECE is the level at which an individual is considered to have marketable education. Investment in education beyond BECE depends a lot on individual ability because the education system does not allow more than one sitting for the BECE examination. Failure to pass the qualifying examination precludes an individual from moving forward to higher education. Conditional on passing, moving beyond the BECE is a signal of higher ability.

estimates also suggest a marginal return to education at the BECE level (coefficient of post-BECE dummy minus coefficient of BECE dummy) of 47.43 percent in paid employment, 32.25 in self employment and 15.75 percent in family enterprise. These differences are naturally expected.

I include regional dummies in these regressions but do not show the coefficients in the table. These can be obtained upon request. Post-estimation, I obtained predicted values of log earnings by education level by region for each employment category while holding other variables included in the estimation at their means. I subsequently computed region-specific estimates of education premium ($\alpha - \sigma$) for each level of education as the difference between predicted log earning in paid employment and predicted log earning in self employment.

5. Results

5.1 Employment Choice Among New Entrants

I estimated multinomial logit models for a virtual group of school-leavers who were working at the time of survey[19]. In the employment module individuals were asked "What was your primary occupation before your last 12 months' main occupation?" Three options that were available to those who did not report a specific occupation include: "Full time education," "Looking for work," and "Other activity." I consider individuals who answered "Full time education" to be the appropriate group that were transiting directly from school. New entrants into the labor market who do not find wage employment immediately will be in the stage of looking for work at the time of the survey. It is difficult to identify these persons because open unemployment is rare; these individuals are more likely to report as family workers while searching for a job.

I present estimates for each round of survey separately and for the pooled data. I also show estimates by education level; separately for the samples with pre-BECE education, the

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[19] The education module does not capture the year of completion of the most recent level of education. Otherwise, I would have included controls for the year of completion of education, which would be, by assumption, the year of entering the labor market. It is also possible that some individuals currently engaged in employment, particularly self employment, are simultaneously in transition from one grade of education to another. I address this potential problem by including in the sample only individuals who are reported to be no longer attending school.

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sample with BECE education, and the sample with post-BECE education. The odd ratios summarized in Table 2 reveal three important results. First, household assets only affect employment choice among the least educated workers by increasing the odds of being family enterprise workers than being self employed. This effect is more likely to be strong if, as a result of low education and inability to secure paid employment, households absorb their children into family enterprise or farm production. Second, the most educated workers who had been most likely to obtain paid employment are increasingly turning to the non-wage sectors. Workers in the post-BEBE category were 22 times more likely to obtain paid employment than workers in the pre-BECE category in the 1991/1992 data, but this ratio reduces to 9 in the 1998/1999 data. Looking only among post-BECE workers, the coefficient of the year 1998/99 dummy of 0.4792 reflects the tightening of paid employment sector within the 7-year interval as a result of which qualified entrants unable to find a wage job remain in the family enterprise. It is plausible that this trend of increased employment in family enterprise is more indicative of disguised unemployment than a choice to work as unpaid family labor. Third, it is increasingly more likely over the years that individuals with apprenticeship training would end up in the self employment sector instead of paid employment sector (odds ratio of 3.90 vs. 2.29 in 1991/1992 compared to 6.45 vs. 1.96 in 1998/1999). This could be the result of increased competition for paid employment on the basis of non-apprenticeship skills or the result of programs to assist apprenticeship graduates to establish their own enterprises.

Other coefficient estimates turned out as expected. Individuals whose parents were wage employees are more likely to be in paid employment compared to any other sector. However, the tightening of paid employment has eroded this effect, so that parent's experience in paid employment does not make significant difference between children's engagement in self employment or paid employment in the 1998/1999 survey. Individuals from large households are more likely to end up in family enterprises or farms, independent of the effect of household assets. Education premium $(\alpha - \sigma)$ did not seem to matter in 1991/1992 data but appears to reduce the odds of paid employment in 1998/1999. Expansion of schooling and other forms of skill development programs over the years contribute to this observation through excess supply of labor to wage employment, which reduces the odds that an individual

will find wage employment. It is expected that the effect would be felt most among the least educated workers, and the estimates among the pre-BECE category confirms this (coefficient of paid employment rent of 0.020).

5.2 Occupational Mobility

The factors that influence employment choice among new entrants to the labor market may be different from those that influence transition from one sector to another. These new factors include on-the-job experience and accumulated savings. Individuals with work experience are more likely to have accumulated some assets that may influence their choice of remaining in the sector or moving elsewhere. Unfortunately, I am unable to identify individual assets in the data; only household assets are provided. As a result, I am unable to test the effect of individual asset on transition from paid employment.

I estimate a number of multinomial logit models for a sample of workers who had been in paid employment and examine their transition. I include experience in the set of regressors and designated paid employment sector as the reference sector. The results presented in Table 3 indicate that large household assets increase the odds of transition from paid employment to self employment, although this effect seems not important in the 1998/1999 data. The disaggregated results show that this effect is operational among the most educated workers where increases in household assets are associated with slight increases in the odds of moving from paid employment to self employment. Apprenticeship training also increases the odds of moving into self employment among these workers.

When accounting for experience in Table 3, I find that experience in paid employment is associated with a decrease in the odds of entering self-employment. This result contradicts the commonly-held belief that workers start with paid employment, accumulate savings in order to ease credit constraint, and then turn to self employment (see Evans and Jovanovic, 1989). However, this effect is limited only to workers with BECE education. Looking at the results in general, length of experience in paid employment tends to reduce rather than increase the odds of transition into self employment even among most educated workers who make the most earnings in paid employment. Notice also that increase in education premium raises the

odds of transition into family enterprise in both the 1991/1992 and the 1998/1999 data, consistent with the predictions of the model. By education category, this effect is noticeable among more educated workers.

I estimated similar model for workers with experience in self employment and summarized the estimates of relative risks of transition in Table 4. Taking self employment as the reference category, the data reveals interesting results. First, household asset does not affect the odds of transition from self employment to either paid employment or family enterprise. Apprenticeship training raises the odds of transition to family sector among the more educated groups (BECE and post-BECE categories) but raises the odds of transition to paid employment among the least educated (pre-BECE) workers. These results may reflect experiences following self employment failure. Previously self employed workers are likely to seek paid employment opportunities but face opportunities in low-wage markets. The less educated workers are likely to accept low wages while more educated workers are likely to reject them and continue to seek jobs that pay more. As a result, they will remain in the family sector that is home to the unemployed.

Other results in Table 4 are expected. Increase in household size raises the odds of moving from self employment into the family sector in all skill categories; experience in self employment decreases the odds of moving out of self employment for all skill categories; exit from self employment becomes increasingly unlikely among the most educated workers; and education premium reduces the likelihood of transition to paid employment while increasing the odds of transition to family enterprise.

Finally, I estimate the same model for workers who had been engaged in family enterprise and summarize the results in Table 5. Taking family enterprise as the base category, the results show that household assets increase the odds of transition from family enterprise into self employment but this occurs only among the most educated workers. Moreover, possession of apprenticeship skills also increases the odds of transiting into self employment among them as well as among workers with BECE education. As expected, household size reduces the odds of moving from family enterprise for all categories of education. Education premium seems to affect transition only among the BECE workers by decreasing the odds of

moving from family enterprise to paid employment sector. It is plausible that the premium also provides signals about competition for wage jobs among workers[20].

5.3 Self Employment Enterprise Assets

Table 6 presents linear regression estimates of the determinants of self-employment enterprise assets. I linked individuals from the employment module to the household enterprise module. An individual reported as self employed in non-farm enterprise (in the employment module) is designated as the operator of the household enterprise of which he is reported as the household member who knows most about (in the household enterprise module).

As expected, individuals from wealthier households have larger enterprise assets, and older enterprises have more assets than newer enterprises. But two sets of estimates are worth noting in terms of implications. First, while workers with BECE education who had apprenticeship training run enterprises with more assets than those who did not receive apprenticeship training, the opposite case occurs with post-BECE workers. This is plausible considering that the most educated workers might be running more skill-driven enterprises which will require less physical capital. Second, investigation of whether experience in paid employment has any effect on self-employment assets yields interesting results. For example, among the most educated (post-BECE) workers, evidence suggests that workers who transit from paid employment to self employment have more assets (nearly double in log terms) than others. In contrast, workers with previous paid employment have lower enterprise assets than others among less educated workers, notably the pre-BECE workers. It is plausible that the post-BECE workers have larger and wealthier social networks than other categories of workers and may be able to raise larger capital. On the other hand, the pre-BECE workers moving into self employment are probably workers that were laid off from paid employment who became self employment out of necessity. Unfortunately, I have no data to test these hypotheses.

I examine whether experience in previous employment (could be wage, self employment or family enterprise) has any effect on enterprise assets, and found a positive effect only among the BECE-educated workers. An interaction term between transition from

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[20] Absence of similar effects among the post-BECE category might be due to the size of the sample.

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wage to self employment and experience in preceding employment captures the extent to which experience in preceding paid employment raises assets. I find this term to have significant effect only in the lowest education class, and the effect is negative.

5.4 Returns on Enterprise Assets

I present estimates of regression models investigating determinants of enterprise profits in Table 6. Due to the presence of recall errors and the fact that informal self employment enterprises rarely maintain proper accounts, the survey limited questions about income and expenses to the two weeks preceding the survey. The table shows that nominal enterprise profits increase by education level, but returns on assets do not. Individuals with apprenticeship training, and probably whose enterprise activity is dependent on their apprenticeship skills, make lower earnings when measured by both nominal profits and return on assets. Age of enterprise tends to reduce profits but the effect is not robust to inclusion of characteristics of the entrepreneur.

I investigate whether individuals who move from paid employment to self employment earned more income than others, and the results show that if anything, they are more likely to record lower earnings. Length of experience in paid employment tends to raise profits while length of experience in family enterprise tends to reduce them, but the coefficients are not statistically different from zero.

Looking at the coefficient on the year dummy, profits increased in nominal terms as expected (price changes are enough to make this happen) between 1991/1992 and 1998/1999. However, when measured in real terms through returns on assets, self-employment enterprises are less profitable in the 1998/1999 survey than in the 1991/1992 survey.

6. Summary

I have used Ghana Living Standard Surveys (GLSS) data sets to examine a model of employment choice in an African setting where capital markets are often missing for credit constrained individuals and reliance on family asset becomes inevitable. The results, as expected, offer insights that are different from those obtained from economies with

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functioning capital markets. They also offer insights into the basis of multisector labor markets as they are known in less developed societies.

These results support a phenomenon that was first observed by Lewis (1954) that individuals are drawn into paid employment due to the premium that exists in that sector. In the model and results, education premium attracts workers into paid employment. This is consistent with a phenomenon that has been labeled as infinitely sloped labor supply curve. Higher premium intensifies competition for limited paid employment opportunities and implies that individuals are less likely to find a job in the wage sector. Moreover, the role of formal education in accessing wage opportunities also implies that highly educated workers are preferred in the paid employment sector.

Inability to secure paid employment and lack of access to financial markets reinforce the importance of family and other personal characteristics in employment choice. For example, individuals from wealthy households and those who received apprenticeship training are more likely to be self employed than individuals from poor households with no training. Notice, however, that, regardless of wealth, individuals from large households are more likely to be employed in family farm or enterprise as compared to individuals from small households.

In terms of labor mobility, the results show that workers engaged in self employment are the least mobile while those employed in household production or family enterprise are most mobile. In particular, this indicates that the family enterprise sector is home to the unemployed who must do something. Paid employment workers are in the intermediate position. The fact that individuals engaged in family enterprise are very mobile is compatible with the theoretical model and is supported by the empirical findings. Across education categories, the longer an individual has been self-employed, the less likely he is to move into either paid employment or family enterprise. This is plausible because a self-employment enterprise is suitably tailored to the entrepreneur's personal characteristics and thrives more importantly on unobserved ability that is not likely to be rewarded elsewhere.

Apart from household assets, the results do not reveal systematic determinants of enterprise assets. Although the age of the enterprise seemed to raise the value of assets, this effect itself is not robust when characteristics of the entrepreneur are accounted for. There is

no evidence that earnings or any experience from paid employment exerts important influence on the size of enterprise assets. In terms of profits, the single most consistent result is that workers who became self employed through apprenticeship training achieve lower returns whether measured in terms of nominal profits or in terms of return to assets. This is most likely to be driven by lack of technological progress in apprenticeship-led enterprises.

Analysis of self employment and entrepreneurship based on two-sector models have suggested that liquidity constraints limit the rates of self employment and consequently affects labor productivity. In those models, workers choose between paid employment and self employment, or transit from the former to the latter. These models are not able to reflect key analytically important characteristics of labor markets in developing economies. Instead of these models, developing countries' labor markets are better captured by multisector models with at least three sectors. Unlike the two sector models where it is assumed that workers can transfer their experiences from one sector to another, there are constraints to intersectoral mobility in developing countries that might prevent the two-sector model from generating meaningful insights for policy purposes. In addition to liquidity constraint that is well captured in the two-sector model, the three-sector model analyzed in this paper accounts for human capital constraints in terms of marketability of experience from one sector to another. The theoretical model and empirical results confirm that the labor market in developing countries is a bit different and as such constitutes a case of interest for economists and policy makers. It should be noted that both liquidity and human capital constraints are key to studying labor market dynamics in developing countries, especially in sub-Saharan Africa as the case of Ghana indicates.

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TABLE 1
LINEAR REGRESSION OF REPORTED MONTHLY EARNINGS
ESTIMATION OF SKILL RENTS BASED ON LEVELS OF EDUCATION
SAMPLE OF MALE ADULTS CURRENTLY AGED 16-64 WHO REPORTED INCOME
GHANA LIVING STANDARD MEASUREMENT SURVEYS 1991/1992

Dependent variable = Log (Earnings)	1991/1992 Survey		
	Paid employment	Self Employment	Family Sector
Log Age	0.577***	0.613**	0.393**
	[0.129]	[0.238]	[0.154]
Log Experience	0.160***	-0.021	0.219***
	[0.041]	[0.077]	[0.066]
None/Primary Education	-	-	-
JSLC/BECE Education	0.184**	0.242**	0.154**
	[0.078]	[0.123]	[0.071]
Post-BECE Education	0.658***	0.565***	0.311**
	[0.082]	[0.197]	[0.144]
Urban	0.087	0.390***	0.242**
	[0.062]	[0.142]	[0.122]
Constant	7.153***	7.392***	7.140***
	[0.418]	[0.786]	[0.469]
Observations	778	399	781
R-squared	0.24	0.18	0.2

Robust standard errors in brackets

Observations are clustered by household

* significant at 10%; ** significant at 5%; *** significant at 1%

Regression includes region dummies

I am unable to use the 1998/1999 data because the survey instruments used omit experience on the job

TABLE 2

MULTINOMIAL LOGIT ESTIMATES OF EMPLOYMENT CHOICE

SAMPLE OF MALE ADULTS WHO TRANSIT FROM SCHOOL TO EMPLOYMENT

GHANA LIVING STANDARD MEASUREMENT SURVEYS 1991/92 AND 1998/99

| | 1991/92 Survey | | 1998/99 Survey | | Pooled Data by Educational Qualification | | | | | |
| | | | | | Pre-BECE | | BECE | | Post BECE | |
	Paid Emp.	Self Emp.	Paid Emp.	Self Emp.	Paid Emp.	Self Emp.	Paid Emp.	Self Emp.	Paid Emp.	Self Emp.
Log household Asset	1.059	0.975	1.048	1.064	0.925	0.818*	1.047	1.132	1.075	1.059
	[0.094]	[0.097]	[0.072]	[0.078]	[0.108]	[0.085]	[0.072]	[0.087]	[0.142]	[0.166]
BECE	2.076	0.839	1.298	1.09						
	[0.988]	[0.381]	[0.459]	[0.347]						
Post-BECE	21.983***	1.214	8.737***	2.161**						
	[12.872]	[0.898]	[3.124]	[0.823]						
Apprenticeship	2.294**	3.903***	1.960**	6.450***	5.539***	4.359***	2.239***	6.044***	0.749	4.487***
	[0.892]	[1.588]	[0.556]	[1.720]	[2.684]	[2.110]	[0.634]	[1.710]	[0.355]	[2.443]
Parent wage emp.	2.235**	1.028	1.747**	1.868**	0.892	1.11	2.007**	1.45	2.080*	2.387*
	[0.806]	[0.496]	[0.488]	[0.586]	[0.700]	[0.647]	[0.630]	[0.511]	[0.804]	[1.141]
Log household size	0.211***	0.245***	0.899	0.818	0.877	0.684	0.513***	0.509***	0.447**	0.457**
	[0.063]	[0.076]	[0.162]	[0.157]	[0.316]	[0.206]	[0.103]	[0.105]	[0.149]	[0.181]
Urban	7.250***	8.958***	5.356***	4.262***	1.001	2.544**	7.934***	5.869***	8.184***	6.162***
	[2.538]	[4.024]	[1.439]	[1.239]	[0.522]	[1.182]	[2.188]	[1.757]	[3.510]	[3.668]
Paid emp. rent	0.787	0.324	0.311***	0.511	0.020***	0.502	0.614	0.485	0.715	0.941
	[0.659]	[0.286]	[0.139]	[0.227]	[0.023]	[0.427]	[0.354]	[0.245]	[0.442]	[0.802]
Year=1998/99					2.26	1.542	0.734	1.297	0.479*	1.693
					[1.413]	[0.748]	[0.214]	[0.397]	[0.214]	[1.177]
Constant	0.597	1.753	0.151**	0.105***	0.763	1.319	0.334*	0.101***	3.648	0.185
	[0.512]	[1.543]	[0.116]	[0.084]	[0.822]	[1.218]	[0.215]	[0.072]	[4.308]	[0.304]
Pseudo R-squared	0.32		0.24		0.15		0.19		0.19	
Model chi-square	109.81		220.15		32.48		122.89		79.40	
N	327		672		202		495		302	

* p<.10, ** p<.05, *** p<.01

Robust standard errors in brackets; observations are clustered by household

Omitted dependent variable category: family farm or enterprise

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TABLE 3

MULTINOMIAL LOGIT ESTIMATES OF EMPLOYMENT CHOICE

SAMPLE OF MALE ADULTS PREVIOUSLY IN WAGE EMPLOYMENT

GHANA LIVING STANDARD MEASUREMENT SURVEYS 1991/92 AND 1998/99

| | 1991/92 Survey | | 1998/99 Survey | | Pooled Data by Educational Qualification | | | | | |
| | | | | | Pre-BECE | | BECE | | Post BECE | |
	Self Emp.	Family Ent./Farm	Self Emp.	Family Ent./Farm	Self Emp.	Family Ent./Farm	Self Emp.	Family Ent./Farm	Self Emp.	Family Ent./Farm
Log household asset	1.301**	1.06	1.064	0.938	1.149	0.988	1.097	0.972	1.246*	0.921
	[0.158]	[0.089]	[0.068]	[0.050]	[0.145]	[0.108]	[0.079]	[0.054]	[0.156]	[0.104]
BECE	1.705	1.044	0.616	0.418***						
	[0.877]	[0.405]	[0.199]	[0.112]						
Post-BECE	0.396	0.214***	0.269***	0.117***						
	[0.250]	[0.107]	[0.099]	[0.040]						
Apprenticeship	1.883*	1.511	2.398***	1.810***	0.89	1.892	2.183***	1.671**	5.439***	1.678
	[0.704]	[0.472]	[0.556]	[0.401]	[0.445]	[0.825]	[0.510]	[0.370]	[2.550]	[0.889]
Parent wage emp.	0.692	0.500*	0.692	0.205***	0.212*	0.527	0.829	0.247***	0.854	0.143***
	[0.262]	[0.182]	[0.160]	[0.060]	[0.178]	[0.321]	[0.206]	[0.077]	[0.326]	[0.099]
Log household size	0.796	1.27	0.976	1.253	1.232	2.550***	0.742	1.053	1.191	0.977
	[0.176]	[0.295]	[0.177]	[0.220]	[0.434]	[0.912]	[0.136]	[0.193]	[0.341]	[0.251]
Urban	1.561	0.791	1.408	0.135***	0.603	0.067***	1.09	0.269***	8.245***	0.306***
	[0.571]	[0.252]	[0.304]	[0.034]	[0.290]	[0.036]	[0.256]	[0.065]	[4.743]	[0.124]
Log experience	1.236	1.298	0.663***	0.989	1.203	0.921	0.726**	1.168	0.751	1.077
	[0.299]	[0.234]	[0.094]	[0.135]	[0.357]	[0.290]	[0.114]	[0.165]	[0.168]	[0.272]
Paid emp. rent	0.073**	4.870***	0.664	2.979***	0.108	1.861	0.776	3.605***	0.276	2.824*
	[0.094]	[2.653]	[0.283]	[1.043]	[0.147]	[1.521]	[0.376]	[1.333]	[0.246]	[1.537]
Year=1998/99					3.225*	4.951***	0.909	1.066	1.371	1.357
					[1.941]	[2.523]	[0.273]	[0.269]	[0.814]	[0.634]
Constant	0.050**	0.081***	0.693	2.315	0.146	0.205	0.45	0.515	0.006***	0.211
	[0.059]	[0.072]	[0.505]	[1.509]	[0.187]	[0.243]	[0.299]	[0.318]	[0.007]	[0.226]
Pseudo R-squared	0.13		0.22		0.22		0.12		0.17	
Model chi-square	67.35		240.74		62.32		110.15		63.52	
N	333		795		166		572		390	

* p<.10, ** p<.05, *** p<.01

Robust standard errors in brackets; observations are clustered by household

Omitted dependent variable category: wage employment

TABLE 4

MULTINOMIAL LOGIT ESTIMATES OF EMPLOYMENT CHOICE

SAMPLE OF MALE ADULTS PREVIOUSLY SELF EMPLOYED

GHANA LIVING STANDARD MEASUREMENT SURVEYS 1991/92 AND 1998/99

| | 1991/92 Survey | | 1998/99 Survey | | Pooled Data by Educational Qualification | | | | | |
| | | | | | Pre-BECE | | BECE | | Post BECE | |
	Paid Emp.	Family Ent./Farm	Paid Emp.	Family Ent./Farm	Paid Emp.	Family Ent./Farm	Paid Emp.	Family Ent./Farm	Paid Emp.	Family Ent./Farm
Log household asset	0.982	0.939	0.993	0.962	0.902	0.899	1.024	0.951	1.111	1.428
	[0.109]	[0.099]	[0.062]	[0.076]	[0.083]	[0.094]	[0.077]	[0.074]	[0.141]	[0.336]
BECE	1.013	1.201	1.246	0.692						
	[0.445]	[0.520]	[0.340]	[0.183]						
Post-BECE	6.469***	3.938*	0.71	0.296**						
	[4.204]	[3.036]	[0.274]	[0.163]						
Apprenticeship	3.972***	2.191*	1.207	1.953**	3.207***	2.203**	1.304	1.863**	1.348	5.666*
	[1.790]	[0.987]	[0.292]	[0.537]	[1.402]	[0.794]	[0.355]	[0.572]	[0.777]	[5.833]
Parent wage emp.	0.926	0.903	0.89	0.309***	1.538	0.614	0.754	0.321***	0.355	0.371
	[0.445]	[0.483]	[0.230]	[0.102]	[0.678]	[0.295]	[0.220]	[0.120]	[0.225]	[0.400]
Log household size	1.178	2.606***	0.953	1.104	1.000	1.556	1.036	1.486*	0.875	6.949*
	[0.322]	[0.871]	[0.179]	[0.218]	[0.287]	[0.422]	[0.211]	[0.339]	[0.370]	[7.472]
Urban	2.030*	0.568	1.186	0.203***	1.611	0.469**	1.029	0.190***	3.567*	0.133***
	[0.873]	[0.291]	[0.290]	[0.056]	[0.650]	[0.178]	[0.281]	[0.064]	[2.456]	[0.102]
Log experience	0.529**	0.749	0.761*	0.569***	0.702	0.491***	0.772	0.678*	0.287**	0.123*
	[0.147]	[0.210]	[0.118]	[0.102]	[0.174]	[0.109]	[0.137]	[0.137]	[0.150]	[0.141]
Paid emp. rent	0.81	0.304	0.127***	6.283***	0.174*	1.731	0.234**	4.224***	0.989	4.899
	[0.699]	[0.240]	[0.088]	[2.854]	[0.184]	[1.004]	[0.144]	[2.094]	[1.302]	[7.266]
Year=1998/99					0.893	2.632**	0.922	1.557	0.071***	0.030***
					[0.407]	[1.199]	[0.303]	[0.591]	[0.054]	[0.038]
Constant	0.423	0.319	1.364	1.304	1.188	0.975	0.965	0.45	6.937	0.088
	[0.489]	[0.347]	[1.008]	[0.973]	[1.243]	[0.835]	[0.683]	[0.342]	[11.849]	[0.227]
Pseudo R-squared	0.12		0.16		0.12		0.12		0.28	
Model chi-square	36.46		113.05		47.21		71.02		40.32	
N	181		530		223		390		98	

* p<.10, ** p<.05, *** p<.01

Robust standard errors in brackets; observations are clustered by household

Omitted dependent variable category: self employment

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TABLE 5

MULTINOMIAL LOGIT ESTIMATES OF EMPLOYMENT CHOICE

SAMPLE OF MALE ADULTS PREVIOUSLY EMPLOYED IN FAMILY ENTERPRISE

GHANA LIVING STANDARD MEASUREMENT SURVEYS 1991/92 AND 1998/99

| | 1991/92 Survey | | 1998/99 Survey | | Pooled Data by Educational Qualification | | | | | |
| | | | | | Pre-BECE | | BECE | | Post BECE | |
	Paid Emp.	Self Emp.	Paid Emp.	Self Emp.	Paid Emp.	Self Emp.	Paid Emp.	Self Emp.	Paid Emp.	Self Emp.
Log household asset	1.074	1.021	0.809***	1.105	1.04	1.056	0.900*	1.045	1.137	1.579**
	[0.070]	[0.089]	[0.058]	[0.069]	[0.100]	[0.095]	[0.053]	[0.064]	[0.148]	[0.308]
BECE	1.901***	0.763	2.329***	0.915						
	[0.472]	[0.226]	[0.694]	[0.229]						
Post-BECE	7.319***	5.169***	2.324*	0.575						
	[3.765]	[2.657]	[1.142]	[0.286]						
Apprenticeship	2.844***	2.808***	1.324	3.160***	4.950***	3.642***	1.355	2.452***	3.098	11.500**
	[0.688]	[0.804]	[0.365]	[0.751]	[1.608]	[1.034]	[0.302]	[0.619]	[2.694]	[11.205]
Parent wage emp.	1.335	1.205	1.101	1.068	0.694	0.895	1.588	1.346	0.742	1.741
	[0.500]	[0.487]	[0.447]	[0.349]	[0.417]	[0.416]	[0.512]	[0.459]	[0.526]	[1.422]
Log household size	0.543***	0.455***	0.570***	0.680**	0.551**	0.506***	0.553***	0.801	0.194***	0.072***
	[0.092]	[0.086]	[0.102]	[0.123]	[0.129]	[0.098]	[0.085]	[0.154]	[0.097]	[0.043]
Urban	14.826***	15.046***	2.728***	7.745***	13.644***	8.244***	4.388***	9.690***	5.403**	6.597**
	[6.151]	[6.934]	[0.909]	[2.213]	[6.583]	[3.472]	[1.298]	[2.818]	[4.143]	[5.885]
Log experience	0.824	1.409*	0.883	0.877	0.694	1.158	0.84	1.041	1.602	1.781
	[0.156]	[0.275]	[0.146]	[0.143]	[0.155]	[0.220]	[0.132]	[0.183]	[0.824]	[1.155]
Paid emp. rent	0.941	1.785	0.155***	0.230**	0.285	0.634	0.276**	0.468	2.590	0.443
	[0.531]	[1.114]	[0.111]	[0.132]	[0.265]	[0.404]	[0.152]	[0.289]	[4.497]	[0.805]
Year=1998/99					0.503	0.795	0.737	1.144	0.062***	0.032***
					[0.224]	[0.251]	[0.192]	[0.333]	[0.046]	[0.023]
Constant	0.161***	0.076***	2.839	0.158**	0.353	0.141***	2.49	0.082***	0.828	0.222
	[0.104]	[0.054]	[2.283]	[0.124]	[0.316]	[0.094]	[1.402]	[0.057]	[1.377]	[0.437]
Pseudo R-squared	0.18		0.14		0.17		0.12		0.31	
Model chi-square	137.42		116.24		107.75		121.06		49.68	
N	642		739		560		722		99	

* p<.10, ** p<.05, *** p<.01

Robust standard errors in brackets; observations are clustered by household

Omitted dependent variable category: family enterprise/farm

TABLE 6

DETERMINANTS OF ENTERPRISE ASSETS

GHANA LIVING STANDARD MEASUREMENT SURVEYS 1991/92 AND 1998/99

Dependent Variable is Log of Enterprise Assets

	None/Primary Education			JSLC/BECE			Post BECE		
Log household asset	0.316***	0.341***	0.351***	0.416***	0.455***	0.453***	0.385***	0.352**	0.351**
	[0.069]	[0.076]	[0.075]	[0.053]	[0.067]	[0.068]	[0.136]	[0.169]	[0.170]
Apprenticeship	0.257	0.211	0.195	0.435**	0.579***	0.582***	-0.878*	-1.361**	-1.362**
	[0.237]	[0.284]	[0.276]	[0.169]	[0.203]	[0.203]	[0.450]	[0.584]	[0.588]
Log enterprise age	0.316**	0.19	0.134	0.371***	0.186	0.187	0.220	0.090	0.090
	[0.145]	[0.189]	[0.187]	[0.097]	[0.136]	[0.136]	[0.337]	[0.537]	[0.538]
Manufacturing enterprise	-0.159	-0.335	-0.35	0.021	0.039	0.047	-0.079	-0.438	-0.444
	[0.218]	[0.259]	[0.258]	[0.160]	[0.212]	[0.211]	[0.578]	[0.674]	[0.681]
Log household size	0.243	0.309	0.298	0.04	-0.096	-0.09	0.01	0.159	0.16
	[0.164]	[0.212]	[0.205]	[0.132]	[0.174]	[0.173]	[0.331]	[0.392]	[0.394]
Urban	0.023	0.141	0.088	0.410**	0.295	0.302	0.461	0.528	0.521
	[0.230]	[0.284]	[0.281]	[0.161]	[0.204]	[0.205]	[0.489]	[0.588]	[0.596]
Wage to self emp.	-0.917*	-1.036**	1.446	-0.019	-0.02	-0.398	0.981*	0.877	0.631
	[0.492]	[0.498]	[1.591]	[0.270]	[0.281]	[0.759]	[0.502]	[0.530]	[1.831]
Log prev. exp.		0.048	0.184		0.314**	0.278*		-0.522	-0.546
		[0.180]	[0.177]		[0.131]	[0.142]		[0.494]	[0.533]
W. to S. x Log prev. exp.			-1.136*			0.200			0.1200
			[0.633]			[0.352]			[0.871]
Year=1998/99	0.880***	0.984***	0.993***	0.866***	1.029***	1.051***	2.081***	1.986***	1.982***
	[0.258]	[0.301]	[0.302]	[0.202]	[0.266]	[0.272]	[0.570]	[0.658]	[0.662]
Constant	6.915***	6.832***	6.620***	6.137***	5.576***	5.630***	6.169***	8.023***	8.091***
	[0.469]	[0.566]	[0.572]	[0.434]	[0.607]	[0.627]	[1.040]	[1.375]	[1.427]
Observations	284	199	199	559	358	358	155	100	100
R-squared	0.27	0.32	0.33	0.31	0.35	0.36	0.34	0.35	0.35

Robust standard errors in brackets

* significant at 10%; ** significant at 5%; *** significant at 1%

TABLE 7						
SELF EMPLOYMENT ENTERPRISE EARNINGS						
ENTERPRISE PROFITS IN LAST TWO WEEKS PRIOR TO SURVEY						
GHANA LIVING STANDARD MEASUREMENT SURVEYS 1991/92 AND 1998/99						
Dependent Variable =	Log Nominal Profits			Profit /Assets		
Log enterprise assets	0.229***	0.232***	0.230***			
	[0.047]	[0.056]	[0.056]			
Pre-BECE						
BECE	0.374*	0.280	0.274	0.069	0.026	0.021
	[0.192]	[0.218]	[0.219]	[0.230]	[0.272]	[0.271]
Post-BECE	0.682**	0.422	0.413	0.391	-0.159	-0.167
	[0.323]	[0.414]	[0.415]	[0.422]	[0.532]	[0.533]
Apprenticeship	-0.622***	-0.751***	-0.738***	-0.675***	-0.950***	-0.942***
	[0.173]	[0.218]	[0.217]	[0.221]	[0.278]	[0.278]
Log enterprise age	0.018	-0.041	-0.023	-0.320**	-0.209	-0.197
	[0.114]	[0.127]	[0.131]	[0.139]	[0.175]	[0.177]
Urban	-0.166	-0.013	0.001	-0.531**	-0.389	-0.38
	[0.181]	[0.217]	[0.215]	[0.210]	[0.266]	[0.265]
Wage to self emp.	-0.089	-0.239	-1.500	-0.033	-0.081	-0.972
	[0.363]	[0.373]	[1.265]	[0.424]	[0.436]	[1.225]
Log prev. exp.		-0.056	-0.14		-0.304*	-0.363**
		[0.133]	[0.140]		[0.167]	[0.173]
W. to S. x Log prev. exp.			0.643			0.454
			[0.594]			[0.586]
Year=1998/99	1.148***	1.186***	1.206***	-0.452**	-0.622**	-0.611**
	[0.201]	[0.245]	[0.240]	[0.214]	[0.256]	[0.256]
Constant	6.954***	7.340***	7.488***	0.165	0.919*	1.011**
	[0.519]	[0.614]	[0.572]	[0.379]	[0.491]	[0.483]
Observations	697	455	455	697	455	455
R-squared	0.17	0.19	0.20	0.04	0.06	0.07
Robust standard errors in brackets						
* significant at 10%; ** significant at 5%; *** significant at 1%						