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**FEMALE PARTICIPATION IN THE
LABOUR MARKET:
THE CASE OF THE INFORMAL
SECTOR IN KENYA**

Rosemary Atieno

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Female participation in the labour market: The case of the informal sector in Kenya

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Abstract

The informal sector has become increasingly important as a source of income and employment in Kenya. This contrasts with the declining performance of the formal sector, and underscores the sector's potential for absorbing the country's increasing labour force as more households become dependent on it. One important attribute of the sector is that it has become a major employer of the female labour force in the country. This study investigated the factors determining the participation of women in informal sector activities given a range of other available labour market options.

The results show that education is one of the important factors determining women's participation in the different categories of the labour market. The study concludes that efforts to address the problem of women's access to the labour market should focus on improving their access to education as one of the important factors for improving their human capital. Given the nature of the informal sector, and the fact that access to the labour market is an outcome of the interaction between demand and supply, addressing female participation in the sector may require addressing the demand side of the Kenyan labour market in addition to the factors expected to explain labour market participation.

1. Introduction

Labour markets in sub-Saharan Africa are fragmented, with differing characteristics between formal and informal sectors. Particularly characterized by a dichotomy between the formal and informal sectors is the urban labour market. The differences between the formal and informal sectors can also be seen in light of the segmentation between the different parts of the labour market. In Kenya, as in other parts of Africa, segmentation relates mainly to economic phenomena. Workers in the formal sector have higher levels of education than those in the informal sector, and since these firms are likely to have technologies requiring more skills and on-the-job training, the workers are likely to be more skilled (Bigsten and Horton, 1997).

Kenya's informal sector covers all semi-organized and unregulated small-scale activities largely undertaken by self-employed persons or those employing only a few workers, and excludes all farming and pastoral activities. The activities in the sector are carried out by artisans, traders and other operators. It uses simple technology and businesses are not legally registered although they may be required to obtain licences from relevant authorities (Republic of Kenya, 1998, 2003). For statistical purposes, the informal sector is defined as a group of production units within the System of National Accounts that form a part of the household sector as unincorporated enterprises owned by households. The main features of the informal sector include ease of entry, the small scale of activity, self-employment with a high proportion of family workers and apprentices, little capital and equipment, labour intensive technology, low productivity and low incomes, limited access to organized markets and formal credit, and minimal education and training (CBS, K-REP and ICEG, 1999).

Despite its limitations the informal sector has become increasingly important in the Kenyan economy as a source of employment and income. During the last decade, the growth rate in the sector's employment has remained above that of the formal sector, which declined over the same period. The informal sector has seen its share in total employment rise from 16% in 1980, to 63.6% in 1997 and 70% in 2000. Between 2000 and 2001, employment in the sector rose by 11.4%. Its share in GDP has also recorded increases, rising from 13% in 1993 to 18% in 1999 (Republic of Kenya, 2002). Sectorally, the informal sector is the second largest source of employment after small-scale agriculture (Ministry of Finance and Planning, 2000). The 1999 national survey of micro and small enterprises (MSEs) found that about 26% of the total households in the country are engaged in some form of MSE activity (CBS, K-REP and ICEG, 1999). The sector is therefore an important source of livelihood for a majority of the country's population. Currently, informal sector's share in total employment stands at 75% (Republic of Kenya, 2004).

The decelerating performance of the formal sector has resulted from a number of factors. These include the economic recession of the early 1990s occasioned by adverse

weather conditions, and reduced economic activity in the main sectors of agriculture and manufacturing. The ongoing reforms in the public sector, specifically retrenchment and a restrictive government employment policy, have further reduced the sector's potential for employment generation (ILO/EAMAT, 1999). There has also been increased shedding of labour in the private sector because of restructuring. The small size of the formal labour market also reflects the constraints facing the sector, like high risks, poor infrastructure and lack of social capital (Bigsten and Horton, 1997). The formal sector has therefore become increasingly unable to generate employment and this has contributed to the rapid expansion in the informal sector employment.

These trends underscore the sector's potential in absorbing the increasing labour force in the country. An increasing number of households are becoming dependent on the informal sector as a source of income and employment, in both rural and urban areas. Despite this significance, certain characteristics of the sector raise questions about its potential for income generation and employment. Studies on the informal sector have shown that despite the proliferation of informal sector activities, many of them do not grow (McCormick, 1992). Informal sector activities are characterized by small size of activities, few workers (often fewer than six) and working in makeshift structures. A significant proportion of those counted as employed are also underemployed in the informal sector. The sector is therefore increasingly operating as a sponge for easing open unemployment and transforming it into underemployment (UNDP, 2002; Republic of Kenya, 2003).

There is also increasing concern that the operators in the sector face several limitations, including lack of security of tenure and lack of access to credit, infrastructure, skilled labour and markets. The informal sector has also suffered from lack of coherent policy guidelines, inadequate physical infrastructure and unfavourable regulatory framework, all of which have inhibited its growth and contribution. All these hamper the potential contributions of the informal sector activities and raise the question of the sector's potential in raising the incomes for its participants.

One significant characteristic of the sector is that as it has grown, it has also become an important employer of the female labour force in the country. The 1999 baseline survey of the sector shows that the ownership of the informal sector enterprises is almost equally divided between males and females, with men owning 52% of the enterprises and women 48%. Although women constitute 53% of the labour force, their participation in wage employment in the modern sector has remained low and they have access to less than 30% of wage employment (UNDP, 1999). A number of factors restrict women's access to formal employment. These include traditional roles, occupational segregation by gender, and lack of access to technology and credit, among others. In the informal sector, female-owned enterprises have been found to employ fewer workers and have less capital compared with male-owned ones (CBS, KREP and ICEG, 1999). The survey shows that about 57.4% of the total MSE labour force is generated by male owned MSEs while 42.6% is generated by female owned MSEs. But there are other alternative activity choices in the Kenyan labour market other than the informal sector. So, given all these constraints, what factors contribute to women's participation in the sector?

This study investigates the factors determining the participation of women in informal sector activities given a range of other available labour market options.

2. Study framework

While national surveys of the informal sector in the country have documented its magnitude and contribution in the national economy, little is known about the factors that determine participation decisions in the sector, especially by women, given that there are alternative sectors in the labour market.

A number of factors make women's participation in the informal sector important. Women's share in formal sector employment is proportionately less than that of their male counterparts, while participation of females in wage employment has remained low compared with men's. The share of women in the labour force also shows that they are disproportionately concentrated in community, social and personal services. Although the women's share in total wage employment has increased to 29.5% in 2000, their share in traditionally male dominated industries remains low, while their share in community, social and personal services stands at 58.5% (Republic of Kenya, 1998, 1999, 2002). Furthermore, there are more men than women among the ranks of regular employees and skilled casual employees. Women, however, outnumber men in the categories of urban poor unskilled workers and also dominate among the unpaid family workers in both rural and urban areas. Unemployment levels are higher in all areas for women than for men.

Problem statement

Surveys on labour force participation in both the formal and the informal sectors show that women are disproportionately concentrated in certain activities, with limited access to more remunerative enterprises. This is mainly because the choice of occupation depends on factors like education, training, capital requirements, premises and expected earnings. These factors combine to restrict women to trade and other service businesses in the informal sector and bar them from other activities. The 1999 ILO report further notes that women's participation in specific subsectors and activities of the informal sector is quite low (ILO/EAMAT, 1999).

The main characteristics of women-owned enterprises are also important. They start smaller, grow more slowly and end smaller than men-owned enterprises. They locate more in the home, rely more on less skilled and unpaid workers, and are less likely to diversify into other activities. In addition, women's activities tend to be less remunerative than men's (McCormick and Mitullah, 1995). Nationally, women constitute a majority of the poor, while at the same time they constitute a significant share of the household heads: Almost one-third of households are headed by women (CBS, 1996).

Despite these observations, there is only limited empirical work on the factors responsible for the participation of women in the informal sector and their significance in Kenya. Bigsten and Horton (1997) noted that labour market studies are limited by availability of household survey data. A study by Wambugu (2002) of the impact of education on access to five employment categories, using the 1994 Kenya Welfare Monitoring Survey (WMS II) data, shows that most of the women–men differentials in employment may be explained by differences in their characteristics. Mwabu and Evenson (1997) studied occupational patterns in rural Kenya, and concluded that education and proximities to market centres are key in transforming occupational structures in rural Kenya. These studies investigated both male and female participation. The study by Wambugu (2002) looked at rural and urban households, and Mwabu and Evenson (1997) covered only rural households. While Wambugu (2002) uses the WMS II data set, Mwabu and Evenson (1997) used the data from the 1981/82 rural household survey.

This study focuses mainly on women's participation in the labour market, and uses the 1997 data set from the 1997 Welfare Monitoring Survey III. The study contributes to the studies on labour market participation by investigating female labour force participation in the informal sector using a different data set, namely 1997. This provides a basis for comparison with studies using other data sets.

Assuming that multiple choices of activity exist in the labour market, the study examines the factors that determine the choice of informal sector participation by women in urban Kenya relative to other activity choices. The study models the different types of employment options in Kenya as informal sector, public and private sectors, agricultural sector, unpaid family work, and unemployment.

Study objectives

The main objective of the study is to investigate determinants of female labour force participation in Kenya, focusing on the informal sector, with a view to facilitating a comparison of factors determining female participation in the labour market over time. The specific objectives of the study are:

1. To analyse the factors explaining the participation of women in the different activities in the labour market, with focus on the informal sector.
2. To draw policy conclusions for measures needed to improve women's access to labour market opportunities in the country.

Justification for the study

Women constitute an important category of both the labour force and the vulnerable groups in the Kenyan economy. At the same time, they are major contributors at the household level. Policy interventions are therefore necessary to improve their access to employment opportunities as a source of income. However, this can only be justified with empirical evidence on factors explaining the participation decisions in different sectors of the labour market. In the recent past, the informal sector has become an

3. The informal Sector in Kenya: A description

According to the 1998/99 labour force survey, the informal sector was recognized by a 1972 ILO mission to Kenya, which observed that many people were working outside the formal economy. Since then, government policies have emphasized the importance of supporting the growth of the sector.

The structure and extent of the informal sector

Traditionally, informal sector activities consisted of urban artisans, but have grown to include manufacturing, building and construction, distributive trades, transport and communication, and community and personal services industries. Currently, the main activities include tailoring, carpentry, blacksmithing, retail shops, groceries and kiosks, among others. The sectoral distribution of these enterprises shows a wide variation, with 64.5% of the total enterprises being in wholesale and retail trade, while only 0.3% were in private households. Overall, 71% of industries are in the rural areas with the dominant industries being trade and manufacturing. The prevalence of wholesale and retail trade may be attributed to the liberalized market and ease of entry in the trade subsector (Republic of Kenya, 2003: 65). In the rural areas, the number of male-owned enterprises was higher than the female-owned ones while in the urban areas, the female-owned enterprises exceeded the male-owned ones. Overall, male-owned enterprises were 50.6%, while the female-owned ones were 49.4%.

The distribution of the micro- and small-scale enterprises (MSEs) is considered in terms of the four major economic sectors of manufacturing, trade, services and construction. About 70% of all the enterprises are in the trade sector, which involves mainly buying and selling of commodities. This is followed by manufacturing and services, with construction having the least share. Whereas most MSE activities are located in the rural areas, it is only in the services that they are divided almost equally between rural and urban areas. One notable observation is that females are mostly restricted to the trade sector, with 86% of the enterprises owned by women being in trade. One of the main reasons given for the dominance of women in the trade sector is the relatively low capital required for initial investment and the low training needed for trade compared with other sectors (CBS, K-REP and ICEG, 1999).

Employment and labour force in the informal sector

The employment creation potential of the informal sector is important. The 1999 census estimates that of the 14.5 million working population that are employed, 75% are self-employed, working for profit or family gain, and receiving no salaries or wages in family business or family agricultural holding (CBS, 2002). A large proportion of the surplus labour in the economy is continuously joining this expanding sector. However, a closer look reveals that most informal sector enterprises are family owned, with minimal employment creation for people outside the households of business owners. This is a significant observation in terms of the sector's potential to generate employment. The 1999 survey of the MSEs shows that about 38% of household heads had MSEs as their main activity, with about 1.3 million SMEs in the country employing about 2.3 million people. About 26% of the total households are involved in some MSE activity.

A large number of MSE owners, both males and females, operate the business on own account basis, which means that the owner is the only worker and does not employ any other person. The survey shows that 92% and 97% of males and females, respectively, are own account operators of the MSEs.¹ For the non-own-account workers, the average size of the total labour force for males and females is 4.8 and 3.4, respectively.

The total MSE labour force consists of both regular and non-regular workers. The regular workers consist of working proprietors, unpaid family members, hired regular workers and apprentices. Non-regular workers, on the other hand, consist of part-time and casual workers. Among regular workers, the working proprietors constitute the majority while among non-regular workers, the casual workers are the majority (CBS, K-REP and ICEG, 1999: 27). By economic sector, owner-operators still account for the highest proportion of regular workers in all the sectors, with retail, special trade contractors, and textiles and leather production having the highest percentage. Ownership by gender shows that female-owned enterprises have 86% of the labour force as owner-operators, with only 4% hired workers. For male-owned enterprises, 68% are owner operators, while 17% are hired workers. Nationally, about 70% of the MSEs are one-person units, out of which 40% are own account economic activities. Only less than 1% employ more than 11 workers, with trade being the dominant sector, accounting for 70% of the total labour force found in MSEs. The gender distribution of the MSE labour force shows that about 53% of the labour force is accounted for by male workers.

From the foregoing description, it is clear that the informal sector is becoming an important component of the Kenyan economy for employment generation. Although more women are getting absorbed in the sector, which is also dominated by service activities, most of them are involved as own account workers, a category that has lower potential for employment generation.

4. Literature review

Labour supply studies show that labour force participation for women has risen over time. In some studies on female labour supply in developing countries, however, the bulk of women's work is considered to take place in the "non-market" economy, either at home or in the informal economy (World Bank, 1995). It has been noted that although no direct link exists between economic development and women's labour force participation, rapid development is often accompanied by higher female participation, higher levels of schooling for girls and lower fertility rates (Sackey, 2001). Quoting Fosu (1999), Sackey (2001) shows that the willingness of married women to participate in the labour force stems from a desire to provide their family with a higher standard of living, underscoring the welfare improvement rationale for female labour market participation. Demography is also inextricably linked to labour force participation, since what happens to fertility affects women's labour force participation. Empirical evidence shows that women, especially the heads of households, will utilize all opportunities for employment or income. Women are less likely to discriminate in their choice of activities owing to the need to cater for their families. This may partly explain why they are found in all types of employment, ranging from permanent salaried employment to temporary wage employment and self-employment (M'Bet et al., 1998).

Determinants of women's participation in the labour market

A number of factors have been identified as determining the involvement of women in the labour markets in Africa. Among these are the traditional factors like access to factors of production, credit, information technology and training, the international economic environment, and introduction of new technologies, as well as changes in the political and social landscape (ILO, 1995). Maglad (1998) emphasizes the importance of human capital in increasing female labour force participation and shows that expected own wage, spouse's earnings, the number of children, and age were important in determining participation in the labour market. Assets, however, affected work decisions and hours negatively. Spouse's expected wages affected both participation and labour supply negatively. The presence of preschool children also has a negative effect on participation.

Education has been found to affect the probability of female labour market participation

positively. Also important are post-schooling experience, wage of the household head, household head and presence of school going children (Maglad, 1998). This conforms to other studies showing that income and experience are significant for female participation but not for that of males. The income of other household members is significant for males, however, showing that pressure to work for males reduces if other household members earn income, while for females, participation depends more on rewards they get in the labour market (Bigsten and Horton, 1997). These studies also show that household heads are more likely to participate in the labour market than non-heads.

Labour market conditions have also been found to be important for labour force participation, with the participation of women in the labour force increasing with incomes (World Bank, 1995). Addison (1993), however, argues that female labour force participation is lower than that of males because of women's lower opportunity cost of non-participation when their wages are low.

Kevane and Wydick (2001) bring another dimension to the analysis by looking at women's participation in entrepreneurial activities. They observe that there is an increasing proportion of women involved in entrepreneurial activities, and argue that the share of women in informal employment has increased mainly due to factors like the limited absorptive capacity of the formal sector, difficulty in entry to the formal sector by women, changes in household gender norms, and macroeconomic dislocations and adjustments.

Job tenure and experience have also been found to influence labour force participation. Makonnen (1993) argues that experience and the nature of the labour market itself lead to differences in labour market participation by gender. Demographic and social barriers affect women's participation in the labour market, while differences in labour supply usually arise from differences in productivity endowments, including demographic variables like age, sex and marital status. Lack of assets leads to lower participation by women, but Appleton et al. (1990) also argue that asset incomes have a negative impact on work decisions and participation rates.

Another important factor in labour market participation is the characteristics of the labour markets. Lanot and Muller (1997) say that labour markets in developing countries are characterized by dualism and imperfections as opposed to perfect competition. According to this line of argument, this dualism is marked by the existence of activities with diminishing returns to labour in the traditional sector and entry costs in the modern sector. This is especially true where agriculture or the informal sector is involved. Unlike the formal sector, which is characterized by high wages, high returns to education and on-the-job training, the informal sector is characterized by low wages, low returns to education and decreasing returns to labour. The resulting dichotomy is manifested in the wage gap between the two sectors. Lanot and Muller (1997) describe the participation process for the different activities and find that married women participate less in different activities. Age and education of husbands are important for participation by women, while the presence of children lowers participation in the formal sector. The years of education are also important. These authors conclude that labour supply and activity choices are likely to be distorted by the existence of labour market imperfections. They note that because of the importance of the informal sector, the labour market displays typical dualistic features.

Inter-sector allocation of labour

The allocation of labour within the sectors and reallocation between different sectors can be seen as a central feature of economic transformation in Africa mainly because of the nature of these economies. Most manufacturing activities are urban based, and the urban areas in general account for most of the formal employment in secondary and tertiary sectors (Bigsten and Horton, 1997). Studies on labour allocation across sectors can be grouped into single cross-section and multiple cross-section studies.

Mwabu and Evenson (1997) studied occupational patterns in rural Kenya using cross-section data from a 1981/82 survey of farm households in selected regions. Assuming a fixed set of occupational categories, as self-employment and non-market occupations, they model the occupational choice process of individuals and find that education and proximity to market centres are the key factors in the transformation of occupational structures in rural Kenya. People with some schooling expect to benefit relatively more by not choosing the general labour occupation, and benefit more from professional occupations. Education is therefore a key factor in determining occupational choice in Kenya. These results conform to earlier work, which showed that education is the most important determinant of labour market participation.

Krishnan, Sellasie and Dercon (1998) modelled the factors explaining the allocation into work in Ethiopia for the period 1990–1997. They used both cross-section and panel data from pre- and post-reform periods 1990 and 1994–1997. They assume multiple choices in the labour market and estimate the multinomial logit model of selection into work in the public and private sectors, self-employment, unemployment, and being out of the labour force. The explanatory variables are taken as personal characteristics, parental characteristics, human capital variables and variables related to assets. They test whether the regression can be pooled over time to test for changes in the factors determining labour market allocation. Their results show that the allocation into work, especially in the public sector, has changed over time, with education having a substantial effect on allocation. Other studies have also assumed the existence of multiple choices in the labour market. Glick and Sahn (1997) examine the impact of gender and schooling on employment and earnings in the private sector, public sector, and self-employment in Guinea. Thomas and Vallee (1996) look at earnings in the informal, formal and regulated sectors within manufacturing in Cameroon.

The foregoing literature shows that access to factors of production, information and technology, as well as human capital, children, spouse's earnings and age, are important in labour supply. The factors important in determining the participation in different categories of the labour market (labour allocation between different categories of the labour market) are identified as education, household headship, experience, assets, other incomes, age, number of pre-school children and the nature of the labour market. This study adds to the body of literature by analysing female labour force participation using 1997 Kenyan data. The variables considered relevant for determining female labour force participation are grouped into categories of individual characteristics, household characteristics, and assets and human capital variables. Like earlier studies, this study has also assumed multiple choices in the Kenyan labour market.

5. Methodology

Access to the labour market, or job attainment, can be seen as an outcome of the interaction between demand and supply. In analysing the choice by individuals to participate in the labour market, we assume the existence of multiple activity choices, including non-participation (Krishnan et al., 1998; Glick and Sahn, 1997; Mwabu and Evenson, 1997).

Theoretical framework

As identified from the literature review, a number of factors determine labour demand and supply and hence allocation into different sectors. Labour supply decisions result from workers' desire for utility maximization. Therefore factors that affect/influence the expected and reservation earnings are important in labour supply. For self-employment, human capital and other assets are important in starting own business, through their influence on relative costs and returns from setting up own businesses.

A model that permits the identification of characteristics of individuals participating in different activities in the labour market is the multinomial logit model. It estimates the probability of individual i participating in sector j given a set of explanatory variables. The multinomial logit model is developed on the axiom of utility maximization. It is assumed that an individual associates some level of utility with the choice to participate in any of the available activity choices. The model estimates the effect of explanatory variables on a dependent variable with unordered response categories, or a choice problem with multiple alternatives.

In the decision to participate in the labour market, any individual female is assumed to attach some level of utility U to any possible alternative choice. She will then choose the activity type or sector that offers the highest utility.

An individual i faced with the decision to choose among s alternatives can be described using the utility function:

$$U_{ij} = U_{ij}(Y_i) + \mu_{ij} \quad (1)$$

where: U_{ij} is the utility that individual i derives from participating in sector j .

Y_i is a vector of characteristics of individual i .

μ_{ij} is disturbance term.

An individual will choose sector j if and only if the utility derived from it is greater than that for all the other sectors that can be chosen. This can be written as:

$U_{ij} > U_{ik} = U_{ij}(Y_i) + \mu_{ij} > U_{ik}(Y_i) + \mu_{ik}$, which can be rearranged to:

$$U_{ij}(Y_i) - U_{ik}(Y_i) > \mu_{ik} - \mu_{ij} \quad (2)$$

This can then be generalized as:

$$U_{ij} \leq \mu_o + \leq_1 Z_{1i} + \dots + \leq_n Z_{ni} + \mu_{ij} \quad (3)$$

where Z_{1i}, \dots, Z_{ni} are the transformations of the characteristics.

Equation 3 can be written as:

$$U_{ij} = Z_{ij} \leq + \mu_{ij} \quad (4)$$

and can be transformed into an inequality reflecting the choice of the individual i as follows:

$$\beta(Z_{ij} - Z_{ik}) >_{ni}, \text{ where }_{ni} = \mu_{ik} - \mu_{ij} \text{ (see Equation 2)} \quad (5)$$

Assuming normal distribution in ni , the probability of activity j being chosen is represented by a cumulative normal probability density function. To simplify the econometric problem, the study uses the logistic distribution function, with a linear logistic regression (Judge et al., 1988).

Assume that individual i prefers j to k and other alternatives in a case of multiple choices, then the probability that she will choose it can be written as:

$$P_{ij} = \text{Prob. } (Z_{ij}\beta + \varepsilon_{ij} > Z_{ik}\beta + \varepsilon_{ik}) \quad (6)$$

This probability can be given as the utility of the preferred sector j , weighted by the total utility of the alternative sectors as follows:

$$P_{ij} = \frac{e^{Z_{ij}\beta}}{N} \quad (7)$$

$$\sum_{j=1}^J e^{Z_{ij}\beta}$$

Equation 7 is the multinomial logit model representing a choice problem with multiple alternatives.

Empirical estimation

The empirical problem in this study can be described as determining the probability of individual female i choosing to participate in sector s . Given that there are several possibilities of alternative activity choices, the study uses the multinomial logit model, which allows for the identification of factors determining the participation in various sectors.

Specifying the logistic regression model from Equation 7 leads to:

$$P_{ij} = \frac{e^{\beta_j x_i}}{\sum_{j=1}^J e^{\beta_j x_i}} \quad (8)$$

where P_{ij} is the probability that sector j will be chosen, j is the index of sectors and X^i is a vector of regressors.

Assuming that before deciding to participate in the informal sector there are a number of alternative activities to choose from, the dependent variable in the logit model is grouped into six categories based on the realities of the Kenyan labour market. These are public sector, private sector, informal sector, agricultural sector, unemployed and unpaid family worker.

Following the literature, we group the explanatory variables into three categories:

- Individual characteristics (age, marital status, education, household headship).
- Household characteristics (number of children, household size).
- Assets and human capital (land owned). (See also (Krishnan et al., 1998; Wambugu, 2002.)

In addition, the rural–urban variable is included as a dummy.

Data types and sources

The study uses secondary data obtained from the 1997 Welfare Monitoring Survey III. This data set was collected through a survey conducted by the Central Bureau of Statistics (CBS), using the National Sample Survey Evaluation Programme (NASSEP).

The results obtained from this analysis are compared with other similar studies done using data from the 1994 Welfare Monitoring Survey II. In this section, we present the description of the data used.

In the 1997 WMS III, the data consisted of 50,713 individuals from 10,874 households. Out of the total sample, there were 24,910 males (49.1%) and 25,803 females (50.9%). From the total sample, adults of working age were selected consisting of those individuals of 15 years of age and above (CBS, 2002). The total adult population is therefore 27,767, out of which 13,277 were males and 14,490 females.

As above, the dependent variable was grouped into six categories on the basis of the

realities of the Kenyan labour market (Wambugu, 2002; Mwabu and Evenson, 1997): public sector, private formal sector, informal sector, agricultural sector, unpaid family worker and unemployed. The distribution of the total adult sample by the different categories of the dependent variable (labour market participation) for the 1997 data set is presented in Table 1. A total of 3,933 cases could not be identified by employment category; of these 2,158 were males and 1,775 were females.

Table 1: Distribution of the 1997 sample by employment categories

Employment category	Total sample	Males	Females
Public sector	1,425	1,013	412
Private formal sector	1,258	982	276
Informal sector	3,628	2,324	1,304
Agriculture	6,623	3,604	3,019
Unpaid family worker	9,239	2,433	6,806
Unemployed	1,661	763	898
Missing	3,933	2,158	1,775
Total	27,767	13,277	14,490

The female adult sample used in the analysis is therefore 14,490. From the table we see that unpaid family worker constituted the majority of the sample, followed by agricultural sector and informal sector. Most males were employed in the agricultural sector, while most females were in the category of unpaid family worker, followed by agriculture and the informal sector. This shows that the data reflect the reality of the Kenyan labour market and are consistent with other surveys in the country showing that women dominate in the category of unpaid family worker (CBS, 1996). The 1999 census analytical report on labour force Volume IX shows that most of the employed economically active population were self-employed, working for family gain in either family business or agricultural holdings, and receiving no salary or wages (CBS, 2002).

Definition of variables

The dependent variable is the participation in the different categories of the labour market. This is divided into categories of public sector, private sector, informal sector, unpaid family worker, agriculture and being unemployed. These are defined as follows:

- **Public sector:** Public sector workers consist of skilled, semi-skilled and unskilled workers. The semi-public sector was also included under this category. According to the WMS III, from which the data used in the study are drawn, the public sector consists of government owned entities, while the semi-public sector consists of those entities partially owned by the government and the private sector (Republic of Kenya, 2000). The public sector covers all activities and establishments of the central government, statutory corporations, registered companies in which the government

is a majority shareholder and all local authorities. They are mainly in the modern sector (CBS, 2002).

- **Private sector:** This consists of formal private sector workers, for entities that are privately owned and registered. It consists of private companies and businesses in the modern sector in which the government does not own majority shares.
- **Informal sector:** These enterprises are privately owned but not registered under the Company's Act, and include mainly *jua kali* activities. The sector includes mainly own account workers, who are those persons operating their own economic enterprises, or engaged independently in a profession or trade and hire no employees. They may operate as sole entrepreneurs or with partners who may or may not be members of the same family.
- **The unemployed:** The WMS III defined the unemployed as those without regular employment in the past 12 months but available for work and actively seeking work (Republic Of Kenya, 2000).
- **Unpaid family workers:** These are persons who work without pay in an economic enterprise operated by a related person living in the same household. This involves working in a family business or family agricultural holding without pay. The 1999 Census notes that those unpaid workers in family businesses are largely in the informal sector.
- **The agricultural sector:** The agricultural sector worker is categorized into paid workers, unpaid workers and self-employed agricultural workers. The WMS III defines agriculture to encompass crop farming and livestock husbandry. Crop farming consists of both cash crop and subsistence farming. Pastoralism is also included under agricultural sector.

The explanatory variables were defined in terms of the three categories noted above: individual and household characteristics, assets, and human capital. Individual characteristics and human capital variables consist of age, household head, education and marital status. These are defined as:

- **Age:** The age structure of a population is important in determining the division of labour at both social and individual household levels. This structure will determine the participation of individuals in the labour market, the expenditure patterns and investment in the social sector. A high proportion of a young population also implies that the labour force is small, with a constraint on the household per capita income. At the household level, very many children combined with few working adults implies a high dependency ratio, which also influences the well being of the household members. In this study, age was taken in years.

- **Household head:** This is defined as the key decision maker, the one who is acknowledged by other members as having the authority to make all major decisions within the household. The CBS welfare monitoring surveys on which this study is based considers de jure headship and therefore the head is taken as a usual resident of the household, or if residing elsewhere, must be returning at frequent intervals. Household headship was defined as a dummy, with head = 1 and not head = 0.
- **Education:** This was defined as the number of years of schooling completed.
- **Marital status:** This is defined as a dummy, with married = 1 and not married = 0.
- **Assets:** The main asset was land. Land holding is defined as the total land in acres owned or operated within and outside the districts for both grazing and crop cultivation.

Household characteristics consisted of the number of infants (preschool children) and the household size. Household size was defined as the number of persons residing in the same compound answerable to the same head and pooling resources of common provision like food and shelter. Infants were defined as the number of children under five years of age.

The data are further categorized into rural and urban clusters on the basis of the CBS definition of rural and urban areas. The urban component consists of all the district headquarters irrespective of the population size and all towns with a population exceeding 10,000 people (CBS, 1996). We have therefore included a dummy for rural/urban cluster, with urban = 1 and rural = 0.

The income variable was not included in the data set and is therefore not available.

6. Results and discussion

The focus of this study is females. Nevertheless we begin this section with a presentation of summary statistics for both males and females in order to give the structure of the population from which the sample was drawn. In the following sections, the analysis has focuses only on the female population.

Summary statistics

Table 2 summarizes statistics of the variables used by gender for the 1997 data set. We observe that both males and females have an average age of 34 years. The mean number of years spent in education is slightly higher for males at 9 than for females at 8.7 years. The household size did not differ between males and females, nor did the number of infants. Among the females, only 21% were household heads, compared with 59% for males. Sixty-one per cent of males reported being in gainful employment, compared with 45% of females.

Table 2: Summary statistics for the variables used in the study by gender, 1997

Variable	Total sample			Male			Female		
	N	Mean	Std dev.	N	Mean	Std dev.	N	Mean	Std dev.
Age	27,767	34	16.2	13,277	34.25	16.208	14,490	33.9	16.04
Years of schooling	27,767	9	3.02	13,277	9	3.15	14,490	8.7	2.82
Household headship (1=yes)	27,767	.39	.488	13,277	.59	.492	14,490	.21	.408
Household size	27,767	4.6	2.716	13,277	4.6	2.695	14,490	4.6	2.735
Marital status (1=married)	27,767	.66	.474	13,277	.60	.489	14,490	.71	.453
Land size owned	27,767	27.2	152.17	13,277	27.45	152.1	14,490	26.58	152.36
Number of infants	27,767	1.43	.628	13,277	1.43	.623	14,490	1.3	.632
Rural/urban cluster (1=urban)	27,767	.15	.357	13,277	.16	.364	14,490	.14	.350
In gainful employment (1=yes)	27,767	.53	.499	13,277	.61	.487	14,490	.45	.497

Table 3 gives the summary statistics for explanatory variables across the categories of the dependent variable. The table shows that the unemployed category consists of a relatively younger population compared with the other categories. At a mean age of 32 years, unemployed females are older than their male counterparts in the same category whose mean age is 31 years. The agricultural sector has the oldest workers, with the mean age for males being 39 years and for females 38 years. The public sector has the highest age gap between males and females, with 38 years for males and 34 for females. The household size did not vary much between males and females. In terms of education, the public sector workers, both males and females, have higher levels of education than the other categories in terms of years of schooling. Agriculture shows the lowest level of education for both males and females. In terms of household headship, more males than females were household heads for all the employment categories. The number of infants did not vary much across the households and employment categories. This can be attributed to the nature of the population, which appears to be young, with a mean age of 34 years.

Table 3: Summary statistics for explanatory variables by employment category, 1997

Variable	Public sector		Public formal sector		Informal sector		Unemployed		Agriculture		Unpaid family worker	
	M	F	M	F	M	F	M	F	M	F	M	F
Age	38	34	35	31	35	33	31	32	39	38	36	35
Years of schooling	12	12	10	11	9	9	9	9	8	8	9	8
Household headship (1=yes)	.91	.39	.84	.43	.76	.34	.31	.15	.76	.37	.51	.15
Marital status	.91	.83	.83	.58	.77	.70	.56	.86	.76	.81	.37	.58
Household size	4.3	4.9	4.6	4.1	4.5	4.5	4.9	4.5	4.5	4.8	4.5	4.7
Land owned	32	26	28	34	29	29	41	45	26	18	20	32
Rural/urban cluster (1=urban)	.37	.50	.49	.55	.30	.39	.04	.09	.03	.04	.17	.06

M= male; F=female

Regression results for 1997 data set

In this section, we present results of the regression analysis for female participation in the labour market. The reference category for participation is taken as the unemployed category (Liao, 1994; Mwabu and Evenson, 1997). This category consists of an economically active population that is without regular employment but it is actively seeking work (CBS, 2002).

The section summarizes the multinomial logit regression results for the 1997 data. The explanatory variables used in the regression analysis are as defined earlier. Table 4 shows the coefficients for the multinomial logit regressions.

Table 4: Multinomial logit parameter estimates for labour force participation for the female sample, 1997

Variable	Public sector	Private sector	Informal sector	Unpaid family worker	Agriculture
Age	0.795*** (3.04)	0.765*** (3.08)	0.718*** (3.54)	0.495*** (3.27)	0.380*** (2.65)
Age ²	-0.0086*** (-2.64)	-0.0083*** (-2.76)	-0.0083*** (-3.47)	-0.0048*** (-3.12)	-0.0037*** (-2.60)
Years of schooling	0.680*** (3.83)	0.533*** (3.01)	0.332** (2.01)	0.261 (1.56)	0.237 (1.43)
Marital status	-0.270 (0.91)	-0.124 (0.41)	-0.150 (0.54)	-0.280 (1.02)	0.197 (0.73)
Land owned	0.252 (0.88)	0.252 (0.88)	0.216 (0.74)	0.252 (0.88)	0.251 (0.88)
Household head	22.182*** (4.01)	24.305*** (4.46)	25.758*** (5.69)	30.896*** (8.29)	30.637*** (8.17)
Household size	0.075 (0.48)	-0.024 (0.15)	0.027 (0.18)	-0.0056 (0.04)	0.075 (0.51)
Rural/urban cluster	1.884* (1.72)	2.117* (1.92)	1.355 (1.33)	-0.410 (0.39)	-2.074* (1.74)
Constant	-45.615*** (4.57)	-46.03*** (8.98)	-42.069*** (11.86)	-40.511*** (10.11)	-35.965*** (9.95)
Model $\chi^2(40)$	199.77				
N	14,490				
Log likelihood	-385.234				

Note: *** significant at 1%; ** significant at 5%; * significant at 10%.

Figures in parentheses are the Z-statistic.

The hypothesis of the IIA was tested with the results: $\chi^2(7) = 0.30$; $\chi^2(7) = 0.09$; $\chi^2(7) = 0.63$; $\chi^2(7) = 0.24$ with public sector, private sector, informal sector and unpaid family worker omitted, respectively.

The assumption of the independence of irrelevant alternatives IIA was tested and it holds for the data. From Table 4, we see that female participation in the public and private sectors is likely to increase with age, years of schooling, being a household head and being in the urban areas. Age squared has a negative and significant coefficient for all the categories, showing that beyond a certain age women have lower chances of

participating in the labour market. The land owned and household size do not appear to have any effect on participation in either the public or the private sectors. For the informal sector, age, age squared, years of schooling and household headship have significant coefficients. Whereas participation in unpaid family labour and agriculture is likely to increase with age, the years of schooling and land owned do not have any effect on female participation in the two sectors. Household headship is also likely to increase participation in unpaid family work and in the agricultural sector. Being in the urban area reduces the chances of participation in agriculture. Marital status does not seem to have any effect on female participation in any of the labour market categories.

For further interpretation of the results, the marginal effects for participation in the different categories of the labour market were computed. The results are presented in Table 5. The results show that for women, relative to being unemployed, a year of schooling increases the chances of being in the public sector by 3% and in the private sector by 2%. It reduces the chance of participation in agriculture by about 3%. It is important to note that years of schooling is not significant in increasing female participation in the informal sector on the margin. Increasing age significantly reduces the chances of being in agriculture. Being a household head increases the chances of being in the public sector by about 8%, private sector by 8%, being unpaid family worker by 4% and being in agriculture by 4%. Most of the variables specified do not seem to have any significant marginal effect on female participation in the informal sector, although some coefficients were found to be significant. Being in the urban area increases the chances of participation in the public and private sectors, but reduces the chances of participation in agricultural sector by 56%.

The results from this study, which has used the 1997 WMS III data, are comparable with results from studies using other data sets. Earlier studies using different data sets from the same sampling framework have come up with results that can be compared with these results from the 1997 data. Wambugu (2002), using data from the 1994 WMS II, found that some primary education reduces women's chances of agricultural sector work by 3% while a higher level of education increases their chances of public sector work. The study further finds that full primary education for women significantly induces entry into the informal sector. Age and age squared had significant coefficients, with older women more likely to be in the non agricultural sectors. The 1994 data show that it is only age, education, household headship and transfer income that have significant marginal effects on female participation in the informal sector. This contrasts with the 1997 data, where none of the factors affect female participation in the informal sector. This contrast may be attributed to the changes in the role of the informal sector as a source of employment. The share the informal sector in employment was 53.5% in 1994. This had risen to 63.6% by 1997, implying that the sector is increasingly becoming the main source of employment irrespective of the characteristics of the labour.

Table 5: Marginal effects on probabilities for labour market participation

Variable	Public sector	Private sector	Informal sector	Unpaid family worker	Agriculture
Age	0.022 (1.43)	0.020 (1.35)	0.013 (0.57)	-0.008 (0.38)	-0.048** (2.55)
Age squared	-0.002 (1.3)	0.002 (1.26)	0.002 (0.57)	0.001 (0.67)	0.005** (2.30)
Marital status	-0.003 (0.30)	0.008 (0.71)	0.005 (0.44)	-0.021 (0.84)	0.011 (0.44)
Years of schooling	0.029*** (3.21)	0.018** (2.44)	0.001 (0.28)	-0.022 (1.51)	-0.027** (1.99)
Land owned	0.002** (2.10)	0.002* (1.84)	-0.002 (.001)	0.001*** (3.50)	0.006** (1.98)
Household head	0.078*** (2.88)	0.081*** (3.05)	0.067 (0.55)	0.413*** (5.84)	0.358*** (5.23)
Household size	0.003 (0.70)	-0.0045 (0.69)	-0.001 (0.05)	-0.014 (1.21)	0.015 (1.45)
Rural/urban cluster	0.191** (2.49)	0.215*** (2.70)	0.125 (0.58)	0.032 (0.19)	-0.566*** (3.63)

Note: *** significant at 1%; ** significant at 5%; * significant at 10%.
Figures in parentheses are the z-statistic.

7. Summary, conclusions and policy implications

This study had the objective of investigating the determinants of female labour force participation in different employment categories of the Kenyan labour market, with a focus on the informal sector. The study used 1997 WMS III data collected through the Central Bureau of Statistics and applied a multinomial logit model for the analysis.

The regression results show that education, represented by years of schooling, increases women's chances of being employed in the public and private sectors. Land ownership increases females' chances of being in agriculture, public sector, private sectors and unpaid family work, but not in the informal sector. Household headship and the urban/rural location also have significant marginal effects.

A possible explanation for the observation that none of the specified factors appears to be significant in determining participation in the informal sector can be attributed to the characteristics of the informal sector itself. A significant proportion of those counted as employed in the informal sector are actually underemployed. This implies that the sector eases out open unemployment, transforming it into underemployment. As such, participation in the informal sector is a residual outcome of lack of opportunities in the other sectors and not an outcome of changes in the explanatory variables. An important conclusion from these results is that education is important in determining women's access to formal sector employment. Household characteristics as well as assets are equally important in determining women's participation in employment.

Although the coefficients of education and household headship are significant, their marginal effects are not significant in determining participation in the informal sector. This may imply that at the margin, participation in the informal sector is not affected by the factors that are specified, including education. There could be deep-rooted structural factors in the Kenyan labour market that affect female participation in the informal sector. As the informal sector has expanded, it has become a major employer of the female labour force. However, the nature of informal sector activities, like the small size of operations and low remuneration, may reduce its attractiveness as a source of employment. People therefore opt to participate in the informal sector not out of choice, but because it provides the only employment opportunity. Changes in the human capital or other factors may therefore not affect the entry into the sector. Efforts to address the issue of female participation in the informal sector may therefore require correcting the structural problems that affect access to employment opportunities in the labour market.

A number of policy relevant conclusions can be drawn from these results. The quality of human capital in the form of education is significant in determining women's access

to the labour market. This means that policy aimed at increasing women's participation in the labour market, especially in the formal sector, should address their access to education. Participation in the informal sector may be more an outcome of the limited employment opportunities in the formal sector rather than changes in the expected explanatory variables. This is because access to the labour market is an outcome of the interaction between demand for and supply of labour. Therefore addressing female participation in the informal sector may require addressing the demand side of the labour market in addition to the factors expected to determine women's participation.

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to the labour market. This means that policy aimed at increasing women's participation in the labour market, especially in the formal sector, should address their access to education. Participation in the informal sector may be more an outcome of the expected employment opportunities in the formal sector rather than changes in the expected explanatory variables. This is because access to the labour market is an outcome of the interaction between individual and structural factors. Participation in the informal sector may require addressing the latter.

Notes

1. These are percentages of the total sample for the 1999 survey of the MSEs. Since this is a national survey, the 92% and 97% can be used to reflect the national situation.

The regression results show that education, represented by years of schooling, increases women's chances of being employed in the public and private sectors. Land ownership increases females' chances of being in agriculture, public sector, private sector and unpaid family work, but not in the informal sector. Household headship and urban/rural location also have significant marginal effects.

A possible explanation for the observation that none of the specified factors appears to be significant in determining participation in the informal sector can be attributed to the characteristics of the informal sector itself. A significant proportion of those counted as employed in the informal sector are actually underemployed. This implies that the sector does not offer meaningful employment, transforming it into underemployment. As such, participation in the informal sector is a residual outcome of lack of opportunities in the other sectors and not an outcome of changes in the explanatory variables. An important conclusion from these results is that education is important in determining women's access to formal sector employment. Household characteristics as well as assets are equally important in determining women's participation in employment.

Although the characteristics of education and household headship are significant, their marginal effects are not significant in determining participation in the informal sector. This may be due to the fact that, at the margin, participation in the informal sector is not affected by the factors mentioned, including education. There could be deep-rooted structural factors in the Kenyan labour market that affect female participation in the informal sector. As the informal sector has expanded, it has become a major employer of the female labour force. However, the nature of informal sector activities, like the small size of operations and low productivity, may reduce its attractiveness as a source of employment. People therefore tend to participate in the informal sector not out of choice, but because a lack of meaningful employment opportunity. Changes in the human capital or other factors may have little or no effect on the entry into the sector. Efforts to address the issue of female participation in the informal sector may therefore require correcting the structural problems that affect access to employment opportunities in the labour market.

A number of policy relevant conclusions can be drawn from these results. The quality of human capital in the form of education is significant in determining women's access

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