

## Employment Choice and Mobility in a Developing Setting: Model and evidence from Nigeria

**Abstract.** *The authors test a theoretical model incorporating capital market failure and labor market segmentation into sectors of (largely formal) wage employment, (largely informal) self-employment, and family enterprise employment, using detailed household survey data on workers in Nigeria in which credit-constrained individuals draw self employment capital from family assets. The results demonstrate very low rates of mobility across the three sectors, with family enterprise workers having the highest mobility and self-employed people having the lowest. The findings show that wage earnings do not alleviate liquidity constraints, but they do suggest that both liquidity and skill transferability are important for mobility.*

**Keywords:** Mobility, Employment, Multinomial Logit and Labour Market

## Table of Contents

|                                               |                                     |
|-----------------------------------------------|-------------------------------------|
| <b>Table of Contents</b> .....                | 2                                   |
| Introduction .....                            | 3                                   |
| Literature review .....                       | 5                                   |
| A model of individual employment choice ..... | 13                                  |
| Empirical model .....                         | 20                                  |
| Data and variables .....                      | 22                                  |
| Summary and conclusions .....                 | 28                                  |
| Declarations .....                            | <b>Error! Bookmark not defined.</b> |
| Acknowledgements .....                        | <b>Error! Bookmark not defined.</b> |
| REFERENCES .....                              | 31                                  |
| Appendix .....                                | 33                                  |

## List of tables

|                                                                                                                                                      |                                     |
|------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| Table 1 Linear regression estimation of skill premium by level of education (NLSS-reported monthly earnings of workers aged 16-64 in 2003/3004).     | 33                                  |
| Table 2 Linear regression estimation of skill premium by level of education (HNLSS-reported monthly earnings of individuals aged 16-64 in 2008/2009) | 34                                  |
| Table 3: Multinomial logit estimates for intersectoral mobility among individuals previously in wage employment (2003/2004)                          | 36                                  |
| Table 4: Multinomial logit estimates for intersectoral mobility among individuals previously in self- employment (2003/2004)                         | <b>Error! Bookmark not defined.</b> |
| Table 5 Multinomial logit estimates for intersectoral mobility among individuals previously in family-enterprise employment (2003/2004)              | 38                                  |
| Table 6 Determinants of enterprise assets (NLSS 2003/2004)                                                                                           | 38                                  |
| Table 7 Self-employment enterprise earnings and enterprise profits in last two weeks prior to survey                                                 | <b>Error! Bookmark not defined.</b> |

## **Introduction**

**Economic mobility can mean different things in different contexts.** In developing countries, work income is the most important aspect of personal and household income, therefore most economic mobility research focus on labour market. In the textbooks, mobility implies earning more money. From a dual labour market framework, generally, mobility involves moving from the rural to the urban sector or from the non-wage sector to the wage sector. The non-wage sector is not heterogeneous; it is divided on the basis of production process (either a worker is added to an existing process or must create a new one) and income determination that is whether income are considered marginal product (e.g. non-agricultural self-employment) or average product (e.g. family agriculture). As a result, mobility can also apply to transitions in the non-wage sector. Barriers to labor mobility across sectors would plainly be a symptom of unequal development as labor markets in developing nations are multi-sectoral hence making mobility an essential measure of economic progress.

The Nigerian labour market is remarkably divided into the rural sector (which consists of self-employed and unpaid family workers), informal urban sector (comprises of small-scale private businesses, artisans and other street vendors) and formal urban sector (made up of large scale private and public enterprises) that require some degree of regulatory and other stringent control rules (Ogwumike et al., 2006).

**The two-sector models dominate literature on job choice and mobility where individuals select between wage employment and self-employment, and employees generally transit from the**

**former to the latter.** These models are adequate when studying high-income countries, but they are not for developing economies. The assumption that markets always clear in equilibrium and workers can find wage employment anytime does not provide sufficient analytical insights of the labour market. This is because in low-income countries, the bulk of self-employment is made up of informal side hustles carried out by people who are unable to find (formal) wage work.

In Nigeria, it is argued that the informal sector is merely a holding ground for people awaiting entry into formal sector; as such the informal sector is a transitional phase or whether it is here to stay and should be promoted as a major source of employment and income for the urban labour force. In the word of informal sector involuntary workers would prefer formal jobs if one was available, these differences have important policy implications. The two-sector model, for example, considers financial constraints to be the primary restraint to self-employment and labor productivity increases. A worker in wage employment would be hesitant to start their own business not just because of the danger of temporary income loss if it fails, but also because of the risk of permanent wage loss connected with the uncertainty of returning to wage employment (Kihlstrom & Laffont, 1979). On the other hand, workers who began their careers as self-employed may have trouble finding wage job if their skills are not marketable in the wage employment sector due to significant inter-sectoral technological gaps.

The structure of the Nigerian labour market depicts the case of a developing country where the self- employed dominates the employment outcomes; the growth of self-employed is associated with low job generation in the wage employment and rises in unemployment. Labour market in

Nigeria like in any other developing country is dualistic in nature as it is composed of formal and informal sectors. The formal sector is made up of wage employment in the public and private sectors while the informal sector is composed of rural, urban informal and intermediate sector.

The remainder of the article is structured into six sections. The first reviews the literature and existing models, and discusses their shortcomings. The second presents the model used here and considers its implications. The third section constructs the empirical model, and the fourth describes the data and variables, also presenting the descriptive statistics. The fifth section summarizes the findings, and the final section concludes with policy implications and key recommendations.

### **Literature review**

The dual labor market model advanced by Lewis, started the study of labor markets in emerging nations (LEWIS, 1954). There is the rural subsistence sector and an urban capitalism sector, and employees prefer to work in the capitalist sector over the subsistence sector, regardless of their skill level. As a result of this labor market dualism, a worker with a particular degree of skill obtains different salaries depending on the industry. The urban pay premium thereby drives inter-sectoral labor mobility and employment choice. This structure was quickly challenged by those who argued that the two-sector model was insufficient to capture post-independence labor markets, particularly in the late 1950s and early 1960s, when rural populations migrated to cities in large numbers, leading to widespread urban unemployment and underemployment.

Lewis' paradigm, according to Todaro (Todaro, 1969) where unskilled persons move directly from low-productivity rural employment to high-productivity urban industrial ones, does not suit the data. He enlarged the concept to include an "urban traditional sector," in which unskilled rural migrants seeking urban industrial employment spend time before moving on to the modern sector. (Ranis & Stewart, 1999) added a "urban modernizing sector" to Todaro's (1969) three-sector model. Their main goal was to figure out why Asia's export-led economic and job boom extended into the 1980s. According to the model, unskilled rural migrants can work in the formal sector, the urban modernizing sector, or the urban traditional sector while looking for work in the formal sector. Subcontracting from the formal to the informal sector grew the urban modernizing sector, which then absorbed employees from the conventional urban sector. The "V-sector," or urban modernization, was the primary source of job development that followed the expansion of exports.

(Madrid, 2012) analyzes transitions from the second to the third quarter of 1993, 1995 and 1997 in Mexico. He identified six sectors or job statuses to be self-employment, unemployment, formal and informal sectors, out of the labor force, paid by commission or percentage, and unpaid jobs. His findings were a) that the time spent on a job and the so-called four and six-year retention rates are short relative to OECD countries; b) that between 15% and 20% of wage earners in the formal sector move out to another job status in only one quarter, and that the figures for other job statuses (informal workers, self-employment, unpaid jobs, etc.) are much higher; and c) that the share of each job status within the total population did not significantly change, although a high level of individual movements among job statuses.

(Silke, 2002) studies the search methods in Brazilian labor market using the Monthly Employment Survey of 1999. The study, however, deviates from the literature by considering a segmented labor market (formal employment, informal employment, self-employed, searching and inactive) rather than a standard dualistic “searching” or “working” approach. He examines the impact of various job search methods, gender, education and household head position on labor market transitions through multinomial logit model. By definition, searching (unemployment) is then taken to be the reference category, and only transitions out of the searching status are considered. In this way, he tests whether the likelihood of moving to a new state versus remaining in searching status is affected by any of the explanatory variables.

(Duryea et al., 2006) provides an empirical mobility analysis of nine countries of Albania, Georgia, Hungary, Poland, Russia, Ukraine, Argentina, Mexico, and Venezuela. Informality is mainly defined based on the social security definition and contract status in countries where data is lacking. Conditional annual probabilities of moving from an initial sector to another sector  $j$  are calculated to form transitional matrices for each of the six labor market states. The evidence indicates that unemployment is more persistent in transition countries, formal sector jobs have a higher interval than informal sector jobs, transitions into unemployment is greater from informal sector as compared to the formal sector. Furthermore, mobility within wage employment (i.e. formal-salaried and informal-salaried) exceeds that self-employment.

(Krstić & Sanfey, 2007) examined the labor mobility in Bosnia and Herzegovina (BH), employed two waves of panel data from 2001 and 2004 Living Standard Measurement Study (LSMS). They

consider a range of labor statuses; namely informal employees which comprises of informal self-employed, farmers and unpaid family workers; formal self-employed and formal wage employees make up the formal employment; unemployed and inactive forming the remaining labor force. In grouping informal and formal employment into one category, “Shorrocks index” was used. Shorrocks index is proportional to the fraction of individuals who changed their labour market status within a given period. It is calculated as  $S = \{n - tr(p) | (n - 1)\}$  where  $n$  is the number of states while  $tr(p)$  is the trace of transition matrix  $P$ .  $S$  takes the values in the interval  $(0, n/n - 1)$   $S = 0$  when nobody changed their status and  $S = n/n - 1$  when everybody changed their status”

Pagés & Stampini, (2009) provided a comparative analysis of labor mobility patterns for six countries. The sample includes Argentina, Mexico and Venezuela, which have been addressed by several previous researches; and extends to Ukraine, Albania and Georgia which have been understudied. Instead of running a dynamic multinomial logit regression, transition matrices were conducted for skilled and unskilled labor separately as measured by level of education. The main contribution of the paper, however, is a *new benchmark mobility index* that complements the standard transition probabilities. The measure accounts for the size and job openings in initial and terminal states, thereby eliminates all mobility barriers, and renders all the states equally preferred and equally likely to be the destination sector. The evidence displays a high level of mobility between informal-salaried and formal-salaried, but a low level of mobility between formal salaried and self-employed. The skill levels were found to be statistically insignificant in affecting mobility patterns.



"Labour status mobility can be regarded as a process in which changes in states occur randomly across time, and probability of moves between particular states are determined by Markov transition matrices," (Bosch et al., 2010) argued. To evaluate and compare labor market dynamics, panel data from Argentina, Brazil, and Mexico were used. They computed transition statistics across five labor market states: out of labor force, unemployed, informal salaried, formal-salaried, and self-employment, using the continuous time Markov transition processes derived from underlying discrete time counterpart. The raw intensity levels (Q-statistic) of transitions, the propensities (R-statistic) of transitions conditional on turnover rate, the adjusted propensities (C-statistics) controlling for turnover and job vacancies, a general mobility index, and the average duration in each sector pattern are all included in these statistics. For starters, formal-salaried employees have the longest tenure and informal-salaried employees have the shortest, with informal-salaried to formal flows vastly outnumbering reverse flows. Secondly, informal-salaried and self-employed mobility is substantially higher than formal-salaried and self-employed mobility. In terms of propensities, the authors claim that in some circumstances, transition patterns are inverted, implying a closer resemblance to an integrated market approach. The patterns are further smoothed and appear to be reasonably symmetrical across formal-salaried and self-employment, as well as between formal-informal salaried flows, when adjusted propensities are taken into account. They concluded that "a substantial part of the informal sector, particularly the self-employed, corresponds to voluntary entry, although informal salaried work appears to correspond more closely to the standard queuing view, especially for young workers" when flows are disaggregated by age and business cycle.

The research cited above is more concerned with the aggregate migration of employees from the rural to the urban sector than with the nature of the activities they participate in, the sorts of skills they possess, or the mechanisms by which they generate revenue. Recent work, on the other hand, emphasizes the relevance of these difficulties (see Fields, 2005 for an overview). It highlights developments in emerging nations' urban sectors that constitute significant departures from earlier models. The urban sector now employs four different sorts of workers under the new system. The unskilled worker who is effectively kept out of the skill-driven formal wage employment sector and does not look for work there, the semi-skilled or skilled worker looking for work in the formal sector (this worker eventually turns to self-employment or a family business when the waiting period lengthens and the predicted lifetime earnings from a formal job decrease), the third worker who might get a job in the formal sector but prefers self-employment to wage employment and lastly, the fourth kind of worker who varies from the third in that, after working in the formal sector, he or she transitions to the informal sector owing to retirement, layoff, or the bankruptcy of the company.

Different definitions of urban employment have been established by researchers. Fields (1975) categorized urban employment into a "murky" sector and a contemporary sector, departing from the well-known informal-versus-formal classifications that had dominated the literature since (Hart K, 1973) "created" the informal sector. Fields (1990) used the "easy-entry," "upper-entry," and formal categories, whereas (Ranis & Stewart, 1999) differentiated between "traditional," "modernizing," and formal urban sectors. These classifications are especially well-suited to characterizing the nature of work, namely the perceived quality of activities and revenue levels.

(Slonimczyk, 2014) basing his classification on Harris and Todaro model went further to classify the activities of the informal sector (which he called informality and also referred it as the shadow, black, or hidden economy) into “upper-tier” and “easy-entry” informal activities. The upper tier activities are voluntary while the easy entry activities are the survival strategy for those excluded from the formal sector.

In developing nations, household and labor force surveys frequently utilize categories that differ from those suggested in the literature, allowing for contextual differences between sectors in terms of production processes and wages determination. The majority of these classes are based on the employer's ownership. In most surveys, people are asked a variation of the question, "Who do you work for?" A worker is defined as a wage employee if she/he works outside of her/his family for a wage; self-employed if she/he works in a business owned by her/him; and family worker if she/he works on the family farm or in an enterprise owned by a member of her/his family.

The evident differentiation across sectors in terms of ownership, production, and wage-setting processes reveals direct ties between labor market dynamics and economic development.

Labor income also plays a predominant role in income mobility research. In much of this literature, economic welfare is gauged by household per capita income (PCI) or household consumption per capita (PCC). Research on changing PClin Indonesia, South Africa, Spain, and Venezuela has shown that household per-capita income changes are determined much more by changes in household income (the numerator) than by changes in number of household members

(the denominator) and that changes in labor income far outweigh changes in other sorts of income (Fields et al., 2003)

Worker mobility in the EU remains relatively low, although statistics on mobility flows on the underlying motivations need improvement. Worker mobility should be viewed as a means to create employment and to help individual personal development in the 27 EU Member States. The ability to move from one job, from one region or country to another is considered crucial for solving Europe's employment problem. Worker mobility requires not only readiness on the side of workers, but also adapted social security schemes, dedicated training and responsible employers

**Because the measurement of international labour mobility touches upon economic, social and demographic domains, labour mobility is considered from different viewpoints, which separately cannot provide a full picture.** For example, migration statistics cover migrants but not those who work in another country without changing place of residence. They also more often measure long-term migration than short-term migration, and do not always include the purpose of the move. Tourism statistics measure short-term moves only. Labour market statistics often lack information on mobility. The improvement of statistics on labour mobility thus requires coordination across several statistical domains and data collection systems, at both national and international levels.

### **A model of individual employment choice**

The authors used the model that describes the choices made by new entrants to the labour market, paying attention to differences in sectoral earnings determination processes. In the following empirical section, the authors analyses transitions between sectors among the employed. The same model was used to analyse employment choice and mobility among workers in Ghana, (Taiwo, 2012). The model divided the labour market into three sectors; self-employment, family employment and wage employment. Workers who work for a pay outside of family businesses or self-employment make up the wage employment sector which is mostly a formal industry. Individuals who work as wage employees in the informal sector were also included in the empirical analysis although the proportion of wage employees in the informal enterprises is assumed to be very small in the context of this study. This is because most informal enterprises are in effect own account jobs that are classified as self-employment. In contrast, the family-business and self-employment sectors are seen to be primarily informal.

Prospective employees arrive in the market with some observable level of education  $z$  and innate ability  $\theta$ . Following the model by Taiwo (2012), we analyzed the model assuming a fixed distribution of ability across the population. Ability is a significant factor in sorting people into sectors in the model; raising the threshold of ability necessary for wage employment means fewer people will be able to find work. An individual is engaged in one of the three sectors at any one moment. Individual earnings in wage employment are given by

$$w = z^{\alpha} x^{\beta} \theta^{\tau} \xi \quad (1)$$

Where  $\xi$  is a disturbance factor that is constant across individuals and  $x$  is accumulated experience of a wage worker plus one. Representing the current state of the labor market, education was measured by the highest level of certification in place of number of years spent in school. Return to education is measured by  $\alpha$ ,  $\beta$  depicts level of experience pay off and  $\tau$  measures returns to the unobserved innate ability. There was no distinction made between private and public employment.

Individual earnings in self-employment are given by

$$\omega = z^\sigma k^\delta \theta^\pi \epsilon \quad (2)$$

Where  $k$  depicts enterprise capital and  $\epsilon$  is a disturbance factor relevant to self-employment. This equation differs from the former in two ways. First, rather than relying solely on ability to generate income, the model stresses the complementary nature of innate ability and education in the income generation process. Second, the authors assume that there is no market for self-employment capital and that self-employment capital comes from family assets.

Thus, the main constraint faced by the entrepreneur is given by

$$k \leq A \quad (3)$$

Where  $A$  represents family assets. Equation (3) indicates that a family asset is always greater than enterprise.<sup>1</sup> Combining the constraint in (3) and self-employment earnings from equation (2), individual earnings in a family enterprise equation becomes

$$\varpi = \lambda(n) (A-k)^{\gamma} \varepsilon \quad (4)$$

Where  $n$  represents family size,  $\lambda$  denotes output sharing which depends inversely on family size, capital productivity in family enterprise is represented by  $\gamma$ , and  $\varepsilon$  is a disturbance factor. Individual wages are affected by family size in two ways: a positive influence through output and a negative effect through output-sharing. While marginal impact to output decreases as the size of the family grows, marginal impact to output-sharing does not. As a result, as a family grows larger, the average product decreases and earnings decrease.

**Production procedures and earnings determination differ among industries based on these descriptions.** Returns to education, as indicated by the parameters  $\alpha$  and  $\sigma$ , respectively, differ between the wage and self-employment sectors. This difference  $(\alpha-\sigma)$  measures the premium that a worker can possibly earn in wage employment relative to self-employment, and the magnitude could differ between different education levels. Likewise, the differential  $(\pi-\tau)$  represents the premium paid for unmeasured ability in self-employment versus wage employment, which changes according to ability level (see Lucas, 1978; Blau, 1985).

<sup>1</sup>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.

**The authors assume that the labor market is never completely clear, and that there is always an excess of labor supply in the wage employment sector.** In this setting, the wage employment sector cannot accommodate everyone looking for job at the market wage. Considering a group of newcomers, a person who is not working in the wage sector may pursue self-employment or start a family business. Some people, on the other hand, would prefer to remain unemployed and continue searching for work in wage employment rather than accept other forms of work. Individuals who have been rationed out of wage employment have the option of remaining unemployed or finding work elsewhere. It's also possible that people who would choose unemployment and job search have similar characteristics to people who got paid work. Admittedly, the group of workers who obtain wage employment at a given time may have had periods of unemployment that differ from person to person. Due to the fact that this article seeks to identify the characteristics that make an individual likely to be employed in a given sector, we treated wage employment as the choice of such individuals. The assumption is that the initial unemployment and subsequent job search that leads to paid employment was a conscious decision made by these people.

**The ease of obtaining wage work is assessed by giving competition and cohort effects  $\mu \leq 1$ , where low values of  $\mu$  reflect tightening of the wage employment market.** Judging from the existence of equilibrium in the labour market, we associate  $\mu = 1$  with a clearing market and associate lower values with greater degrees of excess labour supply. When confronted with the choice of entering other industries or continuing to look for wage work, the individual weighs the predicted earnings in wage work (given by  $\mu w$ ) to earnings from the other sectors and reservation



wages. A low  $\mu$  implies that an individual will choose self-employment over unemployment.

Based on earnings comparison, an individual is indifferent between wage employment and self-employment if  $\omega = \mu w$ , that is

$$\theta^\pi z^\sigma k^\delta \epsilon = \mu z^\alpha \xi \theta^\tau \quad (5)$$

An expression for  $k$  can be derived from a family-enterprise earnings function as

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

Adding (6) is into (5), we generate the threshold level of ability

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

As the right-hand side of (7) does not depend on  $\theta$ , the equation provides an explicit solution to (5). In the empirical part below, employment choice will be estimated as a function of education, where equation (7) is represented as a conditional function. Taking away the exponent of  $z$ , (7) becomes

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

Conditional on  $z$ , the right-hand side depends only on the expression beginning with the bracket.

On the left side,  $z$  enters the conditioning set along with the premiums. Hence, (8) can be expressed as

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

Where  $h$  is a function of ability conditional on level of education and the premiums. Equation (9) may be regarded a probability function, because it reflects the possibility of a person being placed in a specific work sector. The authors assume that the education premium is positive ( $\alpha - \sigma > 0$ ). The sign of the ability premium, on the other hand, is decided by labor market conditions. Returns to individual ability are higher in Self-employment in a market that clears; therefore persons with high ability have an incentive to be self-employed.

In this case,  $\pi - \tau > 0$ , and  $h$  is an increasing function of  $\theta$ . But looking at non-clearing markets, the opposite might hold true where returns to ability is greater in wage employment compared to self-employment. Employers in non-clearing markets frequently put job seekers through a battery of tests in order to obtain signs of ability. These tests come after screening applicants on the basis of educational qualifications preferred. Individuals with high abilities are drawn into paid work by this sort of job rationing.

Following the assumption that the labour market is non-clearing, a reminder that this article is based on the assumption that  $\pi - \tau < 0$ , and that  $h$  is therefore a decreasing function of  $\theta$ .

**Equation (9) identifies the education premium as the primary determinant of employment choice in the model.** Holding all else constant, an increase in the education premium ( $\alpha - \sigma$ ) reduces the right side and reduces the left side at equilibrium. Because  $h$  is a decreasing function

of  $\theta$ , an increase in the education premium corresponds to an increase in the ability threshold at which people enter paid employment. Because of the distribution of ability in the population, fewer people will be able to find wage work. As a result, the education premium enhances the chance of self-employment and employment in a family business.<sup>2</sup>

An increase in returns to capital in family enterprise employment (increase in  $\gamma$ ) decreases the right side of (9) and, in equilibrium, raises the threshold level of ability over which individuals choose wage work. Consequently, more employees are turning to self-employment or, more broadly, non-wage employment. When capital in family businesses becomes more productive, two things happen. First, family businesses will require less capital (see equation 3), allowing more cash to be available for self-employment. Alternatively, the surplus created by family businesses is channeled into capital for self-employment.

In the case of family assets, similar conclusions might be derived. A rise in family assets, decreases the supply of labor available in the wage job sector.<sup>3</sup>

<sup>2</sup>A high education premium creates excess supply of workers to the wage employment sector and reduces the likelihood that a representative worker would obtain wage employment. In this case, unemployed workers who want to work immediately are left with the options of self-employment or work in the family sector. The odds of self-employment increase relative to family enterprise employment when individuals can borrow from credit markets. Otherwise, constrained workers draw capital from the family for self-employment or remain as family workers.

<sup>3</sup>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 at a sub-optimal level, a self-employed individual depends solely on family assets to operate his enterprise. In this case, it is appropriate to assume 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 profit-maximization process.

## Empirical model

In deriving the empirical model, equation 7 was used. Base on educational attainment, employment choice of workers is determined by their ability premium ( $\pi-\tau$ ), which is an unmeasured characteristic of the labour market, and the education premium ( $\alpha-\sigma$ ), which is measurable. Other major determinants include family assets ( $A$ ), family size ( $n$ ), and sectoral shift factors referred to the disturbance factor such as  $\mu$ ,  $\xi$ ,  $\varepsilon$  and  $\epsilon$ . The authors use data obtained to account for sectoral change and incorporate parental occupation in the model to reflect the possible effect of family job history.

The authors estimated a multinomial probability model of employment choice between wage employment, self-employment, and family employment. While some employees may work in two or more jobs at the same time (either part time or full time), the authors consider the activity they spend most of their time to be their principal occupation. We omitted unemployment from the options since open unemployment is relatively low in the absence of official unemployment benefits because these people are more likely to be involved in a family business. As a result of this exclusion, we estimate robust standard errors to adjust for specification bias in the estimates.

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 with the probability that it belongs to an omitted (or reference) category. Denoting the reference category as  $r$ , then for  $n = 1, 2, \dots, N$ , the model estimates

$$\frac{p(y=n)}{p(y=r)} = \alpha_n + \sum_k \beta_{nk} x_{nk}$$

where  $Y$  is employment sector of an individual. The parameter  $\beta_{nk}$  measures the effect of a variable  $X_{nk}$  on the log of odds that a sampled individual is in employment type  $n$  relative to employment type (the omitted category).

For simplicity, we transform the estimates using the equation  $b_{nk} = e^{\beta_{nk}}$  in order to obtain direct relative risks. Increases in the value of a regressor with relative risk  $b_{nk} < 1$  make it less likely that an individual is in type- $n$  employment relative to type- $r$  employment. Simply put, the variable indexed by  $k$  sorts individuals into type- $r$  employment relative to type- $n$ . We estimate the model separately for new entrants and existing workers; and among existing workers, the author estimates the model separately for transition from wage 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. While this assumption is usually not satisfied, failure of the assumption in this exercise is not due to correlation between unobserved ability and included regressors.<sup>4</sup> If unmeasured ability within a given education level induces bias into the coefficient estimates for each category of the dependent variable, then computation of coefficients for non-omitted

<sup>4</sup>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.

categories relative to the omitted category will offset the potential bias. Because the model is estimated conditional on education level, the correlation between education and family assets will not be problematic for interpreting the effect of assets on employment.<sup>5</sup>

### **Data and variables**

For the purposes of our empirical analysis, data from the Nigeria Living Standard Surveys (NLSS) conducted in 2003/2004 and Harmonized Living Standard Survey (HNLSS) conducted in 2008/2009. Specifically, the first survey was carried out between September 2003 and August 2004, and the second, between November 2008 and October 2009. The 2003/2004 data set comprises 22,970 males and 25,022 females aged 16-64, with an overall locational distribution of 36,274 respondents in rural areas and 11,718 in urban areas. For 2008/2009, there are 73,811 males and 71,276 females aged 16-64, with locational distributions of 109,833 in rural and 35,254 in urban areas.

The authors used level of education instead of years, those with no primary education which is 50 percent of the workers were classified as NO EDUCATION; individuals with First school leaving certificate to Junior secondary school were classified under BASIC EDUCATION category; individuals with SSCE, O'level and A'level were categorize as POST BASIC EDUCATION and those with NCE, OND up to Professors were merged as DEGREE/DIPLOMA.

<sup>5</sup>The correlation between education and family asset is problematic if the coefficient of family asset on employment in specific sectors systematically increases with the level of education. Even then, since the reported coefficients are relative to the omitted category rather than absolute effects, the comparison will eliminate the bias.

With the exception of the education premium, the other regressors in the equation are easily assessed in the data. The authors first estimate a regression of log wages on log age, education levels, an urban dummy, and regional dummies to obtain a measure for this. All participants above the age of 15 who reported having engaged in some activity during the reference period were asked to fill out the employment and time utilization section of the survey, which collected information on labor earnings.

We estimated the regressions of earnings separately for individuals in wage employment, self-employment and family-enterprise employment, and present the regression estimates in table 1. From the table, older people earn higher wages than younger people, and this appears to be consistent across all the sectors. Compared to individuals with no education, returns to the Basic education level are highest in wage employment: 43.2percent (in log earnings) compared to 34.1per cent in self-employment, and 29.4 per cent in family enterprises.

Returns to post basic education level (also compared to individuals with no education) are highest in wage employment (68.7) as compared to self-employment (to 51.7 per cent) and family enterprises (42.9 percent). Degree and Diploma follow suit except it dropped in family enterprise from 42.9 per cent to 35.8 per cent. In terms of returns to marketable education, the estimates implied a marginal return to education at Post Basic Education level at 25.5 percent in wage employment, 17.6 percent in self-employment and 13.5 percent in family enterprise (based on coefficient of post Basic Education dummy minus Basic education dummy). For Degree/Diploma, the marginal return to education was 48.6 in percent wage employment and 34.5 percent in self-

employment (based on coefficient of Degree/Diploma dummy minus post Basic Education dummy). These differences are naturally expected with the exception family returns that had a negative return for Degree/Diploma.

For 2009, a part of the survey on employment module collected data on earnings only for wage employment. The earning for self-employment was obtained by taking the average of the habitual income and expenses incurred (high and low) while for family enterprise employment no collection with regards to earnings was made. As a result, the estimates for self-employment and family enterprise employment were not consistent as presented in Table 2. For wage employment, just as older people earn more for 2004 the same trend is observed here. Likewise, for education, with higher education come higher earnings for wage employment

These regressions include regional dummies, but the coefficients are not included in the table. These can be obtained upon request. The authors calculated anticipated log earnings by education level and region for each job category while keeping the other variables in the estimation at their means. The authors then computed region-specific estimates of the education premium ( $\alpha - \sigma$ ) for each level of education as the difference between predicted log earnings in wage employment and predicted log earnings in self-employment.

## **Results**

### **Occupational mobility**

The authors estimate a number of multinomial logit models for a sample of workers who were formerly in wage employment and examine their transitions. The authors designate wage



employment as the reference sector. The results presented in table 3 indicate that large household assets do not affect the transition from wage employment to either self-employment or family enterprises. Apprenticeship training also increases the odds of moving into family enterprise among the educated workers. This result contradicts the commonly held belief that workers start with wage employment, accumulate savings in order to ease credit constraint, and then turn to self-employment (see Evans and Jovanovic, 1989). Also, worth noting is that an increase in the education premium raises the odds of transition into self-employment, which is not consistent with the predictions of the model. This effect is noticeable among non-educated workers. The result for wage workers contradicts that found in the Ghana paper as household assets increase the odds of transition among wage workers; apprenticeship increases odds of transiting in to self-employment; and education premium raises the odds of transition into family enterprise among educated workers.

A similar model is estimated for workers with experience in self-employment. The results are summarized in table 4. Here, household assets increase the odds of transition to family enterprise but doesn't affect transition into either family enterprise or wage employment in Ghana. Apprenticeship training raises the odds of transition to family-enterprise employment for those with Basic education (as the rest of the coefficient was 0). These results may reflect experiences following self-employment failure. Increased household size raises the odds of moving from self-employment into the family sector in all skill categories; exit from self-employment becomes increasingly likely among the most educated worker; and the education premium reduces the

likelihood of transition to family-enterprise employment while increasing the odds of transition to wage employment reverse is the case for Ghana.

Finally, the authors estimate the same model for workers with experience in family-enterprise employment and summarize the results in table 5. The results show that household assets increase the odds of transition from family-enterprise employment into self-employment but only among the less educated family workers while it is among the most educated workers in Ghana. Moreover, possession of apprenticeship skills also increases the odds of transiting into self-employment. Household size increases the odds of moving out of the family enterprise across all educational categories which is against the norm of household size reducing the odds of exit from family enterprise which is consistent with the Ghana result. The education premium seems to affect transition to wage employment by increasing the odds but has no effect across educational workers which are in contrast to Ghana.

### **Self-employment enterprise assets**

Table 6 presents linear regression estimates of the determinants of self-employment enterprise assets. Individuals from the employment module were linked to the household enterprise module. An individual who is self-employed in a non-farm business (in the employment module) is identified as the operator of the home business for which he is reported as the household member with the most knowledge about the business (in the household enterprise module).

From the table, individuals from wealthier households have larger enterprise assets, and older enterprises have more assets than newer enterprises. However, two sets of estimates are worth

noting for their implications. First, workers with education and apprenticeship training run enterprise with more assets than those without apprenticeship training, the opposite holds true for those without education. This may be explained by the fact that the most educated workers might have acquired more knowledge on how to increase their asset through investments and other methods; also, of maintaining already existing assets while in Ghana mobility paper, the most educated workers without apprenticeship have more assets.

### **Returns on enterprise assets**

Table 7 presents estimates of regression models investigating determinants of enterprise profits. Because of the possibility of recall errors and the fact that informal self-employment businesses rarely keep good records, the survey asked only about income and expenses from the previous two weeks. The table shows that nominal enterprise profits increase by level of education, but returns on assets do not. Individuals with apprenticeship training, whose enterprise activity is probably dependent on their apprenticeship skills, earn less in terms of both nominal profits and returns on assets. The age of the enterprise tends to reduce profits but this effect is not robust to inclusion of characteristics of the entrepreneur.

The authors investigate whether individuals who moved from wage employment to self-employment earned more income than others. The results show that, if anything, they probably earned more.

## Summary and conclusions

Using data from the Nigerian Living Standard Survey (NLSS), this article has examined mobility among workers across different sectors. The results show that workers engaged in self-employment are the least mobile, while those employed in household production or a family enterprise are the most mobile. In particular, this indicates that the family enterprise sector is the last resort of the unemployed, who must do engaged in a productive activity. Wage workers are in the intermediate position. The empirical finding that individuals engaged in family-enterprise employment are very mobile fits the theoretical model. Across educational categories, the longer an individual has been self-employed, the less likely he/she is to move into either wage employment or family-enterprise employment. This is plausible because a self-employment enterprise is customized to the entrepreneur's personal characteristics and thrives on unobserved ability that is not likely to be rewarded elsewhere.

The results do not reveal any systematic determinants of enterprise assets apart from household assets. Although the age of the enterprise seemed to raise the value of its assets, even this effect is not robust when the characteristics of the entrepreneur are accounted for. There is no evidence that previous earnings from wage employment have a significant 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 earned less, both in terms of nominal profits and in terms of returns on assets. This is most likely to be driven by lack of technological development in apprenticeship-led enterprises.

Analysis of self-employment and entrepreneurship based on a two-sector model suggests that liquidity constraints limit the rates of self-employment and consequently affect labour productivity. In such a model, workers choose between wage employment and self-employment, or transit from the former to the latter. But this model fails to reflect analytically crucial characteristics of the labour markets of developing economies, which are better captured by multi-sector models with at least three sectors. Contrary to the two-sector models which assume that workers can transfer their experiences from one sector to another, there are constraints on intersectoral mobility in developing countries that might prevent the two-sector model from generating meaningful insights for policy purposes. In addition to liquidity constraint, which is well captured by the two-sector model, the three-sector model analysed in this article accounts for human capital constraints in terms of marketability of experience across sectors. The theoretical model and empirical results confirm that the labour market in developing countries is a bit different and as such constitutes a case of interest for economists and policy makers. Indeed, both liquidity and human capital constraints are key to studying labour market dynamics in developing countries, especially in sub-Saharan Africa as the case of Nigeria makes clear.

In conclusion, the determinant of enterprise asset and profit are similar with Ghana. For mobility, there was slight discrepancy between the results in Nigeria and of Ghana. For workers in wage employment, household asset does not affect transition while it does in Ghana; apprenticeship increase the odds of movement into family enterprise but for Ghana is into self-employment; and education premium raises the odds of moving into self-employment unlike in Ghana where the odds is for moving into family enterprise.

For workers in self-employment, transition is not affected by household asset in Ghana while in Nigeria it does; exit became increasingly likely among most educated worker reverse was the case of Ghana and as education premium increased the odds of moving into wage employment in Nigeria, it decreased in Ghana.

Lastly for workers in family enterprise, both Nigeria and Ghana result showed household asset increasing the odds of transition to self-employment but the difference is while it is common among the less educated in Nigeria, it is noticed among the most educated in Ghana

## REFERENCES

- Aminu, A. (2016). Determinants of Participation and Earnings in Wage. *African Journal of Rural Development*, 1(1), 61–74.
- Aromolaran, A. B. (2002). *Private wage returns to schooling in Nigeria: 1996-1999*.
- Bosch, M., Maloney, W. F., Bosch, M., & Maloney, W. (2010). Comparative analysis of labor market dynamics using Markov processes: An application to informality. *Labour Economics*, 17(4), 621–631. <https://econpapers.repec.org/RePEc:eee:labeco:v:17:y:2010:i:4:p:621-631>
- Duryea, S., Márquez, G., Pagés, C., & Scarpetta, S. (2006). For Better or for Worse? Job and Earnings Mobility in Nine Middle- and Low-Income Countries. *Brookings Trade Forum*, 2006(1), 187–203. <https://doi.org/10.1353/btf.2007.0002>
- Fields, G. S. (2005). *Social Protection Discussion Paper Series A Guide to Multisector Labor Market Models*.
- Hart K. (1973). *Informal Income Opportunities and Urban Employment in Ghana on JSTOR*. <https://www.jstor.org/stable/159873>
- Kihlstrom, R., & Laffont, J.-J. (1979). A General Equilibrium Theory of Firm Formation on Risk-Aversion. In *Journal of Political Economy* (Vol. 87, pp. 719–748).
- Krstić, G., & Sanfey, P. (2007). Mobility, poverty and well-being among the informally employed in Bosnia and Herzegovina. *Economic Systems*, 31(3), 311–335. <https://doi.org/10.1016/j.ecosys.2007.06.004>
- LEWIS, W. A. (1954). Economic Development with Unlimited Supplies of Labour. *The Manchester School*, 22(2), 139–191. <https://doi.org/10.1111/J.1467-9957.1954.TB00021.X>
- Madrid, A. C. (2012). Job Stability and Labor Mobility in Urban Mexico: A Study Based on Duration Models and Transition Analysis. *SSRN Electronic Journal*, November. <https://doi.org/10.2139/ssrn.1814681>
- Ogwumike, F. O., Alaba, O. A., Alaba, O. B., Alayande, B. A., & Okojie, C. E. E. (n.d.). *LABOUR FORCE PARTICIPATION, EARNINGS AND INEQUALITY IN NIGERIA*.
- Okuwa, O. B. (2004). *Private returns to higher education in Nigeria* (Issue March).
- Pagés, C., & Stampini, M. (2009). No education, no good jobs? Evidence on the relationship between education and labor market segmentation. *Journal of Comparative Economics*, 37(3), 387–401. <https://doi.org/10.1016/j.jce.2009.05.002>

- Ranis, G., & Stewart, F. (1999). V-Goods and the Role of the Urban Informal Sector in Development. *Economic Development and Cultural Change*, 47(2), 259–288. <https://doi.org/10.1086/452401>
- Silke, W. (2002). Job-search methods and Labour Market Transitions in a segmented Economy- Some Empirical Evidence from Brazil. *Discussion Papers*.
- Slonimczyk, F. (2014). Informal employment in emerging and transition economies. *IZA World of Labor*, May, 1–10. <https://doi.org/10.15185/izawol.59>
- Taiwo, O. (2012). *CSEA Working Paper WPS / 13 / 02 Employment Choice and Mobility in Multisector Labor Markets : Theoretical Model and Evidence from Ghana*. November.
- Todaro, M. P., Todaro, & P, M. (1969). A Model for Labor Migration and Urban Unemployment in Less Developed Countries. *American Economic Review*, 59(1), 138–148. <https://econpapers.repec.org/RePEc:aea:aecrev:v:59:y:1969:i:1:p:138-48>



## Appendix

Table 1 Linear regression estimation of skill premium by level of education (NLSS-reported monthly earnings of workers aged 16-64 in 2003/3004).

| Dep variable=<br>Log Earnings | 2003/2004 Survey     |              |              |                 |              |              |                   |              |              |
|-------------------------------|----------------------|--------------|--------------|-----------------|--------------|--------------|-------------------|--------------|--------------|
|                               | Wage/Paid employment |              |              | Self-employment |              |              | Family Enterprise |              |              |
|                               | Male                 | Female       | Pooled sex   | Male            | Female       | Pooled sex   | Male              | Female       | Pooled sex   |
| Log Age                       | 0.698**<br>*         | 1.099**<br>* | 0.848**<br>* | 0.525**<br>*    | 0.444**<br>* | 0.656**<br>* | 0.682**<br>*      | 0.619**<br>* | 0.873**<br>* |
|                               | [0.123]              | [0.187]      | [0.096]      | [0.118]         | [0.119]      | [0.086]      | [0.066]           | [0.102]      | [0.057]      |
| No Education                  | —                    | —            | —            | —               | —            | —            | —                 | —            | —            |
| Basic Education               | 0.300**<br>*         | 0.779**<br>* | 0.432**<br>* | 0.189**<br>*    | 0.188**<br>* | 0.341**<br>* | 0.140**<br>*      | 0.179**<br>* | 0.294**<br>* |
|                               | [0.103]              | [0.191]      | [0.093]      | [0.082]         | [0.073]      | [0.056]      | [0.048]           | [0.068]      | [0.042]      |
| Post Basic Education          | 0.497**<br>*         | 1.182**<br>* | 0.687**<br>* | 0.353**<br>*    | 0.286**<br>* | 0.517**<br>* | 0.163**<br>*      | 0.445**<br>* | 0.429**<br>* |
|                               | [0.093]              | [0.162]      | [0.084]      | [0.089]         | [0.092]      | [0.065]      | [0.065]           | [0.107]      | [0.057]      |
| Degree/Diploma                | 1.031**<br>*         | 1.619**<br>* | 1.173**<br>* | 0.554**<br>*    | 0.683**<br>* | 0.862**<br>* | 0.169             | 0.32         | 0.358**      |
|                               | [0.101]              | [0.173]      | [0.092]      | [0.158]         | [0.202]      | [0.133]      | [0.196]           | [0.280]      | [0.173]      |
| Urban                         | 0.231**<br>*         | 0.094        | 0.210**<br>* | 0.420**<br>*    | 0.227**<br>* | 0.324**<br>* | 0.125             | 0.13         | 0.059        |
|                               | [0.066]              | [0.094]      | [0.059]      | [0.073]         | [0.067]      | [0.053]      | [0.079]           | [0.114]      | [0.071]      |
| Constant                      | 5.917**<br>*         | 4.024**<br>* | 5.268**<br>* | 6.364**<br>*    | 6.499**<br>* | 5.670**<br>* | 5.280**<br>*      | 4.813**<br>* | 4.080**<br>* |
|                               | [0.528]              | [0.727]      | [0.404]      | [0.494]         | [0.508]      | [0.363]      | [0.302]           | [0.420]      | [0.251]      |
| Observations                  | 2,094                | 799          | 2,893        | 2,753           | 2,683        | 5,436        | 6,922             | 3,139        | 10,061       |
| R-squared                     | 0.114                | 0.241        | 0.129        | 0.115           | 0.115        | 0.109        | 0.119             | 0.138        | 0.112        |

Robust standard errors in brackets

Observations are clustered by household

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

Regression includes state dummies

Table 2 Linear regression estimation of skill premium by level of education (HNLSS-reported monthly earnings of individuals aged 16-64 in 2008/2009)

| Dependent variable= Log Earnings | 2009 Survey             |                         |                         |                          |                         |                          |                         |                         |                         |
|----------------------------------|-------------------------|-------------------------|-------------------------|--------------------------|-------------------------|--------------------------|-------------------------|-------------------------|-------------------------|
|                                  | Wage/Paid employment    |                         |                         | Self-employment          |                         |                          | Family Enterprise       |                         |                         |
|                                  | Male                    | Female                  | Pooled sex              | Male                     | Female                  | Pooled sex               | Male                    | Female                  | Pooled sex              |
| Log Age                          | 3.242*<br>**<br>[0.123] | 2.654*<br>**<br>[0.152] | 3.246*<br>**<br>[0.096] | 7.293**<br>*<br>[0.057]  | 3.361*<br>**<br>[0.061] | 5.246**<br>*<br>[0.045]  | 0.011<br>[0.008]        | -0.004<br>[0.009]       | 0.006<br>[0.006]        |
| No Education                     | -                       | -                       | -                       | -                        | -                       | -                        | -                       | -                       | -                       |
| Basic Education                  | 0.970*<br>**<br>[0.127] | 1.182*<br>**<br>[0.167] | 1.315*<br>**<br>[0.107] | -<br>0.145**<br>[0.060]  | 0.153*<br>**<br>[0.051] | 0.409**<br>*<br>[0.041]  | -0.006<br>[0.006]       | -0.003<br>[0.007]       | -0.004<br>[0.005]       |
| Post Basic Education             | 2.175*<br>**<br>[0.109] | 3.397*<br>**<br>[0.145] | 2.853*<br>**<br>[0.094] | 0.097<br>[0.066]         | 0.130*<br>*<br>[0.060]  | 0.608**<br>*<br>[0.047]  | 0.003<br>[0.008]        | 0.01<br>[0.011]         | 0.006<br>[0.006]        |
| Degree/Diploma                   | 2.632*<br>**<br>[0.120] | 4.154*<br>**<br>[0.167] | 3.401*<br>**<br>[0.105] | 0.856**<br>*<br>[0.140]  | 0.800*<br>**<br>[0.185] | -0.178<br>[0.117]        | 0.028*<br>**<br>[0.005] | 0.020*<br>**<br>[0.006] | 0.024*<br>**<br>[0.004] |
| Urban                            | 0.301*<br>**<br>[0.078] | 0.562*<br>**<br>[0.114] | 0.387*<br>**<br>[0.071] | 0.475**<br>*<br>[0.064]  | 0.379*<br>**<br>[0.055] | 0.441**<br>*<br>[0.048]  | 0.011<br>[0.010]        | -0.008<br>[0.009]       | 0.004<br>[0.007]        |
| Constant                         | 5.112*<br>**<br>[0.514] | 4.427*<br>**<br>[0.622] | 5.856*<br>**<br>[0.403] | 19.548*<br>**<br>[0.251] | 6.171*<br>**<br>[0.274] | 12.952*<br>**<br>[0.206] | -0.016<br>[0.037]       | 0.041<br>[0.035]        | 0.005<br>[0.026]        |
| Observations                     | 11,755                  | 7,144                   | 18,899                  | 31,825                   | 44,864                  | 76,689                   | 30,178                  | 19,237                  | 49,415                  |
| R-squared                        | 0.311                   | 0.418                   | 0.357                   | 0.427                    | 0.301                   | 0.299                    | 0.004                   | 0.003                   | 0.003                   |

Robust standard errors in brackets

Observations are clustered by household

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

Regression includes state dummies



Table 3: Multinomial logit estimates for intersectoral mobility among individuals previously in wage employment (2003/2004)

| Dependent variable= Present employment type | 2003/2004 Survey    |                     | Pooled Data by Educational Qualification |                         |                  |                  |                      |                     |
|---------------------------------------------|---------------------|---------------------|------------------------------------------|-------------------------|------------------|------------------|----------------------|---------------------|
|                                             |                     |                     | No Education                             |                         | Basic Education  |                  | Post Basic Education |                     |
|                                             | Self Emp            | Fam Ent             | Self Emp.                                | Fam Ent                 | Self Emp.        | Fam Ent          | Self Emp.            | Fam Ent             |
| Log household Asset                         | 0.82<br>{0.106}     | 0.727***<br>{0.089} | 0.521**<br>{0.160}                       | 0.531<br>{0.219}        | 0.996<br>{0.212} | 1.034<br>{0.305} | 0.763<br>{0.209}     | 0.494**<br>{0.153}  |
| Basic Education                             | 0.602<br>{0.375}    | 0.379<br>{0.253}    |                                          |                         |                  |                  |                      |                     |
| Post Basic Education                        | 0.251**<br>{0.148}  | 0.256**<br>{0.162}  |                                          |                         |                  |                  |                      |                     |
| Degree/Diploma                              | 0.000***<br>{0.000} | 0.113**<br>{0.108}  |                                          |                         |                  |                  |                      |                     |
| Apprenticeship                              | 1.123<br>{0.818}    | 1.655<br>{1.435}    | 0.013*<br>{0.034}                        | 0.000***<br>{0.000}     | 1.22<br>{1.158}  | 3.945<br>{4.379} | 9.259*<br>{12.467}   | 31.894*<br>{62.589} |
| Parent wage emp.                            | 1.733<br>{0.846}    | 1.237<br>{0.693}    | 80.684***<br>{108.499}                   | 35.669**<br>{61.500}    | 1.334<br>{1.012} | 2.196<br>{2.105} | 2.027<br>{1.794}     | 2.765<br>{2.092}    |
| Log household size                          | 0.599<br>{0.218}    | 1.216<br>{0.513}    | 0.317<br>{0.477}                         | 0.26<br>{0.408}         | 0.263<br>{0.218} | 0.609<br>{0.607} | 0.717<br>{0.368}     | 2.162<br>{1.844}    |
| Urban                                       | 1.422<br>{0.717}    | 0.716<br>{0.471}    | 0.772<br>{1.060}                         | 0.071<br>{0.134}        | 0.378<br>{0.286} | 0.527<br>{0.492} | 2.262<br>{1.894}     | 0.3<br>{0.319}      |
| Paid emp. Rent                              | 1.571<br>{0.958}    | 0.671<br>{0.565}    |                                          |                         |                  |                  |                      |                     |
| PE rent for Qual==0                         |                     |                     | 2.759<br>{4.351}                         | 1.494<br>{2.473}        |                  |                  |                      |                     |
| PE rent for Qual==1                         |                     |                     |                                          |                         | 1.189<br>{1.067} | 0.159<br>{0.187} |                      |                     |
| PE rent for Qual==2                         |                     |                     |                                          |                         |                  |                  | 0.695<br>{0.591}     | 0.223<br>{0.353}    |
| _cons                                       | 6.090*<br>{5.890}   | 8.738*<br>{10.075}  | 133.254*<br>{345.870}                    | 501.796**<br>{1363.130} | 9.84<br>{16.030} | 1.758<br>{3.227} | 2.135<br>{4.090}     | 16.686<br>{47.115}  |
| Pseudo R-squared                            | 0.166               |                     | 0.343                                    |                         | 0.101            |                  | 0.156                |                     |
| Model chi-square                            | 2850.099            |                     | 1132.884                                 |                         | 10.528           |                  | 17.94                |                     |
| N                                           | 155                 |                     | 30                                       |                         | 49               |                  | 49                   |                     |

\* p<.10, \*\* p<.05,

\*\*\* p<.01

Table 4: Multinomial logit estimates for intersectoral mobility among individuals previously in self-employment (2003/2004)

| Dependent variable= Present employment type | 2003/2004 Survey          |                     | Pooled Data by Educational Qualification |                  |                     |                   |                      |                        |
|---------------------------------------------|---------------------------|---------------------|------------------------------------------|------------------|---------------------|-------------------|----------------------|------------------------|
|                                             |                           |                     | No Education                             |                  | Basic Education     |                   | Post Basic Education |                        |
|                                             | Paid Emp.                 | Family Ent./Farm    | Paid Emp.                                | Family Ent./Farm | Paid Emp.           | Family Ent./Farm  | Paid Emp.            | Family Ent./Farm       |
| Log household asset                         | 0.967<br>{0.182}          | 1.131<br>{0.144}    | 1.39<br>{0.357}                          |                  | 0.374***<br>{0.138} | 1.024<br>{0.231}  | 1.131<br>{0.326}     | 0.817<br>{0.367}       |
| Basic Education                             | 2.80e+06***<br>{2.32e+06} | 0.587<br>{0.357}    |                                          |                  |                     |                   |                      |                        |
| Post Basic Education                        | 1.95e+07***<br>{9.39e+06} | 0.157**<br>{0.117}  |                                          |                  |                     |                   |                      |                        |
| Degree/Diploma                              | 6.61e+06***<br>{6.85e+06} | 0.000***<br>{0.000} |                                          |                  |                     |                   |                      |                        |
| Apprenticeship                              | 0.000***<br>{0.000}       | 0.679<br>{0.550}    |                                          |                  | 0.000***<br>{0.000} | 4.512<br>{4.800}  | 0.000***<br>{0.000}  | 0.000***<br>{0.000}    |
| Parent wage emp.                            | 0.593<br>{0.410}          | 2.027<br>{1.304}    | 7.768*<br>{9.086}                        |                  | 0.000***<br>{0.000} | 0.988<br>{1.255}  | 0.677<br>{0.528}     | 0.092<br>{0.136}       |
| Log household size                          | 0.473<br>{0.393}          | 3.650**<br>{2.269}  | 2.639<br>{3.306}                         |                  | 7.542<br>{10.241}   | 4.773*<br>{4.534} | 0.549<br>{0.568}     | 491.200*<br>{1817.711} |
| Urban                                       | 4.429*<br>{3.631}         | 0.521<br>{0.323}    | 2.833<br>{4.495}                         |                  | 7.757<br>{14.933}   | 0.308<br>{0.444}  | 2.795<br>{2.777}     | 0.000***<br>{0.000}    |
| Paid emp. Rent                              | 1.455<br>{1.060}          | 0.53<br>{0.574}     |                                          |                  |                     |                   |                      |                        |
| PE rent for Qual==0                         |                           |                     | 0.057<br>{0.166}                         |                  |                     |                   |                      |                        |
| PE rent for Qual==1                         |                           |                     |                                          |                  | 2.195<br>{3.669}    | 0.442<br>{0.691}  |                      |                        |
| PE rent for Qual==2                         |                           |                     |                                          |                  |                     |                   | 2.058<br>{2.141}     | 0.8<br>{1.228}         |
| _cons                                       | 0.000***<br>{0.000}       | 0.151<br>{0.221}    | 0.058<br>{0.161}                         |                  | 1.106<br>{3.160}    | 0.06<br>{0.122}   | 0.502<br>{0.929}     | 0.000*<br>{0.001}      |
| Pseudo R-squared                            | 0.3                       |                     | 0.369                                    |                  | 0.267               |                   | 0.485                |                        |
| Model chi-square                            | 3831.423                  |                     | 1764.234                                 |                  | 2342.98             |                   | 3379.865             |                        |
| N                                           | 140                       |                     | 60                                       |                  | 38                  |                   | 39                   |                        |

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

Table 5 Multinomial logit estimates for intersectoral mobility among individuals previously in family-enterprise employment (2003/2004)

| Dependent variable= Present employment type | 2003/2004 Survey    |                    | Pooled Data by Educational Qualification |                     |                      |                    |                           |                           |
|---------------------------------------------|---------------------|--------------------|------------------------------------------|---------------------|----------------------|--------------------|---------------------------|---------------------------|
|                                             |                     |                    | No Education                             |                     | Basic Education      |                    | Post Basic Education      |                           |
|                                             | Paid Emp.           | Self Emp.          | Paid Emp.                                | Self Emp.           | Paid Emp.            | Self Emp.          | Paid Emp.                 | Self Emp.                 |
| Log household asset                         | 1.088<br>{0.130}    | 1.107<br>{0.106}   | 1.028<br>{0.117}                         | 1.194<br>{0.218}    | 0.987<br>{0.191}     | 1.079<br>{0.134}   | 1.011<br>{0.202}          | 0.814<br>{0.192}          |
| Basic Education                             | 4.624**<br>{3.371}  | 0.713<br>{0.333}   |                                          |                     |                      |                    |                           |                           |
| Post Basic Education                        | 5.107*<br>{4.315}   | 2.243*<br>{0.964}  |                                          |                     |                      |                    |                           |                           |
| Degree/Diploma                              | 3.901<br>{4.420}    | 0.471<br>{0.511}   |                                          |                     |                      |                    |                           |                           |
| Apprenticeship                              | 0.000***<br>{0.000} | 3.356*<br>{2.214}  | 0.000***<br>{0.000}                      | 0.000***<br>{0.000} | 0.000***<br>{0.000}  | 1.943<br>{2.217}   | 0.000***<br>{0.000}       | 13.587**<br>{15.674}      |
| Parent wage emp.                            | 1.24<br>{0.659}     | 1.621<br>{0.615}   | 1.46<br>{1.326}                          | 2.864*<br>{1.720}   | 0.823<br>{0.651}     | 0.757<br>{0.577}   | 1.384<br>{2.199}          | 0.65<br>{0.564}           |
| Log household size                          | 2.641<br>{2.017}    | 1.035<br>{0.245}   | 0.814<br>{0.634}                         | 1.066<br>{0.402}    | 32.380**<br>{47.731} | 1.548<br>{0.694}   | 1.996<br>{1.010}          | 0.698<br>{0.495}          |
| Urban                                       | 3.708**<br>{2.442}  | 1.514<br>{0.948}   | 8.801<br>{12.203}                        | 0.327<br>{0.372}    | 0.000***<br>{0.000}  | 5.853*<br>{6.093}  | 6.27e+08***<br>{1.08e+09} | 1.24e+09***<br>{1.76e+09} |
| Paid emp. Rent                              | 1.178<br>{0.747}    | 0.657<br>{0.273}   |                                          |                     |                      |                    |                           |                           |
| PE rent for Qual==0                         |                     |                    | 0.791<br>{0.654}                         | 1.232<br>{0.815}    |                      |                    |                           |                           |
| PE rent for Qual==1                         |                     |                    |                                          |                     | 0.735<br>{0.810}     | 0.465<br>{0.371}   |                           |                           |
| PE rent for Qual==2                         |                     |                    |                                          |                     |                      |                    | 1.114<br>{0.832}          | 0.304*<br>{0.204}         |
| _cons                                       | 0.001***<br>{0.002} | 0.072**<br>{0.059} | 0.016**<br>{0.025}                       | 0.024**<br>{0.037}  | 0.000***<br>{0.000}  | 0.039**<br>{0.059} | 0.013*<br>{0.029}         | 2.586<br>{5.060}          |
| Pseudo R-squared                            | 0.104               |                    | 0.133                                    |                     | 0.173                |                    | 0.235                     |                           |
| Model chi-square                            | 2035.19             |                    | 403.248                                  |                     | 1236.166             |                    | 3302.275                  |                           |
| N                                           | 389                 |                    | 201                                      |                     | 114                  |                    | 60                        |                           |

\* p<.10, \*\* p<.05,

\*\*\* p<.01

Table 6 Determinants of enterprise assets (NLSS 2003/2004)

|                             | 2003/2004<br>Survey | Pooled by Education |                     |                      |                     |
|-----------------------------|---------------------|---------------------|---------------------|----------------------|---------------------|
|                             |                     | None Education      | Basic Education     | Post Basic Education | Degree/Diploma      |
| Log household asset         | 0.200***<br>[0.073] | 0.119<br>[0.119]    | 0.173**<br>[0.079]  | 0.249***<br>[0.095]  | 0.264<br>[0.215]    |
| Apprenticeship              | 0.23<br>[0.148]     | -0.099<br>[0.252]   | 0.342<br>[0.226]    | 0.222<br>[0.251]     | 0.051<br>[1.637]    |
| Log enterprise age          | 0.084<br>[0.143]    | 0.174<br>[0.160]    | 0.054<br>[0.237]    | 0.034<br>[0.209]     | 0.272<br>[0.446]    |
| Manufacturing<br>enterprise | 0.341<br>[0.261]    | 0.734**<br>[0.373]  | 0.138<br>[0.346]    | 0.319<br>[0.318]     | -0.943<br>[0.966]   |
| Log household size          | 0.151<br>[0.212]    | 0.571*<br>[0.308]   | 0.069<br>[0.270]    | 0.02<br>[0.260]      | -0.615<br>[0.735]   |
| Urban                       | 0.660***<br>[0.246] | 1.095***<br>[0.339] | -0.06<br>[0.358]    | 0.847***<br>[0.315]  | 0.622<br>[0.789]    |
| Wage to self emp.           | -0.154<br>[0.748]   | 1.404<br>[0.915]    | -0.009<br>[0.945]   | -2.342<br>[1.506]    | -                   |
| Constant                    | 7.780***<br>[0.616] | 6.964***<br>[0.820] | 8.315***<br>[0.784] | 7.972***<br>[0.821]  | 9.115***<br>[1.825] |
| Observations                | 2,701               | 932                 | 987                 | 673                  | 109                 |
| R-squared                   | 0.047               | 0.084               | 0.02                | 0.071                | 0.095               |

Notes: Dependent variable is log of enterprise assets

Robust standard errors in brackets.

\* significant at the 10 per cent level; \*\* significant at the 5 per cent level; \*\*\* significant at the 1 per cent level

Table 7 Self-employment enterprise earnings and enterprise profits in last two weeks prior to survey

| Dependent Variable =  | Log Nominal Profits | Profit /Assets      |
|-----------------------|---------------------|---------------------|
| Log enterprise assets | 0.174***<br>[0.042] |                     |
| No Education          |                     |                     |
| Basic Education       | 0.103<br>[0.139]    | 0.13<br>[0.214]     |
| Post Basic Education  | 0.162<br>[0.179]    | -0.173<br>[0.223]   |
| Degree/Diploma        | 0.500*<br>[0.257]   | 0.16<br>[0.401]     |
| Apprenticeship        | -0.24<br>[0.149]    | -0.418**<br>[0.204] |
| Log enterprise age    | 0.157<br>[0.130]    | -0.047<br>[0.179]   |
| Urban                 | 0.537***<br>[0.172] | -0.079<br>[0.275]   |
| Wage to self emp.     | 0.654**<br>[0.260]  | 1.034<br>[0.636]    |
| Constant              | 6.642***<br>[0.435] | -0.757*<br>[0.421]  |
| Observations          | 2,487               | 2,487               |
| R-squared             | 0.086               | 0.006               |

Robust standard errors in brackets

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