

Determinants of Employment in the Formal and Informal Sectors of the Urban Areas of Kenya

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Abstract

By applying a multinomial logit model and economic theory to labour force survey data, this study examines the determinants of formal and informal sector employment in the urban areas of Kenya. The findings show that the determinants of employment in public, private and informal sectors of Kenya's urban labour market vary by age cohort and gender. Special emphasis is placed on the importance of sex (being male rather than female), marital status, household-headship and education variables, of which the first three illustrate the disadvantaged position of women in the labour market. Education has the strongest impact on formal sector employment, yet most women work in the informal sector despite significant improvements in their education attainment.

Two observations merit concern, high youth unemployment and gender imbalance in access to employment. Unemployment is particularly high amongst women, especially younger women. Younger women are either unemployed or employed in the inferior informal sector (in the sense of low income, precarious and unregulated forms of employment), as opposed to males in a similar age bracket who are likely to work in the private sector.

Overall results confirm that the urban labour market is heterogeneous and reveal how labour supply factors are valued in the labour market. They also indicate the existence of sex discrimination in the labour market. The study raises the following questions for further research while identifying education and employment policy gaps: What specific skills or qualities do employers look for when recruiting new employees? Are the recruitment practices gender balanced? Which training and skills are sought for what sectors? Is the current education system demand or supply driven, and does it equip graduates with adequate skills to become self-employed? Does the current policy environment and infrastructure encourage self-employment? What are the real constraints faced by women in finding reasonable work given their remarkably high unemployment rates? Answers to these questions have broad policy implications towards an achievement of gender balance in education, the labour market and poverty eradication.

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1. Introduction

Urban labour markets in developing countries are widely recognized as having two distinct sectors/segments: regulated/protected formal sector¹ and an unregulated/unprotected informal sector (Pradhan and van Soest, 1995).² Mazumdar (1989) describes an urban labour market structure in a typical developing country as being subdivided into three main categories: the formal sector (public and private), the informal sector³ (comprising the informal sector wage labour, self-employed, paid domestic workers, those earning a monthly salary or those working on casual basis) and the unemployed. This categorization ignores unpaid workers (people who work without pay in an economic enterprise operated by a related person⁴), who form a significant proportion of urban and rural labour force.⁵

Among the most important challenges facing governments in developing countries, including Kenya, is the task of identifying development strategies that can generate new employment and income opportunities, and reduce under-employment and unemployment (Republic of Kenya, 1985, 1986). The urgent need to create employment opportunities is underscored by the higher rate of labour force growth than population growth. Persistent slow economic growth, particularly in the public sector, has forced many people, notably school leavers and college graduates, into marginal activities in small-scale agriculture and the urban informal economy. In recent years, many economies in both developed and developing countries have experienced transformations in their labour market structures resulting from such trends as globalization and economic restructuring.

Since the early 1980s, Kenya has witnessed structural adjustment reforms (structural adjustment programmes – SAPs⁶) that have been accompanied by changes in the structure of employment, incomes and poverty. The economy experienced rapid public sector employment growth especially in the period between 1970 and 1980. This was accompanied by poor job creation in the private sector. The trend took an opposite turn in the period thereafter, which was consistent with the limits of fiscal spending and productive employment within the civil service pursued within the SAPs. Public sector employment was expected to decline in the short run with the implementation of the civil service reform programme, while modern sector job creation would depend heavily on the private sector and self-employment. The period from 1980 to the 1990s can be regarded as the economic reform period and was characterized by more commitment and rigorous implementation of SAPs by the government. The era witnessed measures undertaken to enhance economic efficiency by strengthening the role of the private sector, dismantling price controls, reducing or removing import controls, implementing

financial reforms, and privatizing parastatals. SAPs were adopted with the idea that the accompanying measures would spur economic growth and rectify the worsening macroeconomic imbalance.

The context of this study, then, is one in which the size of the labour force in Kenya has been growing much faster than the rate of growth of formal sector jobs and the fact that both private and informal sectors are expected to play the lead role in employment creation. Table 1 depicts three categories of total employment excluding agriculture. Following implementation of the SAPs, modern wage employment (formal sector) dropped sharply from 77.5% of total recorded employment (excluding small-scale agriculture) in 1988 to 20.2% in 2007. Over the same period, the share of informal sector employment rose just as sharply, from 20.0% to 79.1%. This is an indication that employment is increasingly becoming informalized.⁷ Note that “employment in the informal sector” and “informal employment” are concepts that are now recognized as different aspects of the “informalization” of employment (Husmanns, 2004).⁸

Table 1: Total recorded employment excluding small-scale agriculture

Year	Total ("000)	Modern (formal) wage employment (%)	Self-employed and unpaid family workers (%)	Estimated informal sector wage employment (%)
1988	1,736.3	77.5	2.5	20.0
1989	1,796.2	76.2	2.5	21.3
1990	2,395.0	58.8	2.0	39.3
1991	2,557.1	56.4	2.0	41.6
1992	2,753.2	53.1	2.0	44.9
1993	2,997.5	49.2	1.9	48.9
1994	3,355.1	44.8	1.7	53.8
1995	3,858.6	40.4	1.6	58.0
1998	5,096.7	32.9	1.3	65.8
1999	5,492.6	30.7	1.2	68.1
2000	5,911.6	32.1	1.1	70.2
2001	6,409.8	26.3	1.0	72.6
2002	6,866.8	24.8	1.0	74.2
2003	7,325.7	23.6	0.9	75.5
2004	7,800.1	22.6	0.8	76.6
2005	8,281.7	21.8	0.8	77.4
2006	8,975.6	20.7	0.7	78.5
2007	9,450.3	20.2	0.7	79.1

Source, Various *Economic Surveys*.

A striking feature of the urban labour market, which is also concurrent with the implementation of the SAPs, is a sharp increase in female labour force participation and unemployment rates (LFPRs) particularly between 1986 and 1998. The rise marked a near-convergence of male and female LFPRs in 1998. Male LFPR increased but only marginally: Urban female LFPR increased from 6.4% in 1977 to 38.8% in 1986 (Republic of Kenya, 1988) and to 85.9% in 1998, while over the same period, urban male LFPR dropped from 83.9% in 1977 to 82.2% in 1986, then rose to 86.9% in 1998 (Republic of

Kenya, 2003). Female unemployment rates, particularly among young females, also rose sharply – from 6.4% in 1977 to 24.1% in 1986 and to 38.1% in 1998. Meanwhile, the male unemployment rate remained more or less constant at 6.8% in 1977, 11.6% in 1986 and 12.5% in 1998, thus a minimal change between 1986 and 1998. Thus the gender gap in employment and the unemployment rate remained wide. On the whole, the urban unemployment rate shot from 6.7% in 1977, to 16.2% in 1986 and to 25.1% in 1998. A greater part of the increase in overall urban unemployment was driven by the tremendous increase in overall female unemployment.

Despite the tremendous increase in the urban female LFPR, both formal and informal sectors remain highly male-dominated (Table 2), while unemployment has remained outstandingly high among women. With depressed formal employment growth (in both public and private sectors) coupled with the slowdown in overall economic activity that has occasioned massive retrenchments in both public and private sectors, the informal sector has provided the greatest opportunity for employment. The effect of civil service reforms combined with the restructuring programmes in the private sector exacerbated the already volatile unemployment situation in the country. It has aggravated competition for the limited number of new jobs, estimated to be just over 100,000 a year, in a situation in which new entrants to the labour force number more than 400,000 annually. In addition, a lack of demand for increasingly educated labour has contributed to increasing unemployment and especially youth unemployment (also caused by rural to urban migration) and growth of informal sector employment, while the effect of declining real wages on family incomes, pushes urban households to attempt to diversify their income sources through additional activities in the informal economy. Manda and Sen (2004) observe that the economic reform period was accompanied by a dramatic increase in informal sector employment, which became gradually more insecure because of the low survival rate of firms in the sector and low pay as compared with the formal sector. Unemployment increased in both rural and urban areas and especially among women in the urban areas. These authors find that the reform period also witnessed a shift in labour demand in favour of highly skilled labour, a decline in permanent fulltime workers, and an increase in part-time and casual workers as a cost cutting strategy.

Table 2: Employed and unemployed persons by sex and sector as percentage of relevant population group, 1988

Sector	Female	Male
Formal	23.4	53.2
Informal	30.7	32.1
Unemployed	45.9	14.8
Total	100.0	100.0

Source: Own computation from the 1998/99 Labour Force Survey (LFS) data

To sum up, Kenya has over the last couple of decades witnessed structural adjustment reforms that have been accompanied by changes in the structure of employment, incomes and poverty. Generally, the Kenyan economy shows a mixed performance with much better performance in the early 1970s.⁹ The situation deteriorated from the 1980s after the implementation of the SAPs coupled with other external and internal shocks.¹⁰ It got

particularly worse between 1990 and 2002. Real GDP growth rate performance has been poor; employment creation has been low; unemployment has increased; and poverty has risen significantly in both urban and rural areas – marked by a substantial greater increase in urban poverty between 1992 and 1997 than in rural poverty, with income inequality increasing over time.¹¹ Additionally, changes in the urban employment structure relate to the contraction of formal employment and an expansion of informal sector employment where earnings are considerably lower¹² and more irregular than in the mainstream sector, thus further worsening the economic situations of households.

In the meantime, the economy witnessed rapid growth of the informal economy, a process accompanied by much greater reliance of households on multiple and diversified formal and informal sources of income – in more specific terms, the reluctant “stop-go” implementation of economic reforms accompanied by poor growth performance led to a protracted process of real earnings decline that adversely affected the livelihoods of households. This in turn led to a significant rise in the incidence of poverty. Over and above, the standard of living has deteriorated, as evident from the poor performance of the per capita GDP, real earnings growth, high inflation and a drastic increase in urban poverty. The decline in real earnings was highest in the periods 1982–1994 and 1991–1994 when there was more rigorous implementation of SAPs.¹³ The period 1991–1993 was Kenya’s worst economic performance since independence in 1963.

Alongside these negative macroeconomic developments Kenya has also experienced a rapidly increasing labour force and a marked expansion of education (since 1963).¹⁴ However, the economy has not been able to generate enough jobs to meet the demand.¹⁵ The rapid expansion of education, which has led to an increase in the level of education of the labour force, implies that productivity endowments on which individual participation behaviour depends have changed over time.

This study is motivated by the fact that the Kenyan economy has witnessed a significant decline in modern wage employment’s share of total employment and the reverse trend in the share of informal sector employment. These trends call for an analysis of job attainment within the key sectors of Kenya’s urban labour market by assessing the importance of human capital, individual and household characteristics on an individual’s type of employment. This analysis is relevant because different sectors have different opportunities for skill realization and earnings, while such a study can yield indications of heterogeneity or discrimination in the labour market. Additionally, an understanding of the sectoral determinants of the labour supply has policy implications to do with eradication or minimization gender gaps in employment, human capital investment, and the level and distribution of income.

Against this background, the key issues addressed in the paper are as follows: The Kenyan urban labour market structure, consisting of the three broad categories of formal (modern wage employment – public and private sectors together), informal sector employment and unemployment, implies that some kind of sorting process takes place to situate workers in these categories. Once an individual has made the decision to participate in the labour force, what personal and socioeconomic characteristics are important for this process? More specifically, what labour supply factors are associated with a greater (lesser) likelihood of being in formal (public and private) and informal sectors? Is there a significant variation by gender in job attainment in view of women having attained analogous LFPR to men in 1998? Do the factors differ between younger

and older cohorts?

To embark on these questions, the approach of this paper is as follows: First, as summarized above, it explores changes to the Kenyan labour market brought about by SAPs and asks what characteristics make men and women more inclined to some sectors than others. Second, the paper analyses (both descriptively and empirically) a labour force survey (LFS) of a single point in time (cross-sectional data of 1998) in order to identify labour force characteristics associated with a greater (lesser) likelihood of public, private and informal sector employment. Empirically, this is undertaken using a multinomial logit model (MNL).

The remainder of the paper is structured as follows, Section 2 provides an overview of literature and Section 3 outlines the conceptual framework and methodology for the study including a specification of the MNL model and variables to be estimated. It also highlights the major limitations of the study. Section 4 describes the LFS data. Results are reported in Sections 5 and Section 6 concludes.

2. An overview of the literature

A mple empirical evidence exists on labour supply factors that affect an individual's labour participation decisions in the context of both developed and developing countries. (See for example, Gong and van Soest, 2000; Hunter and Gray, 1999; Shoshana and Shoshana, 1998; Kolev, 1998; Lanot and Muller, 1997; Manda, 1997; Makonnen, 1993; Blundell et al., 1987; Myint, 1985; Nwanganga, 1980; Ranis and Fei, 1961; Lewis, 1954.) The studies contain a subset of the following social and economic characteristics among the explanatory variables: female wage, male wage, age, schooling (education attainment), marital status, number and age of children, occupation of primary job, region of residence, religion, and non-labour income. From a methodological point of view, most studies reviewed have discussed in detail some of the econometric issues encountered: measurement problems, selectivity bias problems and weaknesses in using an ordinary least squares (OLS) estimation technique. These issues are addressed in subsequent sections of this paper.

In the Kenyan context, the studies that exist (Manda, 1997; Milne et al., 1990, 1994) – all based on the 1986 labour force survey – have analysed the determinants of participation by simply modelling the labour force participation decision into two categories (employed and unemployed) without taking into account that the determinants also vary by employment sector among the employed. A study by Mariara (2003), based on the 1994 Welfare Monitoring Household Survey data, although mainly concerned with issues of gender wage discrimination, has partly looked at the determinants of participation by disaggregating the urban labour market according to formal (public and private) and informal sectors and by sex. However, determinants of employment may vary between younger and older persons. Here, using a more recent data set, this study bridges the gaps by looking at the determinants of employment by gender and age cohorts.

3. Conceptual framework and methodology

Despite its limitations, the theory underlying participation decisions and number of hours worked has typically been modelled within the context of a standard neoclassical microeconomic model, which is the main standard theory widely applied in the empirical analysis of labour supply (Gray et al., 2002, 2003; Manda, 1997; Van den Brink, 1994; Heckman, 1979; Killingworth, 1983; Becker, 1965).¹⁶ Labour force participation (the state of being employed or unemployed) is one dimension of labour supply in that individuals not only make a choice of how many hours to work, but also make a simultaneous decision of whether to work at all.

Within the neoclassical labour supply framework, individuals as rational actors maximize their utility and are willing to enter employment governed by the fundamental requirement that the market wage exceeds the reservation wage.¹⁷ How a variable affects women's employment decisions depends on how it affects the reservation and market wages or both. A variable that increases the reservation wage, such as the presence of young children, availability of non-labour income,¹⁸ changes in tastes and preferences towards leisure and other non-market activities, the level of structural, cultural and incompatibilities between family and work (such as availability of childcare opportunities and attitudes towards working mothers), decreases the probability of being employed. A variable such as education can strengthen women's attachment to the labour market by increasing their potential earnings in the labour market, thus increasing their market wage.

The labour force status of an individual as predicted by the neoclassical analysis is thus determined in a two-stage process. First, an individual decides whether or not to supply labour to the market. Second, whether they are employed or not is determined by a combination of factors including labour demand (employer preferences, such as skills, experience, education, marital status and sex), incentives to search actively for work and to go for any job offers available. Major drawbacks of the theory are that it ignores the interdependence of household members and therefore their decision making, and that it fails to distinguish between productive and recreative activities (Van de Brink, 1994).¹⁹

Most of the empirical effort of this paper is devoted to the supply-side of the labour market with a look at the determinants of employment (sectoral choice as opposed to being unemployed) at household and individual levels. It should be stressed that the supply-side of a labour market is equally dependent on its demand side and vice versa. Labour markets function through an interaction of workers and employers, resulting in patterns of wages, employment and income. As discussed above, participation in the

labour force involves a decision by individuals on how to allocate their time, and a decision on the part of the employer to offer the individual a job. It is this interaction of supply and demand that determines whether a person participates in the labour force. In an empirical estimation of labour supply, it is not always possible to specify the demand schedule, especially when the analysis is confined to the household level, because information on labour demand variables is lacking.

Empirical model for the determinants of sectoral choice

This study uses a MNL model²⁰ in which individuals are sorted into four labour force categories, public sector, private sector, informal sector, and unemployed. The model allows the dependent variable to take four mutually exclusive and exhaustive values, $j=1, 2, 3$ or 4 and is defined as follows,

$$(Y_i = j) = \frac{e^{\beta_j X_i}}{\sum_{m=1}^4 e^{\beta_m X_i}}$$

where:

- $Y_i = 1$ if an individual is employed in the public sector
- $Y_i = 2$ if an individual is employed in the private sector
- $Y_i = 3$ if an individual employed/works in the informal sector
- $Y_i = 4$ if an individual is unemployed
- X_i represents a specific explanatory variable

Thus, the dependent variable has four categories/outcomes.²¹ In order to facilitate understanding of the effects of the logit coefficients, marginal effects or predicted probabilities (that is, change in predicted probability associated with changes in the explanatory variables²²) are developed on the basis of the MNL model of being in each of the four outcomes. Marginal effects (ME) are evaluated at the sample mean.

An important remark pertaining to informal sector employment has to do with how to treat the various categories of informal sector workers: wage workers, unpaid family workers, working employers and own-account workers. The issue is whether to include or exclude the last three from the analysis. Since the informal sector is now a major employer – currently accounting for over 75% of total employment – it makes sense to include these three categories together with informal sector wage employees. Moreover, as mentioned above, non-agricultural household enterprises are a foundation of the Kenyan economy in which own-account workers and unpaid family members together make up more than 70% of the entire employment.

The independent variables include personal and household characteristics as well as the social economic background. Among personal characteristics are age, level of

education, marital status and household-headship, and wages in the market. Household characteristics include childcare responsibilities such as number of young children (below school age), the size of the household and the presence of female relatives in the household. Age is included to pick up the life cycle effects and as a measure of potential labour market experience.²³ Education is captured by years of schooling or highest level of formal education completed.

The structure of the family has an important bearing on women's participation in the labour market and the sectors they go into. Scholarly consensus has been that women are deterred by marriage and children in the context of labour division within households where husbands specialize in market work and are the breadwinners, and women in childrearing and household work. Married women with young children are thus more likely to be unemployed than to be engaged in formal or informal sector employment. But this depends on the level of education of a woman, as women with high education levels are less constrained by the need to care for young children because they can afford to hire domestic help. As long as it is wage employment where there is little flexibility and the hours of work are fixed, women may select themselves into the inferior informal sector. To some extent, the sector somewhat enables them to combine productive and reproductive/care work.²⁴ In the Kenyan context, the greatest number of informal sector workers amongst women is indeed own-account workers (self-employed).

Most empirical studies find a negative relationship between the number of children in the family and the probability of participation by the wife (Kaufman, 1994). The negative relationship is particularly associated with children of preschool age. This standard gender analysis may breakdown in the Kenyan context where domestic service is affordable among educated women engaged in fulltime jobs or among those engaged in self-employment in the informal sector, which often allows them some flexibility to combine productive and reproductive work.²⁵ Concerning informal sector employment, however, this factor depends on whether one is really able to combine work and caring for children as this may depend on the age and number of children. Since decisions to have children and to participate in the labour market are endogenous, the presence of young children is left out in this paper.

Presence of female relatives in a household would be expected to increase the probability of formal and informal sector employment, as opposed to being unemployed, on the assumption that their presence reduces the burden of caring for children and handling domestic chores for other women in a household thus allowing time to engage in market work. Presence of female relatives is included in the models of married and single women.

It would be expected that being a household head increases the probability of being in employment in either of the two sectors regardless of sex or marital status. Being a household head is expected to reduce the likelihood of being unemployed.

Household size could have either a positive or a negative effect on the probability of being in employment (both sectors). On the one hand, a large household may mean heavier household chores for a woman and therefore a higher reservation wage. In this case, the effect on the probability of being employed in either of the sectors would be negative and positive for being unemployed. On the other hand, a large household may mean an increase in the financial constraints of her household, thus requiring her involvement in the job market. A large household with non-working adult members, especially females, may relieve women of some of the domestic responsibilities such as looking after young children

thus enabling them to take up market work. Here, the effect on the probability of being in employment would be positive and negative for being unemployed.

It should be noted that there is yet another possible endogeneity between the endogenous variable and the exogenous variables (the left-hand side and the right-hand side variables). For instance, marital status, female relatives and household-head variables could be a source of this bias. Specifically, labour market participation in a particular sector may also determine who is regarded as the household head. More female relatives might come to live with a relative who has a stable job in whatever sector. Similarly, marital status may also depend on the job – persons without jobs may not have the resources to marry or stay married. This should be kept in mind while interpreting these variables.

Partner's income and partner's employment status are known to influence the labour supply decisions of women although the effect is not obvious. If partner's income is taken as exogenous under the assumption that the decision to participate is not simultaneously decided within a couple, it would be expected that a higher partner income reduces the probability of participation in both sectors. In the context of worsening economic circumstances, women may be more inclined to work or search for work in order to augment the partner's falling real income (hence an inverse relationship between the likelihood of being employed and partner's income) or to cushion against the partner's potential job loss resulting from employment restructuring. Women (especially the highly educated) may be more induced to work for other reasons independent of partner's earnings such as the need for self-security or economic empowerment. Women whose partners are unemployed may become more inclined to work because they have further economic needs. On a different perspective, if men and women are affected by same economic shocks from the labour market, it may mean that if a man is unemployed, a woman will be more likely to be unemployed as well. Partner's real income and education are included in the model of married women.

On wages in the market, recall that the theory underlying the participation decision stems from a standard neoclassical microeconomic model in which an individual's decision to work is determined by the difference between the market wage and the reservation wage. Since by definition individuals who do not earn a wage and are yet part of the labour force – for instance the unemployed do not have observed wages – all that could be assumed about them is that their market wage is below their reservation wage. More specifically, in the analysis of the labour supply behaviour especially for women, this assumption is inappropriate, partly because many women are unemployed while the wages for non-workers are unobserved leading to econometric problems to do with model specification, measurement and biased estimates.²⁶ Ways to avoid these problems would be to estimate the employment choice equation in a reduced form where both market and reservation wages are replaced by their determinants or by using a direct measure of the market wage. In the former case, it means that the wage levels are not included among the independent variables in the model. This paper follows this method. In the latter case, since unemployed and inactive persons have unobserved wages, the variable used is the predicted wage. Appendix Table A1 provides a list of variables to be estimated and details of their construction.

4. Data and descriptive statistics

The Central Bureau of Statistics (now the Kenya National Bureau of Statistics) of the Ministry of Finance and Planning in Kenya has collected labour force survey data (cross-sectional data) at different points in time: 1977, 1986 and 1998. The study uses the 1998 data. The 1998/99 Integrated Labour Force Survey, conducted in all administrative districts of Kenya constituted in 1989, utilized the 1989 National Sample Survey and Evaluation Programme (NASSEP) frame created under the 1989 population-housing census. The framework followed a two-stage cluster design of 1,139 clusters, out of which 209 were urban; in these 1,938 households were interviewed. In total, 6,646 individuals were interviewed.

The analysis focuses on individuals in the labour force²⁷ age (15–64), excluding the inactive population, young children, fulltime students, the retired and the sick/handicapped. From the original sample of 6,646 observations, 83 observations with incomplete information were deleted, leaving 6,563 observations in which 4,008 are in the labour force age. Of these, 2,557 are employed (formal and informal sectors), 960 are unemployed and 491 are inactive. However, the sample for the analysis consists of 3,238 observations (the employed and the unemployed together, 1,547 females and 1,691 males) of which 537 are public sector employees, 724 are private sector employees and 1,017 are informal sector employees. The remaining 960 are unemployed. Some respondents may hold multiple jobs, but the data do not contain information on this issue. Information on the sample characteristics is provided in Appendix A.

As shown in Table A3 (entire sample), the average age is the highest among public sector workers. The proportion of household heads is higher among public and private sector workers (about 78% and 77%, respectively, compared with 61% and 26% for informal sector workers, and the unemployed respectively). More males than females in the labour force are likely to be engaged in all sectors (about 67%, 74% and 53% for the public, private and informal sectors, respectively). However, unemployment is highest among females (about 74%). Most members of the labour force are married.

Persons engaged in the public and private sector are more likely to have secondary level education (76% and 59%, respectively). Most of those engaged in the informal sector and the unemployed have primary level education (47% and 45%, respectively), although the proportion of those with secondary level education is substantial (about 41% and 43%). The proportion of persons with primary level education is lowest in the public sector (about 15% compared with 32% for the private sector). The proportion of persons with university level education, although quite small, is highest among public sector employees (8% compared with 5% for the private sector and 2% each for the

informal sector and the unemployed). Greater shares of people with no education are found among the unemployed (about 11%) and the informal sector (9%), compared with only 1% and 4% for the public and private sectors, respectively.

A similar analysis by sex (Tables A3 and A4) shows that the mean age for males in the labour force is 38, 34 and 30 for the public sector, for the private and informal sectors each, and for the unemployed, respectively. The mean age for females is lower by four years for the public and private sectors each, and by two years each for the informal sector and the unemployed. Thus most males in the labour force are older than females. Most married females are unemployed, followed by public and informal sector employees, while most married males are public sector employees, followed by private and informal sector employees. The proportions of male and female household heads are highest in the public sector.

Most male and female employment in the public and private sectors comprises those with secondary level education (87% and 55% among females and 70% and 61% among males for the public and private sectors in that order), while low levels of education characterize informal sector employment and unemployment. A snapshot of the general education trends of women in Kenya shows the following: Although school enrolment rates have risen, most girls do not progress to higher levels after completing primary level education. Some tend to get married or enter the labour force early and take up low earning occupations or income-generating activities. A significant number of those who progress to the secondary level drop out. Those who succeed in completing this level hardly proceed further. Progressively, more dropout trends among women partly contribute to their increasing unemployment rates, a scenario further exacerbated by their increasing rural to urban migration.²⁸

Wages in the public sector are the highest followed by those in the modern private sector.²⁹ Earnings of women are far below those of men.³⁰ The disparity between the wages from the modern sector and the rest of the economy is large – average wages in the formal sector are about twice those in the informal sector and about four times those in the small-farm sector.³¹ The modern sector hires more educated workers, hence their wages tend to be higher than those of workers in the rest of the sectors. Disparities in income (referring more directly to disparities in labour earnings) across Kenyan households derive to a degree from disparities in access to work. Persistently low household income reflects the incidence of low-productivity informal and traditional farm/pastoral activities. Only a small proportion of working Kenyans (specifically paid employees in modern wage employment) obtain adequate earnings from labour activities (Pollin et al., 2007).

As can also be observed in Table A3, the distribution of males in the labour force according to the four labour force categories is as follows: about 21%, 32%, 32% and 15% for the public, private, informal sectors and the unemployed, correspondingly. Among females (Table A4), the distribution is 11%, 12%, 31% and 46%, respectively. Thus the majority of males in the labour force (53%) are engaged in formal sector employment. A majority among females are not employed at all (45.7%) followed by those engaged in the informal sector – the proportion among females is relatively slightly higher in the informal sector (31%) compared with the formal sector (23%). Thus, women are predominantly engaged in the informal sector where education and skill levels are low or moderate. The formal sector where education and skill levels are high is male-

dominated; as noted, women constitute slightly less than a third of formal sector employment in Kenya.

In sum, most women work in the informal sector and are mainly concentrated in precarious employment activities. Unemployment has remained outstandingly high among them and is also characterized by low education levels.

So far, the descriptive analysis gives a general picture of the average characteristics of the entire urban labour force and of males and females separately. Descriptive statistics for younger and older persons are presented in tables A5–A10. As already highlighted, a majority of the Kenyan urban labour force is likely to be employed in the private and informal sectors. This is consistent with the changes and policies pursued by the Kenyan government of restructuring public sector employment to make it more efficient in creating an enabling environment for the private and informal sectors, which are in turn expected to create jobs for the ever-increasing labour force in the long run. However, there are quite significant differences in the four states – public sector employment, private sector employment, informal sector employment and the unemployed – when the analysis is broken down by sex (as discussed above) and by age-cohorts (as follows). The scenario is particularly astounding among the unemployed and younger persons (aged 15–34).

The distribution of all younger persons (Table A5) is as follows: 12%, 23%, 30% and 37% for the public, private and informal sector and the unemployed, respectively. For the older cohort (Table A6), the distributions over the same categories are 25%, 23%, 34% and 19%. Thus younger persons are likely to be in the unemployed category (as in many parts of the world) followed by the informal sector category, while the majority among the older cohort is employed in the modern sector.

The key point to note is that unemployment is particularly serious among the youth. This is partly attributable to the increasingly hard challenge the Kenyan economy has experienced over the years of trying to create employment for the ever-growing numbers of the labour force (mainly comprising young persons). The situation has been exacerbated by a fertility increase (although currently at a declining trend) coupled with rural to urban migration. This also partly explains the growth in informal sector employment as a steppingstone for unemployed job seekers.

By sex, the distributions among younger males (Table A7) are 15% for the public sector, 33% each for the private and informal sectors, and 19.1% for the unemployed. For older males (Table A8), the distributions are 29% for the public sector, 31% each for the private and informal sectors, and 10% for the unemployed. Thus, although unemployment is relatively lower among males than among females, it remains a youth problem even among males.

Among younger females (Table A9), the distributions are 9%, 13%, 28% and 51% for the public, private and informal sectors, and the unemployed, respectively. For older females (Table A10), the same distributions are 18%, 11%, 38% and 34%. Thus, while unemployment is also high in the older cohort (unlike in a similar male cohort), it is more serious among the younger cohort. Unemployment is clearly more serious among females. As observed above, the majority of younger males are likely to be private or informal sector workers. This triggers a concern as to why a majority of females in the younger cohort are unemployed, and if employed, in the inferior informal sector.

5. Results and discussion

Estimates of the probability of sectoral choice are presented in Appendix B. There are clear cohort and gender differences in the choice of sector. In the interest of brevity, emphasis is placed on the importance of sex (being male as opposed to being female), marital status, household headship and education.

For the entire urban sample (Table B1), sex (positive coefficient) is important for all sectors. Marital status enhances the likelihood of public sector employment only. All the three levels of education are important (with a positive effect) for both public and private sector employment, while only primary level education is important for informal sector employment. Household-headship is important for all sectors.

Although some of the determinants of employment appear similar across the three sectors, their marginal effects (MEs) differ and are interpretable as follows: A positive (negative) sign implies that a variable increases (reduces) the probability of a particular outcome. For instance, being a household head (as opposed to not being a household head) increases the likelihood of working in the public, private and informal sectors with MEs of about 7%, 15% and 14%, respectively, for an obvious reason. As expected, being a household head decreases the probability of being unemployed by about 36%.

The sex variable has a positive coefficient and is statistically significant in the three sectors. Its MEs is negative in the public and informal sectors (by just about 1% and 3%, respectively) and in the unemployed outcome (by about 12%), but positive in the private sector (by about 15%). This implies that being male as opposed to being female enhances the likelihood of being in private sector employment and reduces that of being in the public and informal employment and of being unemployed. Although this is subject to further research, it may connote some kind of sex discrimination in the labour market in which private sector employers prefer to hire men rather than women despite both groups having probably attained the same level of human capital. From a non-discriminatory point of view, employers may have a preference for men to women because of their varying levels of human capital skills, in which men in general are more advantaged than women. Still, as long as it is wage employment where there is little flexibility and hours of work are fixed, women may select themselves into the inferior informal sector in order to also cope with care work (caring for children and domestic chores). To an extent, this sector enables them to combine productive work and care work.³²

The coefficient and MEs of the marital status variable are positive and significant in the public sector relative to being unemployed, but negative and insignificant in the private and informal sectors. It could be that married people prefer to work in the public sector because working conditions are better despite low pay, as compared with the private

sector, or that persons join the public sector when they are fresh from college and while still single but as they get married later in their lives and as jobs become increasingly difficult to find in the private sector, they get stuck in the public sector. It could also be that married persons may prefer to work and remain in the public sector despite lower wages (in comparison with wages in the private sector) because of greater flexibility (ability to simultaneously hold multiple income-generating activities in the informal sector), guaranteed benefits (sick and maternity leaves) and better working conditions (fixed/stable employment contracts).

The positive effect of education implies that it enhances the opportunities for working relative to having no education (the omitted category). This chance increases with the level of education and is therefore highest for university level education. In the public sector, the ME of education are about 11%, 25% and 51% for the primary, secondary and university levels, respectively. In the private sector, they are about 7%, 12% and 0.3%, respectively. In the informal sector and among the unemployed, the MEs are negative – thus diminishing the likelihood of being in these two outcomes – by about 5%, 20%, and 31% for the primary, secondary and university levels, respectively, as pertains to the informal sector and by about 13%, 18% and 20% for the unemployed. Thus, the positive effect of education on enhancing employment is highest in the public sector and strongest for university level education. In the private sector, secondary level education has the strongest effect.

Estimates for younger and older cohorts (without separate samples by sex) are in tables B2 and B3, respectively. The effect of education also varies by cohorts and by sector. For instance, among younger persons, university and secondary levels of education enhance the likelihood of public sector employment, with university education having the strongest ME of 36%, compared with 9% for secondary level education. For the private and informal sectors, both primary (positive coefficient and MEs of 8% and 14% for the private and informal sectors, respectively) and secondary levels (positive coefficient and MEs of 16% and negative 1%, respectively, for the private and informal sectors) are significant for the likelihood of employment, while university education appears unimportant. Nevertheless, the younger cohort's secondary level education has the strongest impact in the private sector, while primary level education has the strongest impact in the informal sector.

Among the older cohort (age 35–64), all three levels of education augment participation in the public sector (positive coefficients with ME of 30%, 46% and 57% for primary, secondary and university levels, respectively), while in the private sector only secondary and university levels of education are important (positive coefficients with a positive ME of 3% for the secondary level and -8.2% for the university level). Thus university education has the strongest impact on the probability of participating in public sector employment for both age cohorts. The highest positive effect of education (all three levels) is observed among the older cohort engaged in the public sector. The highest positive effect of education in the private sector is observed among younger persons, especially that of secondary level education. Primary and secondary levels of education are important for informal sector employment among the younger cohort, with primary level education having the strongest effect. All three levels of education are unimportant for informal sector employment among the older cohort.

In both cohorts, sex (being male rather than female) increases participation in private sector employment. Sex is also important among younger persons as concerns informal sector employment.

For the younger cohort, marital status does not affect the likelihood of employment in all sectors. After interacting it with age, however, the variable becomes negative and significant in all sectors. The interaction term is positive and also significant, connoting that the effect of age on married younger persons is more positive than its effect on single younger persons in all sectors relative to being unemployed.³³ These results imply that for persons in this cohort, being married discourages participation in all sectors but an increase by a unit in age for married persons enhances it. In reality, this is perhaps due to an increased financial burden of raising children or it could be that the reproductive burden hinders younger persons from working. For the older cohort, marital status is unimportant except in the public sector where the relationship is positive while the age-marital status interaction term is insignificant in all sectors³⁴ – for this cohort, the reproductive burden may not be a hindrance as children are either at school fulltime or are independent.

By sex, Table B4 shows that for males (without age-cohort breakdown), marital status has a positive correlation with sectoral choice (all sectors) with the strongest predicted probability being in the public sector. This result is not surprising and arises because most married males are also the household heads (main economic caregivers) and therefore being married necessarily enhances their likelihood for employment irrespective of sector. Moreover, the Kenyan family system is a highly patriarchal one in which, culturally, men are household heads in terms of key decision making and providing main economic support for the household. Household headship has a positive coefficient (MEs of 6%, 13%, and 8% for public, private and informal sectors, respectively). All three levels of education augment their chances for securing a public sector job, with university level education having the strongest effect. Both secondary and university levels boost male participation in private sector employment. However, despite positive correlation of these two levels with participation in private sector employment, their marginal effects are statistically insignificant. Primary level education is important for informal sector employment.

By age cohorts, household-headship and marital status are important for all the three sectors among younger males (Table B5). All other factors are insignificant. The strongest positive effect of household headship is in the private sector (about 29% compared with 5% of the public sector and 6% of the informal sector). The same holds for marital status – about 9% compared with 5.1% of the public sector. The MEs of marital status are negative in the informal sector (about 1%) and in the unemployed outcome (about 14%), thus reducing young men's likelihood of being in these two outcomes. Of importance to note about this cohort is that none of the three education levels is significant in any of the sectors. For the older cohort (Table B6), household headship and marital status and all three levels of education determine participation in public sector employment, while only secondary and university levels of education are important for private sector employment. The unique points to note about this cohort are that household headship and marital status seem to have no effect on participation in the private sector and that none of the variables are significant for informal sector employment. The age-marital status interaction term is insignificant in both cohorts.

Among females (Table B7a), household-headship is important for all sectors – positive coefficient and positive MEs of 4%, 5% and 26% for public, private and informal sectors,

respectively). Secondary and university levels of education have a positive influence on public sector employment (with MEs of 19% each), while all three levels of education are important for private sector employment, particularly university level education (MEs are 11%, 14% and 42% for primary, secondary and university levels, respectively) – the MEs are remarkable for females in this sector. Marital status³⁵ has a negative effect on private sector employment, thus increasing women's reservation wage while female relatives are also important for public sector employment with a positive effect, thus reducing their reservation wage. The age–marital status interaction term is significant in the private and informal sectors (Table B7b) unlike in the male sample. Education is unimportant for the informal sector. The presence of older children of school-going age in a household is positive in this sector, thus reducing the reservation wage.

For younger females, the variables (without age–marital status interaction term, as presented in Table B8a), household-headship is important for all sectors (with MEs of 3%, 6% and 28% for public, private and informal sectors, respectively). Being married reduces the chance for private sector employment. The presence of female relatives in a household increases the likelihood of public sector employment while that of older children of school-going age is positive in the informal sector. Secondary level education improves young women's odds of employment in the three sectors with MEs of 9%, 14% and 6% for public, private and informal sectors, respectively. Primary level education is important only for informal sector employment (MEs of 15%), while university level education is relevant only for private sector employment (MEs of 36%). The age–marital status interaction term (Table B8b) is positive and significant in all the sectors.

Determinants of employment among older women are summarized in Table B9. Being a household head increases the likelihood of being employed in all sectors, with MEs of 7%, 5% and 26% for public, private and informal sectors respectively. Only secondary and university levels of education are important for public and private employment with MEs of 41% and 26%, respectively, for the public sector and 9% and 39% for the private sector. The presence of older children is positive and important for informal sector employment, thus increasing the market wage. Household size is important for public sector employment – and negatively signed – thus increasing the reservation wage. Marital status for this cohort has no effect on participation in all sectors, while the age–marital status interaction term is insignificant.

6. Summary and conclusion

The paper assessed the determinants of formal and informal sector employment in the urban areas of Kenya based on labour force survey data of 1998. Descriptive statistics show that a majority of the Kenyan urban labour force is likely to be employed in the private and informal sectors. This is consistent with the changes and policies pursued by the Kenyan government of restructuring public sector employment to make it more efficient in creating an enabling environment for the two sectors which are in turn expected to create jobs for the ever-increasing labour force in the long run. However, there are quite significant differences in public, private and informal sectors of employment and the unemployed outcomes when the analysis is broken down by sex and by age cohort.

Of particular concern are the unemployed and informal sector categories, with special attention to gender imbalance in access to employment. Unemployment is clearly a youth problem and its incidence is more serious among women (younger women especially) than men. Formal sector employment in both public and private sectors is male-dominated while women occupy the inferior informal sector (inferior in the sense of low incomes, precarious tenure and unregulated forms of employment) or are unemployed. As matter of fact, a near majority among females are unemployed (46% compared with only 15% of males) followed by those engaged in the informal sector. This phenomenon persists, despite women becoming increasingly well-educated.

The findings reveal that the key labour supply factors important for employment in the public, private and informal sectors of the Kenyan urban labour market vary by cohort (younger and older persons) and by sex. What may appear as the effect of each factor could be misleading, if an analysis failed to take into account this distinction. This variation reflects how labour supply factors are rewarded in the labour market and corroborates heterogeneity in Kenya's urban labour market. The results also give indications of discrimination in the labour market. Special emphasis is placed on the importance of the variables *sex*, *marital status*, *household headship* and *education*, of which the first three reveal the disadvantaged position of women in the labour market.

In terms of the *sex* of respondents, results indicate that being male rather than female enhances the likelihood of employment in the three sectors, particularly the private sector. This means that men have a higher chance than women of working in the three sectors as opposed to being unemployed. Of policy concern and scope for further research is to identify whether this discrepancy is a result of labour market discrimination against women (identified in the literature as sex discrimination) or is justified on the basis of human capital skills.

As for *marital status*, being married as opposed to being single reduces women's (especially younger women) chance of employment in the private and informal sectors. It could be that there are other underlying factors that inhibit married women from working such as sex discrimination and care work (where women may voluntarily or involuntarily decide not to work). This further illustrates the underprivileged position of women in the labour market and it requires further attention.

Household headship is also important. Household heads are more likely to work than non-household heads for obvious reasons. The difference lies in which sectors they are likely to work when the analysis is done for males and females separately. Female household heads are more likely to work in the informal sector irrespective of age, while male household heads are more likely to work in modern wage employment. This has implications for poverty and in particular its incidence in female-headed households.

The study identifies *education* as a major factor determining participation in modern wage employment. Of policy concern is that a high level of youth unemployment persists, despite a significant improvement in education attainment. Related to this is whether the youth are equipped with skills competitive enough for a changing labour market or at least adequate to enable them to create their own employment. Moreover, against the background of currently very high urban unemployment rates among young graduates and first-time job seekers, informal businesses that are precarious in nature emerge among the few potential options of becoming economically active. However, if the environment is not encouraging for young persons with human capital skills and good business ideas, it is apparent that new technology schemes will be rapidly over and done in support for survival schemes within the typical service (retail trade) industry as is the case among non-agricultural household enterprises.

Worth mentioning is that education appears to have no impact on informal sector employment, although primary level education does have a minimal effect among males and females in the younger cohort. Possible reasons are that informal sector employment requires skills and capital, rather than a high education level as would be the case for modern wage employment. The study casts doubt on the extent to which the informal sector is able to absorb the excess and growing number of young, educated and unskilled workers, given a significant decline in the formal sector employment. This has implications for the rising levels of urban poverty, crime and potential for civil disorder in Kenya.

It is commonly acknowledged that the majority among the poor in Kenya, as in other sub-Saharan African economies, have low education levels and derive their incomes from the informal sector. Poverty is particularly high among women and children and, as noted, most women derive an income from the informal sector. Linked to this is a potential problem of life-course and intergenerational poverty transmissions – conditions of childhood that can lead to poverty throughout the life-course and affect transfers of poverty to the next generation. Escape from poverty depends on numerous factors including education opportunities, employment opportunities in adulthood, and parental or neighbourhood role models.

Education and access to modern sector jobs are therefore among most plausible conditions for escaping poverty. Primary level education is important for sorting workers into informal sector employment, which from a policy point of view may mean that

investment in primary level education is likely to place more persons – especially women – in this sector. Earnings increase with the level of education, which in turn helps to reduce poverty by increasing the productivity of the poor. Extreme poverty appears to be much more common in households that are based on informal activity – most of the working poor in Kenya are disproportionately in the informal sector (Pollin et al., 2007; Odhiambo and Manda, 2003). The proportion of working women is relatively higher in the informal sector compared with the formal sector. One conclusion of this paper is that there is need for policies to upgrade women's education and skills so that they can equally compete with men in the labour market. This would ultimately reduce their levels of unemployment and increase their productivity and earnings. Any approach to mitigating urban poverty should strongly endeavour to improve worker's productivity and earnings, particularly in the informal sector where most women and the urban poor are engaged.

The employment situation in Kenya clearly presents a daunting challenge for the Kenyan government. On the one hand, productive jobs are basically limited to wage employment in the formal sector. Returns to education are also quite high, and especially so for tertiary level education. Moreover, the changing structure of the Kenyan labour market has been marked by shifts in labour demand in favour of skilled and highly educated labour (Manda and Sen, 2004; Manda, 1997). Besides, the Kenyan economy has become increasingly capital intensive despite the abundance of labour. The private sector, which is targeted as the main conduit for employment and growth, is likely to employ high-skilled labour. This largely benefits men since they are relatively more skilled and educated than women. On the other hand, how to achieve this target remains to be seen, given a high labour force growth that outstrips employment growth and the inability of the economy to generate modern wage employment.

On the whole, these results suggest that education is very important for women (as it is for men) in enhancing their access to modern wage employment (in the private sector mainly). However, women are still more likely to attain lower levels of human capital (education, experience and skills) than men, which may put them at a greater risk of unemployment and movement into informal sector employment. Low levels of education and skills among women are mirrored in their higher unemployment rates, their under-representation in formal employment and their lower earnings in comparison with those of males. Wambugu's 2003 study on the importance of worker's education (among other factors) on an individual's type of employment (both urban and rural labour markets together) corroborates this argument in which women's lower human capital levels restrict them to agriculture and unpaid family work while men's higher levels of education keep them in modern wage employment. In another study Mariara (2003) also finds that there are marked differences in the process, generating the gender wage gaps in the private and public sectors of the Kenyan labour market where preferential treatment towards men is pronounced in all sectors owing to expected lower productivity of women of childbearing age.

A standard labour market is described by both the supply and the demand sides. This study focuses on the supply factors (i.e., on the characteristics of persons supplying labour to the market). A thorough understanding of the demand would be necessary to complement such a study, but relevant data on the demand side are lacking. Future

research and survey data collection methodologies should incorporate the demand-side information.

Despite the constraints, this study identifies research, education and employment policy gaps by asking: What specific skills or qualities do employers look for when recruiting new employees? Are the recruitment practices gender balanced? Which training and skills are sought for what sectors? Is the current education system demand or supply driven, and does it equip graduates with adequate skills to become self-employed? Do the current policy environment and infrastructure encourage self-employment? What are the real constraints faced by women in finding reasonable work given their remarkably high unemployment rates? Answers to these questions have broad policy implications towards an achievement of gender balance in education, the labour market and poverty eradication. The study not only calls for further investigation into the factors influencing the demand for labour, especially in the private and informal sectors, but also asks whether there is indeed a bias towards male preference in private sector employment and whether the bias is justified on human capital attributes and not on labour market discrimination against women, especially among married women.

Finally, these policy gaps should be seen in light of the fact that women may be more likely to attain lower levels of human capital than men because of discrimination within households where families deliberately choose to invest in boys and not in girls education. This may put the girls at a greater risk of unemployment and informal sector employment, while their marital status may trigger the risk of future unemployment, inactivity or temporary interruptions from work because of reproductive responsibilities and care work. It could also make them more susceptible to sex discrimination in the labour market as employers try to safeguard production costs such as mandatory and paid maternity leave and anticipated interruption from work. Further research is thus needed to identify the actual causes.

Notes

1. In the Kenyan context the “formal sector” (referred to as the modern sector) is defined to include the entire public sector and private sector enterprises and institutions that are formal in terms of registration, taxation and official recording (incorporated enterprises). The public sector covers all activities and establishments of the central government, its statutory corporations (wholly owned corporations or parastatals) and registered companies in which the government is a majority shareholder, and all local government authorities. Public sector activities are entirely in the modern economy. The private sector consists of companies and businesses in the modern sector in which the government does not own majority shares, the informal sector, cooperatives, non-profit making organizations, private households employing domestic servants, and small-scale/subsistence farming and pastoral activities. See Republic of Kenya, (1998, 2003).
2. The origin of these classifications comes from literature on dual labour market and labour market segmentation models. See Ricardo (1815), Lewis (1954), Rans and Fei (1961), and Doeringer and Poire (1971).
3. The “informal sector” concept (now referred to as the “informal economy”) was first introduced by the International Labour Organization (ILO) in the early 1970s when the term was used to describe specific activities taking place in urban areas of developing countries. The concern at that time was with the working poor who were not recognized, registered or protected by the working authority (ILO, 1972). See also Menke (1998) for a succinct discussion of the evolution of this concept. In the Kenyan context, the informal sector (locally known as the *Jua-Kali*, a Kiswahili term meaning “hot sun” to indicate that many workers operate without fixed premises) covers all small-scale activities that are normally semi-organized and unregulated and use low and simple technology. The sector largely comprises self-employed persons or employers of a few workers. It also includes unpaid family workers. Small-scale agriculture and pastoral activities are farm-related economic activities that are mainly located in the rural areas. Owing to their non-registration nature, they are not classified as belonging to either the modern sector or the informal sector (Republic of Kenya, 2003).
4. It is worth mentioning that non-agricultural household enterprises (NHEs) are a fundamental pillar of the Kenyan economy. According to Pollin et al. (2007) about 2.1 million NHEs existed in Kenya in 2006 of which 90% were informal enterprises and the rest formal. Out of 13.5 million Kenyans in the labour force (in 2006), 12.1 million were employed. About 43% or 5.2 million of the total employed persons work in NHEs – 4.1 million (79%) in informal enterprises and 1.1 million (21%) in formal enterprises. The largest category of employment in the NHE sector is unpaid family members, comprising about 37% of total employment followed by own-account workers (people working alone

for themselves) comprising about 34% of total employment. Thus, own-account workers and unpaid family members together account for more than 70% of the entire employment in NHEs. The domestic market within Kenya is the most important source of sales from NHEs, with about 90% of them selling directly to consumers. Hardly do household enterprises sell their commodities to the export market. The overwhelming majority of NHEs – 82% of the total number of firms – derive their earnings by providing services, mainly in retail trade. Service providing enterprises comprise about 63% of all NHEs.

5. See also Magnac(1991) and Pradhan and van Soest (2005).
6. “The term can be defined as a set of policy changes or reforms which combine short-run stabilization measures and long-term adjustment measures” (van der Hoeven and van der Geest, 1999: 9). “SAP mainly entail changes in macroeconomic policies to make the economy adaptable to changing economic realities and basically more market oriented” (Ikiara and Ndung’u in van der Hoeven and van der Geest, 1999: 73). Implementation of SAPs in Kenya required restructuring of numerous public services and social support systems with the intention of reducing the government budget deficit and correcting macroeconomic imbalances for medium- and long-term economic recovery and growth. The process has also involved cost-sharing of basic social services such as health and education; retrenchments in the public sector; privatization and sale of non-strategic public enterprises; removal of price controls and subsidies; and trade liberalization.
7. It should be emphasized here that the linkage and dissimilarity between the formal and informal sectors is no longer as simple as it was in the 1970s and 1980s when the formal sector was viewed as offering “real” jobs with fringe benefits, job security and superior prospects (King, 1996; Agesa and Agesa, 1999). Today, the sector (mostly the private sector) also uses informal labour arrangements such as casual work arrangements – an uncertain macroeconomic environment can discourage investment both domestically and externally with an adverse affect on output and employment growth. Formal enterprises suffer, and consequently are enticed to perform informal business activities alongside their official activities. The link between officially registered enterprises and various informal businesses or practices has become a common trend; informal activities in many developing countries are associated with a lack of opportunity in the formal economy and thus symbolize a coping strategy for survival.
8. According to Husmanns (2004: 1), the main gaps in the informal sector definition are that: 1) persons engaged in very small-scale or casual self-employment activities may not report in statistical surveys that they are self-employed, or employed at all, although their activity falls within the enterprise-based definition; 2)informal sector statistics may be affected by errors in classifying certain groups of employed persons by status of employment such as subcontractors, free-lancers or other workers whose activity is at the borderline between self-employment and wage employment; and 3) an enterprise-based definition of the informal sector is unable to capture all aspects of “informalization” of employment, which has led to a rise in various forms of informal (or non-standard, irregular, precarious, etc.) employment, in parallel to the growth of the informal sector.
9. Overall, Kenya’s economic growth record has been sporadic and can be split into three broad phases: the growth phase (1964–1972); the shocks phase (1973–1984), and the adjustment phase (1985–2002), characterized by inconsistent donor flows and economic stagnation (particularly from 1990 to 2002) leading to an economic recovery from 2003.

10. Economic performance during the first half of the 1980s was frail with an average real GDP growth rate of 3.4% for the period 1980–1984. Although the economic picture in the second half of that decade was relatively better, it started declining persistently from the early 1990s. The period 1991–1993 was Kenya’s worst economic performance since independence marked by a standstill in GDP growth, contraction in agricultural production at a yearly rate of 3.9%, inflation that reached a record 100% in August 1993, and a government budget deficit of more than 10% of GDP. As a result of these combined problems, bilateral and multilateral donors suspended programme aid to Kenya in 1991 and again in 1997 as a prerequisite for more reforms. There were some further shocks both internally and externally: 1992–1993 drought, deteriorating terms of trade; increases in oil prices because of the Gulf War; declining foreign investments; bad rains (El Nino) in 1997 (significantly affecting agricultural production); and two major bombings (in 1998 in Nairobi and in 2002 in Mombasa) with a heavy impact on the tourism industry. By 2000, the economic situation seemed hopeless, recording a negative real GDP growth rate. In 1993, the Government began a major agenda of economic reorganization and liberalization with the backing of the World Bank and the International Monetary Fund (IMF) – see footnote 7. Consequently, during the period 1994–1996, real GDP growth rate averaged just above 4% annually. In 1997, however, the economy regressed into sluggish growth caused by adverse weather conditions and tapering economic activity preceding general elections in December 1997. From 2004 the economy showed remarkable recovery until the post-election violence experienced after the December 2007 elections threatened to overturn this progress. Average real GDP growth rate for the period 2004 to 2006 was 5.6%. Even so, no significant employment gain was witnessed in the latest era of economic recovery. In sum, several decades of declining economic performance, combined with rapid population growth have translated over time into diminished per capita income, increased poverty and worsening unemployment.
11. For instance, the incidence of urban poverty increased from 15.3% in 1976 to 29.3% in 1992, to 29% in 1994 and to 51.5% in 2000. Rural poverty increased from 25% in 1974 to 48.8% in 1981, to 46.3% in 199, to 46.8% in 1994, to 52.9% in 1997 and to 60% in 2000.
12. It is widely acknowledged that incomes in the informal sector are low and that they are in most cases inadequate. In the Kenyan context, Mwabu et al. (2004) show that employment in the agricultural and informal sectors is associated with a higher than average probability of being poor. Zepeda (2007) finds that even after taking into account education, sex and other factors, paid employees in the modern sector earn significantly higher wages than those in the informal sector and farm or pastoral activities. Wages in the modern public sector are highest, followed by those in the modern private sector.
13. Kenya was among the first African countries to adopt SAPs, back in 1980, after a prolonged economic decline, falling world commodity prices, fiscal and monetary instability, and rising levels of unemployment. See Ikiara and Ndung’u (1999) for a summary of Kenya’s first 15 years of experience with structural adjustment.
14. Over the last three decades, Kenya has had an impressive record in expanding access to education by establishing a comprehensive network of schools all over the country. Prior to independence (in 1963), the primary school gross enrolment ratio was 47% in 1960 and had nearly doubled to 90% by 1980. The expansion of primary school enrolment was partly fuelled by free primary education initiated in 1974. Even more drastic was the expansion of secondary school enrolment rate from a mere 2% in 1960 to 19% in 1980

(more than nine-fold increase) and to about 30% in 1990, with the increase in secondary school enrolment due to a large number of schools that were built through self-help initiatives in response to high demand for education (Manda et al., 2006; Manda, 1997). One important result was that the share of illiterate females and males in the population declined over time from 44.0% in 1970 to 11.7% in 1999 for males and from 74.1% in 1970 to 25.2% in 1999 for females.

15. The rapid expansion of education has been accompanied by worsening unemployment problem ever since the late 1960s. Moreover, since 1989 the impressive performance during the first two decades after independence has been reversed. Primary school gross enrolment rates fell from 106% in 1989 to 101.4% in 1999 as secondary school enrolment rates declined from 26% in 1990 to 19% in 1999. Factors contributing to this decline include the high cost of education, crippling poverty, socio-cultural values, and early marriages and pregnancies. The introduction of cost-sharing arrangements in 1989 had an adverse impact on the access to education for children from poor families, especially for girls.
16. The basic underlying assumptions theory refer to utility maximization subject to budget constraints. The theory assumes that economic agents make informed and rational decisions on the basis of complete certainty about prices and wages and that individuals face own budgetary constraints independent of what others do. Hence, it is an application of consumer behaviour theory. Individuals are assumed to allocate time to market work and non-marketable activities (leisure). Utility is maximized by choosing a combination of goods and leisure hours subject to time, price and income constraints.
17. The reservation wage is the amount of money that a person would have to be given to be induced to work for the first one hour or the minimum wage at which a person is willing to enter employment. The market wage is the present value of wages offered in the market and the present value of future earnings' losses caused by non-accumulation and depreciation of human capital (Even, 1987). Therefore, it is highly dependent on level of education, accumulated work experience and length of career breaks. When the market wage is less than the reservation wage, hours of work will be zero, since the utility loss from giving up even one hour of leisure to participate in the labour force would be greater than utility gained from the income earned from market work.
18. For instance, the economic background of a husband or partner is expected to play an important role, especially when children are present. A conjecture of Becker's (1965) theory of household time allocation is that an increase in husband's income may prompt women to consume additional non-market time, thus implying an inverse relationship between husband's income and women's employment decisions whereby the higher the husband's income, the lower the financial pressure of the family and the lower the propensity of the wife to enter employment.
19. For instance, married women's labour supply decisions are typically made in the context of decisions taken by other members of the household or family. To overcome these objections, various extensions of the individual labour supply model have been made, such as game theory models, individual utility models, bargaining models and new household economics model.
20. A multinomial logit model is a direct extension of a binary logit model to a dependant

variable with several unordered categories. A decision to work in formal or informal sectors is not sequential/ordered but depends on the sector in which one finds a job. For instance, some people choose to join the informal sector awaiting modern wage employment job, others leave the modern sector to become self-employed or leave the public sector to join the private sector and vice versa. This choice does not assume any order justifying the use of a MNL model.

21. In MNL models, there is a tendency to separate as many states as is feasible (non-pooling). Cramer and Ridder (1991: 268) warn that unless the aim of the analysis calls for non-pooling, “we should pursue parsimony and pool separate states whenever possible. It is an empirical issue whether a subset of states can be treated as a single state or whether its members show significant differences, an issue subject to statistical test. The solution is to carry out a likelihood ratio test”. In this study, analysis is done without pooling public and private wage employment as the two are mutually exclusive. There is no reason to pool the informal sector with modern wage employment.
22. See for example, Greene (2003: 667).
23. Age-squared is included as well to allow for non-linear relationship between age and the probability of employment.
24. Nevertheless, women may still be less advantaged than men in this sector partly – and mainly – because of the reproductive burden. For instance, age and number of younger children in a household may hinder some women in low-income households from participating in informal sector employment as wage employees or own-account workers even when they have minimal financial ability to do so. Lack of capital to start own business is yet another constraint regardless of the presence of young children.
25. Manda (1997) found the relationship negative but statistically insignificant, and argues that there are perhaps social mechanisms of spreading the burden of rearing children through, for instance, the presence of extended family members in a household.
26. Inclusion of both working and non-working persons in the analysis may lead to model specification problems since the equation is only valid in a case where the value of wages is greater than the reservation wage. Measurement problems may also be due to the large number of non-working persons whose wages are unobserved, while OLS estimates based only on the number of working persons may be biased because of a selectivity bias problem.
27. Labour force (economically active) refers to the number of people aged 15–64 who are either employed or unemployed.
28. Although migrants are predominantly males in the working age population, over the years there has been a slight change in the sex ratio of the migrants, from 121 to 119 to 114 in 1969, 1979 and 1989, respectively. A declining sex ratio suggests that the extent of female rural to urban migration has increased over time.
29. On average, incomes are much higher in the formal than informal sector, with more significant income disparities among the categories of workers within each sector (Pollin et al., 2007; Manda and Sen, 2004; Mwabu et al, 2003).

30. In general, although females constitute about 50.1% of the total population, on average, they account for only about 30% of the total formal sector wage employment and earn 33% less than their male counterparts (Were and Kiringai, 2004). See also Zepeda (2007) and Mariara (2003).
31. Based on the 1998 Integrated Labour Force Survey 1998/99 report (Republic of Kenya, 2003).
32. Nevertheless, women may still be less advantaged than men in this sector partly and mainly due to care work. Age and number of young children in a household may hinder some women in low-income households from participating in informal sector employment as wage employees or own-account workers even when they have a minimal financial ability to do so. A lack of capital to set up own business regardless of the presence of young children, is another major hindrance. Women in middle-income households are less constrained by care work because they can afford to hire domestic servants.
33. Note that if the coefficient estimate for the age–marital status interaction term is significant, it means that the *interval scale* variable *age* has a different effect on married persons relative to single persons. The coefficient estimate gives the differential effect that the *interval scale* independent variable (*age*) has on the dependent category of interest (public, private or informal sectors) versus being in the base (or contrast) category of the dependent variable (being unemployed) for the included group in the dummy variable (being married) versus the excluded group (being single). If the estimate for age–married is positive, it means that the effect of age on married persons is more positive than the effect of age on single persons (for a specific outcome category relative to being unemployed). If the coefficient estimate is negative, it would mean that the effect of age on married persons would be more negative than the effect of age on single persons (for a specific outcome category relative to being unemployed).
34. Results are not reported where the interaction term is significant, but are available upon request.
35. Women’s employment is shaped by household structures and dynamics such as the size of the household, number of dependents and the household cycle; and ideological factors such as gender values and more specifically husband’s attitudes to women’s work. On the basis of my doctorate data collected in 2003 on employment histories and coping strategies of selected households from two different urban income clusters, I find that in the Kenyan context, the reproductive burden affects married women with children from low and middle incomes differently. The burden is seemingly less among the latter. Among women from poor urban households, early marriage and early entry into the labour market are linked to early school termination. After marriage, the reproductive duty tends to constrain them (dependent upon the number of young children below school-age) from engaging in productive work. Cultural attitudes also play a negative role. However, with a household’s deteriorating economic position in the context of unstable, low-paid and precarious tenure forms of income-generating activities of their male spouses, they are pushed to work out of economic necessity. The most convenient sector to join is the informal sector as own-account or unpaid family workers. Others are rendered completely inactive because of young children. In contrast, women from middle-income households may voluntarily choose not to work in order to care for the children. If not, they can afford to employ childcare whenever they wish to work.

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Appendix A: Variable descriptions and characteristics

Variable description

Table A1: Explanatory variables

Age

Age-squared (*agesq*)

Head=whether one is a household head or not, dummy variable in which 1=household head; 0=not household head

Household size=total number of household members (*hsize*)

Sex= male or female, dummy variable in which 1=male; 0=female

Married =whether married or not, dummy variable in which 1=married; 0=not married

AgeMarried, Interaction dummy for age * Married

Education (highest level completed)

Primary, dummy variable in which 1=has primary level education; 0=other level or none

Secondary, dummy variable in which 1=has secondary level education; 0=other level or none

University, dummy variable in which 1=has university level education; 0=other level or none

None/nursery (*omitted category*), dummy variable in which 1=has no schooling; 0=has primary, secondary and university

Presence of children and female relatives in a household

Presence of children 0–6 years in household, dummy variable in which 1=yes; 0=no (*Ch0_6*)

Presence of children 7–17 years, dummy variable in which 1=yes; 0=no (*Ch7_17*)

Presence of female relatives in a household, dummy variable in which 1=yes; 0=no (*Relatives*)

Ownership of a dwelling unit= dummy variable in which 1=owns a house or 0 does not (*Tenure*)

Log monthly wage earnings Salary,

Sample characteristics

Table A2: Total sample

Variable	Public			Private			Informal			Unemployed		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
Age	537	36.42	7.63	724	33.30	9.31	1017	33.18	10.19	960	28.69	10.67
Agesq	537	1384.64	582.11	724	1195.50	670.87	1017	1204.96	753.39	960	936.64	767.32
Head	537	0.78	0.41	724	0.77	0.42	1017	0.61	0.49	960	0.18	0.38
Sex	537	0.67	0.47	724	0.74	0.44	1017	0.53	0.50	960	0.26	0.44
Hsize	537	3.87	2.21	724	3.64	2.41	1017	4.19	2.42	960	4.71	2.64
Married	537	0.84	0.37	724	0.70	0.46	1017	0.69	0.46	960	0.64	0.48
AgeMarried	537	31.23	15.25	724	25.29	17.89	1017	24.41	18.15	960	19.57	17.04
None	537	0.01	0.11	724	0.04	0.19	1017	0.09	0.29	960	0.11	0.31
Primary	537	0.15	0.35	724	0.32	0.47	1017	0.47	0.50	960	0.45	0.50
Secondary	537	0.76	0.43	724	0.59	0.49	1017	0.41	0.49	960	0.43	0.50
University	537	0.08	0.27	724	0.05	0.21	1017	0.02	0.14	960	0.02	0.12
Ch0_6	537	0.40	0.49	724	0.39	0.49	1017	0.43	0.50	960	0.47	0.50
Ch7_17	537	0.44	0.50	724	0.34	0.47	1017	0.46	0.50	960	0.42	0.49
Relatives	537	0.18	0.39	724	0.14	0.35	1017	0.15	0.36	960	0.22	0.42
Tenure	537	0.14	0.35	724	0.12	0.32	1017	0.16	0.37	960	0.17	0.37
Salary	511	8.84	0.59	622	8.56	0.88	270	8.05	0.75	0	0	0
Proportion total	16.6			22.4			31.4			29.7		

Table A3: Males – Total sample

Variable	Public			Private			Informal			Unemployed		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
Age	360	37.67	7.83	539	34.45	9.04	542	34.24	10.54	250	30.23	12.29
Agesq	360	1480.08	612.25	539	1268.18	669.52	542	1283.03	794.42	250	1064.25	898.26
Head	360	0.96	0.21	539	0.90	0.30	542	0.83	0.38	250	0.44	0.50
Hsize	360	3.71	2.26	539	3.53	2.39	542	3.98	2.54	250	4.69	2.68
Married	360	0.92	0.27	539	0.81	0.40	542	0.75	0.44	250	0.41	0.49
AgeMarried	360	35.36	12.71	539	29.17	16.25	542	27.80	18.25	250	16.66	21.26
None	360	0.01	0.12	539	0.04	0.19	542	0.06	0.24	250	0.08	0.27
Primary	360	0.18	0.38	539	0.31	0.46	542	0.48	0.50	250	0.42	0.49
Secondary	360	0.70	0.46	539	0.61	0.49	542	0.42	0.49	250	0.48	0.50
University	360	0.11	0.31	539	0.05	0.21	542	0.03	0.17	250	0.02	0.15
Ch0_6	360	0.40	0.49	539	0.39	0.49	542	0.41	0.49	250	0.32	0.47
Ch7_17	360	0.14	0.35	539	0.11	0.31	542	0.11	0.31	250	0.18	0.38
Relatives	360	0.11	0.32	539	0.11	0.31	542	0.16	0.36	250	0.19	0.39
Salary	342	8.92	0.61	472	8.67	0.81	196	8.22	0.65	0		
Proportion total	21.3			31.9			32.1			14.8		

Table A4: Females – total sample

Variable	Public			Private			Informal			Unemployed		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
Age	177	33.88	6.54	185	29.96	9.32	475	31.99	9.64	710	28.14	9.99
Agesq	177	1190.51	459.16	185	983.76	630.29	475	1115.88	693.83	710	891.71	710.81
Head	177	0.43	0.50	185	0.41	0.49	475	0.36	0.48	710	0.09	0.28
Hsize	177	4.19	2.07	185	3.99	2.45	475	4.44	2.25	710	4.71	2.63
Married	177	0.68	0.47	185	0.41	0.49	475	0.63	0.48	710	0.71	0.45
AgeMarried	177	22.81	16.50	185	13.98	17.71	475	20.54	17.25	710	20.60	15.16
None	177	0.01	0.11	185	0.04	0.19	475	0.13	0.33	710	0.11	0.32
Primary	177	0.09	0.29	185	0.36	0.48	475	0.46	0.50	710	0.46	0.50
Secondary	177	0.87	0.34	185	0.55	0.50	475	0.40	0.49	710	0.41	0.49
University	177	0.03	0.17	185	0.05	0.22	475	0.01	0.09	710	0.01	0.11
Ch0_6	177	0.41	0.49	185	0.37	0.48	475	0.47	0.50	710	0.52	0.50
Ch7_17	177	0.56	0.50	185	0.43	0.50	475	0.56	0.50	710	0.42	0.49
Relatives	177	0.25	0.44	185	0.25	0.43	475	0.20	0.40	710	0.24	0.43
Tenure	177	0.19	0.39	185	0.14	0.35	475	0.16	0.37	710	0.16	0.37
Salary	169	8.67	0.52	150	8.23	0.99	74	7.60	0.81	0	0	0
Proportion total	11.4			12			30.7			45.9		

Table A6: Total sample 35–64 age cohort

Variable	Public			Private			Informal			Unemployed		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
Age	307	41.70	5.37	292	42.74	5.99	422	43.07	7.20	232	44.78	8.05
Agesq	307	1767.89	473.65	292	1862.78	536.54	422	1906.69	666.87	232	2070.11	765.14
Head	307	0.87	0.34	292	0.89	0.31	422	0.78	0.41	232	0.46	0.50
Sex	307	0.74	0.44	292	0.83	0.37	422	0.59	0.49	232	0.34	0.47
Hsize	307	4.06	2.35	292	3.91	2.70	422	4.50	2.52	232	4.83	2.70
Married	307	0.90	0.31	292	0.90	0.30	422	0.81	0.39	232	0.81	0.39
AgeMarried	307	37.48	13.80	292	38.43	13.99	422	35.05	18.02	232	35.75	18.73
None	307	0.01	0.11	292	0.06	0.24	422	0.18	0.38	232	0.23	0.42
Primary	307	0.20	0.40	292	0.34	0.48	422	0.42	0.49	232	0.40	0.49
Secondary	307	0.70	0.46	292	0.52	0.50	422	0.36	0.48	232	0.34	0.47
University	307	0.08	0.27	292	0.07	0.26	422	0.05	0.21	232	0.03	0.17
Ch0_6	307	0.33	0.47	292	0.35	0.48	422	0.34	0.47	232	0.31	0.46
Ch7_17	307	0.57	0.50	292	0.49	0.50	422	0.61	0.49	232	0.53	0.50
Relatives	307	0.17	0.38	292	0.09	0.28	422	0.14	0.35	232	0.21	0.41
Tenure	307	0.17	0.38	292	0.15	0.36	422	0.25	0.43	232	0.28	0.45
Salary	291	8.91	0.64	253	8.80	0.90	93	8.34	0.72	0		
Proportion total	24.5			23.3			33.7			18.5		

Table A7: Males 15–34 age cohort

Variable	Public			Private			Informal			Unemployed		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
Age	133	29.65	3.11	296	27.65	4.05	295	26.39	4.71	171	22.94	4.67
Agesq	133	888.99	177.00	296	780.98	218.77	295	718.72	240.16	171	547.71	230.17
Head	133	0.90	0.30	296	0.84	0.37	295	0.72	0.45	171	0.22	0.41
Hsize	133	3.15	1.84	296	3.23	2.00	295	3.59	2.43	171	4.74	2.61
Married	133	0.80	0.40	296	0.69	0.46	295	0.58	0.49	171	0.19	0.39
AgeMarried	133	24.05	12.42	296	19.81	13.71	295	16.68	14.35	171	5.08	10.85
None	133	0.02	0.12	296	0.02	0.14	295	0.02	0.14	171	0.03	0.17
Primary	133	0.09	0.29	296	0.29	0.45	295	0.53	0.50	171	0.45	0.50
Secondary	133	0.77	0.42	296	0.66	0.48	295	0.45	0.50	171	0.50	0.50
University	133	0.12	0.33	296	0.03	0.18	295	0.00	0.00	171	0.02	0.13
Ch0_6	133	0.43	0.50	296	0.41	0.49	295	0.41	0.49	171	0.32	0.47
Ch7_17	133	0.13	0.34	296	0.17	0.37	295	0.22	0.42	171	0.37	0.49
Relatives	133	0.11	0.31	296	0.13	0.34	295	0.11	0.32	171	0.18	0.38
Tenure	133	0.05	0.21	296	0.09	0.28	295	0.11	0.31	171	0.16	0.37
Salary	127	8.84	0.50	259	8.52	0.73	120	8.09	0.61	0		
Proportion total	14.9			33.1			33			19.1		

Table A8: Males 35–64 age cohort

Variable	Public			Private			Informal			Unemployed		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
Age	227	42.37	5.63	243	42.72	6.04	247	43.60	7.48	79	46.01	8.12
Agesq	227	1826.40	501.07	243	1861.64	542.42	247	1957.01	693.54	79	2182.34	780.52
Head	227	0.99	0.11	243	0.97	0.17	247	0.96	0.20	79	0.91	0.29
Hsize	227	4.04	2.42	243	3.89	2.76	247	4.44	2.58	79	4.58	2.85
Married	227	0.99	0.09	243	0.95	0.22	247	0.94	0.24	79	0.90	0.30
AgeMarried	227	42.00	6.86	243	40.57	10.97	247	41.07	12.70	79	41.72	16.00
None	227	0.01	0.11	243	0.06	0.23	247	0.11	0.31	79	0.19	0.39
Primary	227	0.22	0.42	243	0.33	0.47	247	0.43	0.50	79	0.34	0.48
Secondary	227	0.66	0.47	243	0.55	0.50	247	0.39	0.49	79	0.43	0.50
University	227	0.10	0.30	243	0.07	0.25	247	0.07	0.25	79	0.04	0.19
Ch0_6	227	0.38	0.49	243	0.37	0.48	247	0.40	0.49	79	0.33	0.47
Ch7_17	227	0.52	0.50	243	0.47	0.50	247	0.57	0.50	79	0.51	0.50
Relatives	227	0.17	0.37	243	0.08	0.27	247	0.11	0.31	79	0.19	0.39
Tenure	227	0.15	0.36	243	0.14	0.35	247	0.22	0.41	79	0.24	0.43
Salary	215	8.97	0.66	213	8.85	0.87	76	8.41	0.66	0		
Proportion total	28.5			30.5			31.0			9.9		

Table A9: Females 15–34 age cohort

Variable	Public			Private			Informal			Unemployed		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
Age	97	28.98	3.40	136	25.32	4.93	300	25.96	4.71	557	23.75	4.48
Agesq	97	851.27	190.43	136	665.01	248.83	300	696.01	240.14	557	583.94	221.08
Head	97	0.34	0.48	136	0.37	0.48	300	0.27	0.44	557	0.05	0.22
Hsize	97	4.23	2.01	136	3.97	2.48	300	4.35	2.15	557	4.64	2.63
Married	97	0.72	0.45	136	0.32	0.47	300	0.62	0.49	557	0.70	0.46
AgeMarried	97	21.27	13.52	136	8.99	13.23	300	17.03	13.62	557	17.29	11.83
None	97	0.01	0.10	136	0.02	0.15	300	0.05	0.21	557	0.08	0.27
Primary	97	0.05	0.22	136	0.34	0.47	300	0.50	0.50	557	0.47	0.50
Secondary	97	0.91	0.29	136	0.61	0.49	300	0.45	0.50	557	0.44	0.50
University	97	0.03	0.17	136	0.03	0.17	300	0.00	0.06	557	0.01	0.09
Ch0_6	97	0.58	0.50	136	0.42	0.50	300	0.60	0.49	557	0.58	0.49
Ch7_17	97	0.44	0.50	136	0.38	0.49	300	0.50	0.50	557	0.39	0.49
Relatives	97	0.32	0.47	136	0.29	0.46	300	0.21	0.41	557	0.24	0.43
Tenure	97	0.16	0.37	136	0.11	0.31	300	0.09	0.29	557	0.12	0.33
Salary	93	8.61	0.50	110	8.12	0.96	57	7.47	0.75	0		
Proportion Total	8.9			12.5			27.5			51.1		

Table A10: Females 35–64 age cohort

Variable	Public			Private			Informal			Unemployed		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
Age	80	39.83	4.00	49	42.84	5.85	175	42.31	6.74	153	44.15	7.96
Agesq	80	1601.85	336.13	49	1868.47	511.70	175	1835.66	622.33	153	2012.16	753.10
Head	80	0.54	0.50	49	0.51	0.51	175	0.53	0.50	153	0.23	0.42
Hsize	80	4.14	2.16	49	4.04	2.39	175	4.59	2.42	153	4.95	2.62
Married	80	0.63	0.49	49	0.65	0.48	175	0.63	0.48	153	0.76	0.43
AgeMarried	80	24.68	19.45	49	27.84	21.04	175	26.55	20.83	153	32.66	19.33
None	80	0.01	0.11	49	0.08	0.28	175	0.27	0.44	153	0.25	0.43
Primary	80	0.14	0.35	49	0.43	0.50	175	0.41	0.49	153	0.43	0.50
Secondary	80	0.83	0.38	49	0.39	0.49	175	0.31	0.46	153	0.29	0.46
University	80	0.03	0.16	49	0.10	0.31	175	0.02	0.13	153	0.03	0.16
Ch0_6	80	0.20	0.40	49	0.24	0.43	175	0.24	0.43	153	0.30	0.46
Ch7_17	80	0.71	0.46	49	0.57	0.50	175	0.66	0.48	153	0.54	0.50
Relatives	80	0.18	0.38	49	0.12	0.33	175	0.19	0.39	153	0.22	0.41
Tenure	80	0.21	0.41	49	0.22	0.42	175	0.29	0.45	153	0.31	0.46
Salary	76	8.74	0.53	40	8.52	1.03	17	8.01	0.87	0		
Proportion Total	17.5			10.7			38.3			33.5		

Appendix B: Results

Table B1: Total sample

(Note: * p<.05; ** p<.01; *** p<.001)

Number of obs, 3238; LR chi2(39), 1503.46; Prob > chi2, 0.00; Log likelihood, -3642.53; Pseudo R2, 0.17

Variable	Public		Private		Informal	Unemployed	
	Coef.	ME	Coef.	ME	Coef.	ME	ME
Age	0.60***	0.04	0.24***	0.01	0.19***	0.00	-0.05
Age squared	-0.01***	0.00	0.00***	0.00	0.00***	0.00	0.00
Head	2.08***	0.07	2.05***	0.15	1.74***	0.14	-0.36
Household size	-0.09	-0.01	-0.04	0.00	-0.03	0.00	0.01
Sex	0.42*	-0.01	1.12***	0.15	0.41***	-0.03	-0.12
Married	0.47*	0.05	-0.14	-0.03	-0.04	-0.01	0.00
Primary	1.47***	0.11	0.84***	0.07	0.43*	-0.05	-0.13
Secondary	2.93***	0.25	1.31***	0.12	0.20	-0.20	-0.18
University	3.30***	0.51	1.52***	0.00	0.03	-0.31	-0.20
Tenure	-0.05	0.00	-0.12	-0.02	0.01	0.02	0.01
Ch0_6	-0.18	-0.01	-0.13	-0.02	-0.02	0.02	0.01
Ch7_17	0.21	0.00	0.17	-0.02	0.48***	0.09	-0.06
Relatives	0.66***	0.06	0.24	0.02	0.07	-0.04	-0.04
Constant	-15.16***		-6.46***		-4.13***		

Table B2: Total sample 15–34 age cohort

(Note: * p<.05; ** p<.01; *** p<.001)

Number of obs, 1985; LR chi2(39), 985.07; Prob > chi2, 0.00; Log likelihood, -2109.06; Pseudo R2, 0.19

Variable	Public		Private		Informal	Unemployed	
	Coef.	ME	Coef.	ME	Coef.	ME	ME
Age	0.87**	0.05	-0.09	-0.03	-0.02	-0.02	-0.01
Age squared	-0.01	0.00	0.00	0.00	0.00	0.00	0.00
Head	2.09***	0.03	2.50***	0.24	1.93***	0.15	-0.42
Household size	0.00	0.00	-0.02	0.00	-0.04	-0.01	0.01
Sex	0.36	0.00	0.98***	0.13	0.49	0.02	-0.14
Married	0.32	0.02	-0.30	-0.05	-0.15	-0.01	0.04
Primary	0.38	-0.02	0.99*	0.08	1.05***	0.14	-0.20
Secondary	2.32***	0.09	1.48***	0.16	0.72*	-0.01	-0.24
University	2.64***	0.36	1.14	0.16	-2.01	-0.36	-0.15
Tenure	0.24	0.01	0.12	0.02	-0.05	-0.03	-0.01
Ch0_6	-0.23	-0.02	-0.06	-0.02	0.15	0.05	-0.01
Ch7_17	-0.16	-0.02	0.12	-0.01	0.38	0.08	-0.05
Relatives	0.50*	0.02	0.43*	0.06	0.10	-0.03	-0.05
Constant	-18.91***		-2.87		-2.37		

Table B3: Total sample 35–64 age cohort

(Note: * p<.05; ** p<.01; *** p<.001)

Number of obs, 1253; LR chi2(39), 451.65; Prob > chi2, 0.00; Log likelihood, -1481.81; Pseudo R2, 0.13

Variable	Public		Private		Informal		Unemployed
	Coef.	ME	Coef.	ME	Coef.	ME	ME
Age	0.65**	0.08	0.56**	0.07	-0.04	-0.12	-0.04
Age squared	-0.01***	0.00	-0.01***	0.00	0.00	0.00	0.00
Head	2.09***	0.14	1.52***	0.05	1.55***	0.10	-0.29
Household size	-0.16*	-0.02	-0.07	0.00	-0.02	0.01	0.01
Sex	0.26	-0.04	1.25***	0.18	0.25	-0.07	-0.07
Married	0.94***	0.10	0.36	0.00	0.23	-0.05	-0.06
Primary	1.82***	0.30	0.64	0.00	0.02	-0.21	-0.09
Secondary	3.06***	0.46	1.12***	0.03	-0.11	-0.36	-0.13
University	3.57***	0.57	1.73***	-0.08	0.43	-0.34	-0.15
Tenure	-0.18	-0.02	-0.33	-0.05	0.05	0.06	0.01
Ch0_6	-0.31	-0.02	-0.17	0.02	-0.34	-0.04	0.04
Ch7_17	0.53	0.04	0.11	-0.06	0.58*	0.08	-0.06
Relatives	0.62*	0.14	-0.33	-0.08	-0.04	-0.04	-0.01
Constant	-17.02***		-13.72***		1.20		

Table B4: Males total sample

(Note: * p<.05; ** p<.01; *** p<.001)

Number of obs, 1691; LR chi2(36), 544.76; Prob > chi2, 0.00; Log likelihood, -1995.40; Pseudo R2, 0.12

Variable	Public		Private		Informal		Unemployed
	Coef.	ME	Coef.	ME	Coef.	ME	ME
Age	0.51***	0.05	0.21***	0.01	0.09	-0.04	-0.02
Age squared	-0.01***	0.00	0.00***	0.00	0.00*	0.00	0.00
Head	1.90***	0.06	1.85***	0.13	1.68***	0.08	-0.27
Household size	-0.03	0.00	-0.01	0.00	0.02	0.01	0.00
Married	1.29***	0.08	0.84**	0.04	0.69**	-0.02	-0.10
Primary	1.40*	0.11	0.71	-0.02	0.72*	-0.02	-0.08
Secondary	2.27***	0.24	0.91*	0.05	0.17	-0.20	-0.09
University	3.31***	0.50	1.38*	-0.13	0.51	-0.27	-0.10
Tenure	-0.23	-0.03	-0.11	-0.03	0.11	0.05	0.00
Ch0_6	-0.24	-0.02	-0.15	-0.01	-0.05	0.02	0.01
Ch7_17	-0.26	-0.03	-0.20	-0.04	0.06	0.05	0.01
Relatives	0.38	0.07	-0.04	-0.01	-0.20	-0.06	0.00
Constant	-12.99***		-4.85***		-2.28*		

Table B5: Males 15–34 age cohort

(Note: * p<.05; ** p<.01; *** p<.001)

Number of obs, 895; LR chi2(36), 401.55; Prob > chi2, 0.00; Log likelihood, -990.74; Pseudo R2, 0.17

Variable	Public		Private		Informal	Unemployed	
	Coef.	ME	Coef.	ME	Coef.	ME	ME
Age	0.81	0.07	0.22	0.01	-0.02	-0.04	-0.04
Age squared	-0.01	0.00	0.00	0.00	0.00	0.00	0.00
Head	2.12***	0.05	2.28***	0.29	1.97***	0.06	-0.40
Household size	0.13	0.01	0.01	-0.01	0.06	0.00	-0.01
Married	1.13**	0.05	0.88**	0.09	0.66*	-0.01	-0.14
Primary	-0.29	-0.06	0.27	0.01	0.77	0.10	-0.04
Secondary	1.09	0.08	0.50	0.05	0.13	-0.05	-0.08
University	2.11	0.40	0.48	0.05	-35.01	-0.41	-0.04
Tenure	-0.33	-0.05	0.25	0.06	0.19	0.01	-0.02
Ch0_6	-0.72	-0.05	-0.33	-0.02	-0.19	0.02	0.05
Ch7_17	-0.55	-0.05	-0.02	0.04	-0.11	0.00	0.02
Relatives	0.03		0.29	0.08	-0.15	-0.05	-0.02
Constant	-16.47*		-5.01		-1.34		

Table B6: Males 35–64 age cohort

(Note: * p<.05; ** p<.01; *** p<.001)

Number of obs, 796; LR chi2(36), 146.55; Prob > chi2, 0.00; Log likelihood, 971.40; Pseudo R2, 0.07

Variable	Public		Private		Informal	Unemployed	
	Coef.	ME	Coef.	ME	Coef.	ME	ME
Age	0.65*	0.09	0.50*	0.06	-0.07	-0.12	-0.03
Age squared	-0.01**	0.00	-0.01*	0.00	0.00	0.00	0.00
Head	1.67*	0.14	0.99	0.03	0.81	-0.03	-0.13
Household size	-0.12	-0.02	-0.03	0.01	-0.02	0.01	0.00
Married	2.42**	0.22	0.72	-0.02	0.51	-0.10	-0.10
Primary	1.98**	0.27	0.85	-0.06	0.63	-0.13	-0.08
Secondary	2.66***	0.38	1.07*	-0.01*	0.19	-0.27	-0.10
University	3.71**	0.52	1.81*	-0.17*	1.11	-0.26	-0.10
Tenure	-0.22	-0.02	-0.36	-0.06	0.04	0.07	0.01
Ch0_6	0.16	0.01	0.15	0.01	0.12	0.00	-0.01
Ch7_17	0.05	0.00	-0.23	-0.08	0.29	0.08	0.00
Relatives	0.32	0.17	-0.70	-0.13	-0.46	-0.07	0.02
Constant	-18.02**		-11.14*		1.99		

Table B7a: Females total sample without age-marital status interaction term

(Note: * p<.05; ** p<.01; *** p<.001)

Number of obs, 1547; LR chi2(36), 587.49; Prob > chi2, 0.00; Log likelihood, -1596.68; Pseudo R2, 0.16

Variable	Public		Private		Informal	Unemployed	
	Coef.	ME	Coef.	ME	Coef.	ME	ME
Age	0.78***	0.03	0.19**	0.01	0.22***	0.03	-0.07
Age squared	-0.01***	0.00	0.00**	0.00	0.00***	0.00	0.00
Head	1.75***	0.04	1.36***	0.05	1.61***	0.26	-0.35
Household size	-0.15*	-0.01	-0.07	0.00	-0.05	-0.01	0.02
Married	0.11	0.01	-1.13***	-0.13	-0.18	0.01	0.10
Primary	1.27	0.05	1.16***	0.11	0.25	-0.02	-0.14
Secondary	3.53***	0.19	1.68***	0.14	0.18	-0.11	-0.22
University	2.77***	0.19	2.60***	0.42	-0.58	-0.29	-0.32
Tenure	0.30	0.02	-0.20	-0.02	-0.08	-0.01	0.02
Ch0_6	-0.16	-0.01	-0.07	-0.01	0.04	0.01	0.00
Ch7_17	0.45	0.01	0.33	0.01	0.63**	0.12	-0.13
Relatives	0.69*	0.03	0.11	0.00	0.14	0.01	-0.05
Constant	-18.04***		-5.28***		-4.65***		

Table B7b: Females total sample controlling for age-marital status interaction term

(Note: * p<.05; ** p<.01; *** p<.001)

Number of obs, 1547; LR chi2(39), 615.56; Prob > chi2, 0.00; Log likelihood, -1582.65; Pseudo R2, 0.16

Variable	Public		Private		Informal	Unemployed	
	Coef.	ME	Coef.	ME	Coef.	ME	ME
Age	0.77***	0.03	0.19**	0.01	0.20***	0.02	-0.06
Age squared	-0.01***	0.00	0.00***	0.00	0.00***	0.00	0.00
Head	1.87***	0.04	1.54***	0.06	1.75***	0.28	-0.38
Household size	-0.15*	-0.01	-0.09	-0.01	-0.05	-0.01	0.02
Married	-0.02	0.04	-4.33***	-0.54	-1.39**	0.02	0.48
Primary	1.25	0.05	1.13*	0.11	0.24	-0.02	-0.13
Secondary	3.50***	0.19	1.61***	0.13	0.15	-0.11	-0.21
University	2.71**	0.22	2.37***	0.36	-0.66	-0.29	-0.29
Tenure	0.33	0.02	-0.15	-0.01	-0.06	-0.01	0.01
Ch0_6	-0.17	-0.01	0.11	0.01	0.11	0.02	-0.02
Ch7_17	0.36	0.01	0.16	-0.01	0.54**	0.11	-0.11
Relatives	0.69**	0.03	0.08	0.00	0.13	0.01	-0.04
Age Married	0.01	0.00	0.11***	0.01	0.04**	0.01	-0.01
Constant	-17.99***		-4.70***		-3.97***		

Table B8a: Females 15–34 age cohort without age-marital status interaction term

(Note: * p<.05; ** p<.01; *** p<.001)

Number of obs, 1090; LR chi2(36), 396.75; Prob > chi2, 0.00; Log likelihood, -1080.34; Pseudo R2, 0.16

Variable	Public		Private		Informal	Unemployed	
	Coef.	ME	Coef.	ME	Coef.	ME	ME
Age	1.14*	0.03	-0.05	-0.01	0.05	0.00	-0.02
Age squared	-0.02	0.00	0.00	0.00	0.00	0.00	0.00
Head	1.72***	0.03	1.39***	0.06	1.65***	0.28	-0.37
Household size	-0.07	0.00	-0.08	-0.01	-0.06	-0.01	0.02
Married	0.06	0.01	-1.64***	-0.18	-0.37	0.00	0.18
Primary	0.71	0.01	1.24	0.09	0.95**	0.15	-0.25
Secondary	3.21**	0.09	1.76**	0.14	0.76*	0.06	-0.29
University	2.53	0.15	2.06*	0.36	-1.04	-0.26	-0.25
Ownership of dwelling unit	0.70	0.03	-0.04	0.00	-0.23	-0.05	0.03
Presence of children Age 0-6 in a household	0.04	0.00	0.13	0.00	0.27	0.05	-0.05
Presence of children age 7-17 in a household	0.04	0.00	0.22	0.00	0.51*	0.10	-0.10
Presence of female relatives in a household	0.67*	0.02	0.11	0.01	0.08	0.01	-0.03
Constant	-23.15***		-2.63		-3.20		

Table B8b: Females 15–34 age cohort without age-marital status interaction term

(Note: * p<.05; ** p<.01; *** p<.001)

Number of obs, 1090; LR chi2(39), 414.09; Prob > chi2, 0.00; Log likelihood, 1071.67; Pseudo R2, 0.16

Variable	Public		Private		Informal	Unemployed	
	Coef.	ME	Coef.	ME	Coef.	ME	ME
Age	1.28**	0.03	0.20	0.01	0.24	0.03	-0.07
Age squared	-0.02*	0.00	0.00	0.00	0.00	0.00	0.00
Head	1.93***	0.03	1.60***	0.06	1.91***	0.32	-0.42
Household size	-0.07	0.00	-0.07	0.00	-0.06	-0.01	0.02
Married	-4.49	-0.04	-6.06***	-0.46	-4.30***	-0.33	0.82
Primary	0.76	0.01	1.24	0.09	0.98**	0.15	-0.25
Secondary	3.23**	0.09	1.73**	0.13	0.75*	0.06	-0.28
University	2.48	0.16	1.93	0.33	-1.13	-0.26	-0.23
Tenure	0.73	0.03	0.00	0.00	-0.21	-0.05	0.02
Ch0_6	0.00	0.00	0.08	0.00	0.23	0.05	-0.04
Ch7_17	-0.11	-0.01	0.03	-0.01	0.35	0.08	-0.06
Relatives	0.63*	0.02	0.07	0.00	0.04	0.00	-0.02
Age married	0.18*	0.00	0.18**	0.01	0.16***	0.03	-0.04
Constant	-23.64***		-4.68		-4.42*		

Table B9: Female

35-64 age-cohort

(Note: * p<.05; ** p<.01; *** p<.001)

Number of obs, 457; LR chi2(36), 196.81; Prob > chi2, 0.00; Log likelihood, -485.82; Pseudo R2, 0.17

Variable	Public		Private		Informal	Unemployed	
	Coef.	ME	Coef.	ME	Coef.	ME	ME
Age	1.08	0.07	0.78*	0.06	0.04	-0.07	-0.07
Age squared	-0.01*	0.00	-0.01*	0.00	0.00	0.00	0.00
Head	2.0***	0.07	1.69***	0.05	1.79***	0.26	-0.37
Household size	-0.24*	-0.02	-0.16	-0.01	-0.01	0.01	0.02
Married	0.55	0.03	0.45	0.03	0.23	0.02	-0.07
Primary	1.56	0.15	1.11	0.12	-0.37	-0.22	-0.05
Secondary	3.74***	0.41	1.54*	0.09	-0.25	-0.33	-0.18
University	2.79*	0.26	2.90**	0.39	-0.56	-0.40	-0.25
Tenure	-0.02	0.00	-0.38	-0.04	0.15	0.06	-0.01
Ch0_6	-0.82	-0.04	0.05	0.04	-0.64	-0.13	0.12
Ch7_17	0.97*	0.04	0.39	-0.01	0.74	0.13	-0.16
Relatives	0.75	0.06	-0.04	-0.02	0.16	0.01	-0.05
Constant	-24.78*		-19.37*		-0.11		

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