



**Working Paper  
No. 500**

**Economic Crisis and Women's Employment Rate in a  
Sub-Saharan African Country: Explaining the Rise in  
Women's Employment Rate in the Urban Areas of  
Kenya**

*Wambui R. Wamuthenya*

April 2010

ISSN 0921-0210

The Institute of Social Studies is Europe's longest-established centre of higher education and research in development studies. On 1 July 2009, it became a University Institute of the Erasmus University Rotterdam (EUR). Post-graduate teaching programmes range from six-week diploma courses to the PhD programme. Research at ISS is fundamental in the sense of laying a scientific basis for the formulation of appropriate development policies. The academic work of ISS is disseminated in the form of books, journal articles, teaching texts, monographs and working papers. The Working Paper series provides a forum for work in progress which seeks to elicit comments and generate discussion. The series includes academic research by staff, PhD participants and visiting fellows, and award-winning research papers by graduate students.

Working Papers are available in electronic format at [www.iss.nl](http://www.iss.nl)

**Please address comments and/or queries for information to:**

Institute of Social Studies  
P.O. Box 29776  
2502 LT The Hague  
The Netherlands

*or*

E-mail: [wpapers@iss.nl](mailto:wpapers@iss.nl)

# Table of Contents

ABSTRACT	4
1 INTRODUCTION	5
2 CONCEPTUAL FRAMEWORK AND METHODOLOGY	9
2.1 Theoretical Considerations	9
2.2 Empirical model for the determinants of employment	11
2.3 Methodology for decomposing the rise in ER	14
3 DATA AND SUMMARY STATISTICS	19
4 DETERMINANTS OF THE INCIDENCE OF EMPLOYMENT	22
5 DECOMPOSITION ANALYSIS	29
6 CONCLUSION	33
BIBLIOGRAPHY	34

## **Abstract**

Focusing on urban Kenya, this paper attempts to identify the sources of the temporal increase in women's employment rate between 1986 and 1998. The paper relies on labour survey data, household responses to coping strategies and case studies. The analysis presented in the paper shows that the bulk of the increase in women's insertion into the labour market comes from an increase in the work participation of married women. While women's higher educational endowments, particularly the increase in secondary education, account for an improvement in their employment prospects, the period also witnesses a sharp decline in the importance given to education in determining employment and by 1998, university graduates were just as likely to be employed as individuals with no education. The period between 1986 and 1998 witnessed civil service reforms, restructuring of the private sector, firm closures and increasing job insecurity. Notwithstanding the role of education, declining opportunities for males, who in 1986 were the primary breadwinners and the accompanying income and employment insecurities within households seem to be the key factors prompting the sharp increase in the labour supply of (married) women. The analysis presented in this paper focused mainly on the period 1986 and 1998 and while more recent data would have provided an updated picture of the issues discussed in this paper, there is little evidence to suggest that the situation of women in Kenya's labour market has changed substantially in recent years.

## **Keywords**

Deteriorating economic conditions, urban households, coping strategies, women, employment rate, decomposition: composition & structural effects

# **Economic Crisis and Women's Employment Rate in a Sub-Saharan African Country**

## **Explaining the rise in women's employment rate in the urban areas of Kenya**

### **1 Introduction**

Women's propensity to participate in labour market activities has increased in most parts of the world. In the developed world, this trend has been optimistically linked to increased clerical and service jobs, improvements in education, public welfare provisions (for example, of childcare), and regulations against labour market discrimination (Cerrutti 2000; Joshi and Davies 1992; Oppenheimer 1976). In the developing world, education, urbanisation, declining fertility rates and perhaps an increase in female labour force participation as a consequence of economic restructuring are some of the possible factors.<sup>1</sup>

Set against a weakening macroeconomic environment<sup>2</sup> and rapid educational expansion, a striking feature of Kenya's urban labour market has been a steep increase in female labour force participation rate (FLFPR) between 1986 and 1998 (see Table 1.1) marking a near-convergence with that

---

<sup>1</sup> As one of the few sub-Saharan countries to experience remarkable declines in fertility in the last two decades, Kenya has seen its total fertility rate decline from 8.1 in 1978 to 4.8 in 2003. Between 1962 and 1977, total fertility rates increased from 5.3 to 8.1. Thereafter, they declined to 4.8 children per woman, a decline of 42 per cent over 25-years. Based on this cursory analysis of fertility trends in Kenya, the steepest drop occurred during the late 1980s and early 1990s and slowed during the mid-1990s. In terms of LFPR, owing to the eras of high fertility increase in the 1960s and 70s, the impact of those born then must have influenced labour-force structures of the mid-1980s on, via an increase in the share of the working age population exerting pressure on the existing labour-force. An additional important trend to note is the rising number of childless women, implying an increase in the age at birth (based on Demographic Health Survey reports). Most childless women are in the 15-19 and 20-24 age groups and are probably still at school pursuing either secondary or higher education, or unemployed job seekers. After age 15-19, there is a sharp decline in the number of childless women, which is also linked to the age at first marriage. All together, the rising trend in the number of childless women in all age groups, and especially at younger ages, coupled with the fact that those who have children are having fewer of them is an indication of a rising shift towards productive activities vis-à-vis reproductive activities.

<sup>2</sup> Between the mid-1970s and mid-80s, Kenya suffered a series of economic crises due to rapid increases in oil prices in 1973-74 (first oil shock), the commodity boom of 1976-77 (fluctuation in coffee and tea prices), the collapse of the East African Community (EAC) in 1978, the drought of 1979, the second oil shock in 1979, the world recession of 1981-82 caused by a rise in world interest rates, a coup attempt in 1982 and a series of droughts.

of males.<sup>3</sup> This substantial increase coincides with implementation of extreme economic reforms and structural adjustment policies (SAP). Due to the rise in female LFP, the urban employment rate (ER) of all women increased by 12.2 per cent while for men the figure was 2.4 per cent. Conditional on marital status, ER of married and single women increased by 15.3 per cent and by 7.4 per cent respectively. While in 1986, married women were less likely than single women were to be employed, by 1998 the ER for both married and single women converged (about 51 per cent). Accordingly, a larger proportion of the overall increase in women's employment rate was driven by the increase in employment of married women.<sup>4</sup>

While, at 51 per cent, the female ER in Kenya is relatively high by international standards it is lower than the rate found in other parts of sub-Saharan Africa (about 61 per cent in 1998).<sup>5</sup> In terms of convergence in the employment rates of married and single women, Kenya provides a similar situation to many developed countries such as the United States, United Kingdom, Australia and Finland. For example, Smith (2008) shows that over time, the employment rates of married and single women have converged in the United States and in 2007 were at about 71 per cent for both groups. In Finland, Gilbert (2006, 2005) and, Golden and Figart (2002) report that both single and married women (and men) work about the same number of hours and participate in the labour force at about the same rate. In the United

---

<sup>3</sup> LFPR is the proportion of employed and unemployed persons in the relevant working-age population. LFS data collection on Kenya has occurred at three distinct times: 1977, 1986 and 1998. According to reports based on these surveys, labour-force participation rose by 17 percentage points between 1977 (females 38.8 per cent; males 83.9 per cent) and 1986 (females 55.8 per cent; males 82.2 per cent) and by 30.1 points between 1986 and 1998 (females 85.9 per cent; males 86.9 per cent).

<sup>4</sup> These statistics showing high economic activity among women (and men) should be interpreted cautiously as they unfortunately mask the under-employed. Moreover, statistics on open unemployment give an incomplete image of labour market conditions because they do not factor in under-employment or more significantly, poverty-level employment (persons who claim to be employed but earn very low incomes) Pollin et al. (2007).

<sup>5</sup> In developed economies and the European Union (EU), ER is about 48 per cent, 49 per cent in Central and South Eastern Europe (Non-EU) and CIS (Commonwealth of Independent States – former Soviet Republics), 70 per cent in East Asia, 59.9 per cent in South East Asia and the Pacific, 36.7 per cent in South Asia and about 20-22 per cent in the Middle East and North Africa (ILO 2009). Cultural obligations, welfare benefits, women's attitudes towards mother-hood and having children and education are some of the factors that explain these differences. In seven out of nine regions, female adult employment-to-population rate increased between 1998 and 2008. Although the largest increases occur in Latin America and the Caribbean, the Middle East and North Africa, the rates remain well below 30 per cent in the latter two regions. ER varies from country to country within a specific region. For instance the percentage of women in paid work is particularly high in the Scandinavian states (Denmark, 73.2 per cent; Sweden, 71.8 per cent; and Finland 68.5 per cent) and in the Netherlands (69.6 per cent). UK has the third highest rate of female employment in Europe with a record 70 per cent of women at work. In countries such as Spain, Italy and Greece, ER is about 40 per cent. Malta has perhaps the lowest rate of women at work in Europe – about 36.9 per cent.

Kingdom, the employment rate for married women (73 per cent in 2000) is higher than the employment rate for single women (61.7 in 2000). In contrast, in Spain, the employment rate for married women was 43.3 per cent in 1998 while for single women it was much higher at close to 71 per cent. While the situation in Kenya is similar to the more developed countries in terms of equal work participation rates for married and single women, the circumstances that led to this convergence are likely to be different.

The purpose of this paper is to contribute to an understanding of the ways in which female labour supply reacts in a context of deteriorating economic conditions. More specifically, the paper seeks to identify the characteristics of and reasons for the growth in women's labour market attachment in urban Kenya.

Although the increasing number of women in the Kenyan urban labour-force has been previously acknowledged (Milne et al. 1990; Manda 1997; Republic of Kenya 1986a; Republic of Kenya Economic Survey 2002), no study has systematically explored this trend. Furthermore, while this impressive rise in FLFPR (ER) may be seen as a positive development, the question is whether it is driven by increased opportunities for women (due to increased education levels or increased demand for female labour) or that women were pushed into the labour market owing to worsening economic conditions for urban households.

To be accurate, the focus of this paper is on explaining the rise in women's ER and not on the increase in LFPR.<sup>6</sup> As shown in Table 1, in 1998, 87.2 per cent of women were participating in the labour-force while 12.8 per cent were inactive. In the 1986 sample, the corresponding numbers are 58.4 per cent and 31.6 per cent. Thus over time, women's LFPR has increased immensely leading to a situation where nearly every woman is in the labour-force. While the distinction between being economically active and inactive was quite clear in 1986, a decade later, the distinction has blurred with near universal participation in economic activity. The fact that by 1998, nearly all women were in the labour-force and therefore may not understand the distinction between looking for a job and not looking for one, makes the differentiation between inactive and unemployed and active not particularly useful. For these reasons, it is reasonable to focus on ER (the proportion of the working-age population employed) instead of LFPR (the proportion of the working-age population in the labour-force). In short, the employment rate is

---

<sup>6</sup> Within a particular group, employment rate is the proportion of the working-age population that is employed (including unpaid family workers) while working-age population refers to population aged 15-64 years. Labour-force participation rate refers to the proportion of the working-age population that is in the labour-force while labour-force (economically active) refers to the number of people who are either in work or are available and actively seeking work (that is, employed or unemployed). The economically inactive (those not in the labour-force) refers to the number of people who are not in work and are either not available or not actively seeking work (that is, they are not employed and not unemployed). This includes for example, retired people, students and people at home with children.

**TABLE 1**  
**Labour force participation & employment rates**  
**(% of relevant population group)**

<b>All Urban</b>	<b>1998 Sample Mean (%)</b>	<b>1986 Sample Mean (%)</b>	<b>% Change</b>
LFPR	87.7	73.3	14.4
ER	63.8	58.9	4.8
<b>Women</b>			
LFPR	87.2	58.4	28.8
ER	51.4	39.2	12.2
<b>Married Women</b>			
LFPR	96.6	56.4	40.2
ER	51.5	36.2	15.3
<b>Single Women</b>			
LFPR	74.9	61.6	13.3
ER	51.3	43.9	7.4
<b>Men</b>			
LFPR	88.2	84.3	3.9
ER	75.9	73.5	2.4

*Source:* Computations from the 1986 and 1998 LFS Data; Republic of Kenya, Various Labour Force Survey (LFS) Reports – Integrated Labour-Force Survey (ILS)-1989/99; Economic Survey-2002; Urban Labour-Force Survey (ULFS)-1986.

treated as the effective labour force participation rate and the two terms are used interchangeably in the paper.<sup>7</sup>

In terms of its approach, the paper attempts to explain the increase in women’s employment rate by decomposing the change into 1) a part that may be explained by changes in the average characteristics (such as experience, education, etcetera) of women between 1986 and 1998, referred to as the *composition effect* and 2) changes in the labour market valuation of these characteristics, for example, the importance given to different levels of education between the two periods in determining employment. This is referred to as the *structural effect* and reflects in part the demand for labour. The decomposition strategy outlined above is used to analyse two cross-section labour-force survey data sets gathered in 1986 and 1998, periods before and after the intensification of the various elements of the SAP. In addition to the decomposition, the paper also relies on information drawn from a primary survey and case studies conducted in 2003.

The remainder of the paper is as follows: section 2 outlines a conceptual framework for the study while section 3 describes the data. Sections 4 and 5 present estimates of the likelihood of being employed and the decomposition estimates, respectively. Section 6 concludes.

---

<sup>7</sup> From a statistical point of view, LFPR and ER are dichotomous variables with two mutually exclusive states taking the value of one if one participates in the labour-force or if one is employed and zero otherwise (the base category). To estimate the determinants of LFPR or of ER would require estimating a probabilistic function such as a logit or a probit model. Estimating a LFPR function is difficult as in the 1998 sample nearly all women are in the labour-force.



## 2 Conceptual Framework and Methodology

This section describes the conceptual framework utilised in this paper, provides a discussion of an empirical model used to estimate the determinants of employment and outlines a methodology for decomposing the rise in employment.

### 2.1 Theoretical Considerations

Since this paper treats ER as the real LFPR and given that the state of being employed is an aspect of labour-force participation (as described below), this paper defines the main theoretical concepts and arguments under the neoclassical theory of labour supply, which despite limitations, is applied widely in empirical analysis of labour supply (Becker 1965; Gray et al. 2002, 2003; Heckman 1979; Killingworth 1983; Manda 1997; Van den Brink 1994). The theory is based on the assumption of utility maximisation subject to budget constraints. The theory assumes that economic agents make informed and rational decisions from information about prices and wages. Individuals are assumed to allocate time to market work and non-marketable activities (leisure). Utility is maximised by choosing a combination of goods and leisure hours subject to time, price and income constraints.

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. As with hours of work, each individual must choose how to allocate time: that is whether to work in the market or spend time in non-market activities. The decision to work is influenced by the market wage and the reservation wage (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). Hence, participation/employment depends 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.

Therefore in the neoclassical labour supply framework, individuals as rational actors maximise their utility and are willing to enter employment governed by the fundamental requirement that the market wage exceeds the reservation wage. 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 young children, availability of non-labour income, 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. On the other hand, a variable such as education

strengthens women's attachment to the labour market by increasing their potential earnings.

In addition to the potential negative effect of young children on women's employment decisions, the existence and economic background of a husband or partner plays 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 encourage women to consume additional non-market time 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.

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 to supply labour to market or not. Second, a combination of factors including labour demand (employers preferences: skills, experience, education, marital status and sex), incentives to search actively for work and to accept the available job offers determine whether they are employed or not.

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 recreation activities (Van de Brink 1994).<sup>8</sup>

The empirical specification developed below will draw on the preceding discussion to aid model specification. However, since this paper treats the employment rate as the effective labour force participation rate, it is important to view the observed outcome not only in terms of an outcome of factors that determine supply of labour but the interaction between supply and demand factors. As discussed above, participation in the labour-force involves a decision by an individual on how to allocate his/her time, and a decision on the part of the employer to offer an individual a job. This interaction of supply and demand determines whether a person effectively participates in the labour-force or not. Given data limitations, this paper does not explicitly include

---

<sup>8</sup> 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 models (see for example Haddad et al. (1997). For simplicity, this study assumes that urban households pool-income, make joint decisions over expenditures and labour allocation. However, it is important to note that assuming income is pooled, implies income is equally shared among household members. This may not be the case as income is non-pooled in some instances and not equally shared due to unequal power relations within households. It is also possible that some women engage in paid work or income generating activities to enhance their power position in the household or due to a desire to have independent income or as a risk precaution measure in case a marriage/relationship breaks down or in case the main-income earner is unable to provide for the family as a result of joblessness or other natural calamities. Household composition and structure, and the cohesion of the family members determine its ability to mobilise additional labour. Households can also be seen as adaptive institutions for pooling income and other resources and for sharing both consumption modifying and income raising strategies.

factors that determine labour demand. However, the interpretation of the results will be sensitive to labour demand issues and indeed, the analysis of key macroeconomic and employment trends as in the introduction provides a background for the demand-side without necessarily modelling it.

## 2.2 Empirical model for the determinants of employment

This paper uses a probit model to calculate the probability of being employed, conditional on a given set of characteristics. The model is non-linear and provides predicted probabilities between zero and one.<sup>9</sup> An individual's dichotomous employment status is denoted by  $Y_i$  and  $Y_i=1$ , if an individual is employed and  $Y_i=0$  if an individual is not (unemployed or inactive). The probability that  $Y_i=1$  is defined as:

$$\text{Probability } (Y_i=1) = F(\beta_0 + \beta_1 X_{i1} + \dots + \beta_k X_{ki}) \quad (1)$$

that is,  $F(X_i\beta)$

where,  $F(\cdot)$  is the standard normal cdf.

Given the objective of exploring whether the change (rise) in ER of women is explained by changes in the determinants of ER, the probit model is estimated separately for 1986 and 1998. The explanatory variables in the model are derived from the economic theory of labour supply behaviour or those considered important in previous empirical studies. To facilitate understanding of the effects of the probit coefficients, marginal effects or predicted probabilities (that is, change in the predicted probabilities associated with

---

<sup>9</sup> For the probit model,  $F(X_i\beta)$  in equation (1), is the cumulative standard normal distribution function, which rises from zero to one as  $Z$  goes from negative infinity to positive infinity. The probit model employs an integral, making it computationally more difficult than the logit. For the logit model,  $F(X_i\beta)$  is the logistic function that also rises from zero to one and employs an exponential function – where the logit transformation is the natural log of the odds ratio, the function used in probit is the inverse of the standard normal cumulative distribution function. A logistic regression is based on the assumption that the categorical exogenous reflects an underlying qualitative variable and uses the binomial distribution while a probit regression assumes the categorical dependent reflects an underlying quantitative variable and it uses the cumulative normal distribution. The logit is easier to interpret in terms of the odds ratios. Probit models have the drawback that probit coefficients are more difficult to interpret – interpretation of estimated coefficients from a probit model is not straightforward because there is no equivalent to logistic regression's odds ratios as effect sizes in probit. Hence, they are less used although the choice is largely personal preference. From an empirical standpoint, logit and probit models typically yield similar estimates of the relevant derivatives. This is because the cumulative distribution functions for the two models differ only slightly in the tails of their respective distributions. However, while the derivatives are usually similar, the parameter estimates obtained from the two models differ. Parameter estimates of both models can be made comparable by multiplying those from the logit by a factor, 0.625.

changes in the explanatory variables) are provided.<sup>10</sup> Marginal effects (ME) are evaluated at the sample mean.

The remainder of this section provides a rationale for the empirical specification used. As discussed above, the dependent variable is employed. An individual reporting any level of employment including un-paid family work is treated as employed. The likelihood of being employed is affected by personal and household characteristics. Personal characteristics include, age, level of education, marital status and house-hold-headship, and wages in the market. Household characteristics include childcare responsibilities as captured by the number of young children below school age, the size of the household, and the presence of female relatives in a household.

Age is included to pick up lifecycle effects and as a measure of potential labour market experience. Age-squared is included as well to allow for non-linear relationship between age and the probability of employment. In addition to potential labour market experience, an individual's human capital is captured by years of schooling or highest level of formal education completed. According to the neoclassical theory of human capital, a rise in education attainment may lead to an increase in women's employment rate (or attachment to the labour market) for several reasons. First, earnings from work rise progressively with educational attainment, thus increasing the cost of time spent in non-market activities. Second, education may increase the probability of being employed as it changes an individual's tastes or attitudes regarding the desirability of homework versus market work. Third, if education is considered an investment in human capital, then the recipient has to work to recover the cost of education. Higher education is often undertaken as an investment in the sense that a person willingly suffers large direct costs (tuition) and opportunity cost (foregone earnings from work) of a college education with the anticipation that these costs will be recouped in the form of higher earnings and occupational attainment after graduation. For these reasons, it is natural to associate increasing employment rates of women (or their attachment to the labour market) with higher educational attainment

Partner's income and partner's employment status 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 relationship, then it may be expected that increases in a partner's income reduce the probability of participation. In the context of worsening economic circumstances, women may be more inclined to work or search for work in order to augment a decline in partner's real income (hence an inverse relationship between the likelihood of being employed and partner's income) or as a precautionary measure against potential job-loss resulting from employment restructuring. Women, especially the better educated, may be more likely to work for reasons independent of partner's earnings such as the need for self-security or economic empowerment. Drawing on this discussion, the empirical models estimated here include partner's real income and education.

---

<sup>10</sup> See for example Greene (2003: 667).

The structure of the family has an important role in explaining women's participation in the labour market. Scholarly consensus has been that marriage and children deter women's LFP in the context of labour division within households where husbands specialise in market work and are the breadwinners, and women in child rearing and household work. Most empirical studies find a negative relationship between the number of children in the family and the probability of a woman's work participation (Kaufman 1994). The negative relationship is particularly associated with children of pre-school age. This standard gender analysis may break down in the Kenyan context where domestic service is affordable especially among educated women engaged in fulltime jobs or among those engaged in self-employment in the informal sector, which may often allow flexibility to combine productive and reproductive work.<sup>11</sup> Household size could have either a positive or a negative effect on the probability of being employed. On 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 would be negative. 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 enabling them to take up market work. Here, the effect on the probability of employment would be positive. Presence of female relatives in a household would be expected to increase the probability of being employed on the assumption that their presence reduces the burden of caring for children and domestic chores for other women in a household. While recognising the role of children and household size it is likely that both variables, especially, the number of children is endogenous to labour market participation as decisions to have children and to participate in the labour market may have been taken together. While the presence of young children is excluded from the specifications, control for household size and the presence of female relatives remains. Strictly speaking, household size should be treated as endogenous, however, as will be seen later, in practical terms this does not turn out to be relevant as household size appears to have no impact on female employment status. In addition, I did include the number of children in some of the specifications and the inclusion of such a variable did not have a large bearing on the estimates. Being a household head is included in the specifications as it is likely to increase the probability of being in employment regard-less of sex or marital status.

On wages in the market, recall that the theory underlying the participation decision stems from a standard neoclassical microeconomic model in which the difference between the market wage and the reservation wage along with other factors and assumptions determines an individual's decision to work. While theoretically this idea is straightforward, empirically, given that an individual's reservation wages are endogenous, it is hard to estimate such a structural model. Accordingly, analysis estimates reduced form employment

---

<sup>11</sup> Manda (1997), found the relationship negative but statistically insignificant. He argues that there are perhaps social mechanisms of spreading the burden of rearing children, for instance, the presence of extended family members in a household.

equations. Table 2 provides a list of the variables used in the specification and their definitions.

**TABLE 2**  
**Variable description**

<b>Variable</b>	<b>Description</b>
Employed	Dummy dependent variable taking the value '1'. If the respondent reported any form of employment including unpaid family work and '0' otherwise (for unemployed and the inactive together).
Age	Age in years
Age-squared (agesq)	Age in years – squared
Sex	Dummy variable:1=male; 0=female
Married	Dummy variable:1=married; 0=not married
Head of household	Dummy variable:1=Yes; 0=No
Household size (hsize)	Total number of household members (hsize)
Education (highest level completed)	Primary dummy variable:1=has primary level education; 0=otherwise; Secondary dummy variable:1=has secondary level education; 0=otherwise; University dummy: 1=has university level education; 0=otherwise; None/nursery (omitted category) dummy variable: 1=has no schooling including or has nursery level; 0=otherwise
Presence of female relatives in a household (relatives)	Dummy variable: 1 =Yes; 0=No
Partner's Income (Hus_earn)	Husbands real monthly earnings from both wage employment and/business earnings, computed using consumer price index (CPI) for urban areas with 1986 as base year.
Partner's Education (highest level completed)	Hus-Primary dummy variable: 1=has primary level education; 0=otherwise; Hus-Secondary dummy variable: 1=has secondary level education; 0=otherwise; Hus-University dummy variable: 1=has university level education; 0=otherwise; Hus-None /nursery (omitted category) dummy variable: 1=has no schooling/has nursery level; 0=otherwise

### 2.3 Methodology for decomposing the rise in ER

Substantial research effort in the field of social sciences has been dedicated to unravelling the underlying causes of racial and gender differences in labour market, education, health and other outcomes. To decompose the sources of observed differences, an extension of the well-known Blinder-Oaxaca decomposition technique is the most widely used approach.<sup>12</sup> The technique enables decomposition of intergroup differences in mean levels of an outcome, into those due to different observable characteristics or 'endowments', and

<sup>12</sup> Both Blinder (1973) and Oaxaca (1973) first used the Blinder-Oaxaca decomposition in separate works on wage discrimination and gender wage differentials. In the analysis of wage differentials (continuous outcomes), the observed log of the wage gap between two groups is decomposed into a part explained by differences in the average individual characteristics and a part explained by differences in coefficients (ascribed to discrimination in the labour market).

those due to different effects of characteristics (Fairlie 2003). The technique is particularly useful in the identification and quantification of separate contributions of group differences in measurable characteristics such as education to racial and gender differences in outcomes. This method is also useful in answering various questions such as why employment rates or participation rates in the labour market have changed over time or why these aspects are different by gender.

Within the statistical framework applied in this paper, change in the probability of being employed between 1986 and 1998 can be attributed to two sources. One, changes in average characteristics of women between 1986 and 1998 could be responsible for changes in their respective ER levels. Two, there may be changes between 1986 and 1996 in the determinants of employment status, that is, the influence of different characteristics on employment status as measured by their estimated coefficients ('prices') may have changed. Coefficient estimates may change over time as labour market valuation of characteristics (for example, labour demand for educated workers or demand for experienced workers may change) is likely to evolve over time whereby people with same characteristics may receive different treatment. Thus, over time, the changes in the proportion of employed women may be disentangled into a change in the behavioural model (coefficients of the probit model) and change in the average level of the variables in the model (education, experience, partner's income, marital status).<sup>13</sup>

Using an extension of the Blinder-Oaxaca decomposition technique as proposed by Even and Macpherson, (1990, 1993)<sup>14</sup> it is possible to use the estimates of the determinants of ER for 1986 and 1998 to decompose the change in ER over that period into the characteristics' and coefficients' effects as follows.

To start with, for a linear regression, the standard Blinder-Oaxaca decomposition (for example, to isolate changes in wages over time), would be written in terms of changes in the average value of the dependent variable (call it Y) as:

$$Y_{98}-Y_{86} = (X_{98}- X_{86})\beta_{98} +(\beta_{98}-\beta_{86})X_{86} \quad (2.a)$$

where  $X_{98}$  and  $X_{86}$  are row vectors of average values of the independent variables and  $\beta_{98}$  and  $\beta_{86}$  are vectors of coefficient estimates for each year.

---

<sup>13</sup> Clark and Drinkwater (2006) applied an extension of the Blinder-Oaxaca decomposition to analyse employment gaps of main ethnic groups in England and Wales between 1991 and 2001. Gutierrez-Domenech and Bell (2004) used it to analyse the rise in female labour-force participation in the UK between 1984 and 2002 and Gray et al. (2002, 2003) applied it to changes in employment and labour-force status of Australian women. In addition, Gomulka and Stern (1990) used the decomposition to analyse the employment of married women in the UK between 1970 and 1973.

<sup>14</sup> See also Blackaby et al. (1998, 1994); Fairlie (2003); Jensen and Nielson (1997); Nielsen (1998); Wen-Hao et al. (2005); Yun (2004).

Although mainly employed in the decomposition of continuous variables as in this example, the technique has been extended to accommodate discrete or binary choice models.

Temporal decomposition of a non-linear equation as in the case of the probit model used here, where,

$$Y = F(X\beta), \quad (2.b)$$

may be written as,

$$Y_{98} - Y_{86} = F(X_{98}\beta_{98}) - F(X_{86}\beta_{86}) \quad (3)$$

where  $Y_{98}$  is the mean predicted ER probability for 1998 using the characteristics (explanatory variables) of 1998 and  $Y_{86}$  is the mean predicted ER for 1986 using the characteristics of 1986.

Equation 3 expresses the predicted change in ER between the two points in time and this paper endeavours to explain this change. Equation 3 can be decomposed as:

$$Y_{98} - Y_{86} = [F(X_{98}\beta_{98}) - F(X_{86}\beta_{98})] + [F(X_{86}\beta_{98}) - F(X_{86}\beta_{86})] \quad (4)$$

$F$  (for a probit model), is the cumulative distribution function from a standard normal distribution.  $\beta_{98}$  and  $\beta_{86}$  are vectors of parameter estimates associated with individuals in 1998 and 1986 respectively and  $X_{98}$  and  $X_{86}$  are vectors of individual characteristics in 1998 and 1986 respectively. This alternative expression for the decomposition is used because the average value of the dependent variable ( $Y$ ) as in equation (2.a) does not necessarily equal  $F(X\beta)$  as in equation (2.b) hence, equation 4 is a special case of the Blinder-Oaxaca decomposition. In equation 4, the first term in brackets corresponds to the part of the gap that is due to group differences in distributions of  $X$ , while the second part corresponds to the portion due to differences in the group processes determining the levels of  $Y$  (ER).

Following Fairlie (2003), an alternative expression of equation 4 is as follows:

$$Y_{98} - Y_{86} = \frac{F(X_{98}\beta_{98}) - F(X_{86}\beta_{86})}{F(X_{98}\beta_{98}) - F(X_{98}\beta_{86})} [F(X_{98}\beta_{86}) - F(X_{86}\beta_{86})] \quad (5)$$

Note that in equation 4, the 1998 coefficient estimates ( $\beta_{98}$ ) are used as weights for the first term of the decomposition and the 1986 distributions ( $X_{86}$ ) are used as weights for the second term. Contrastingly, in equation 5, the 1986 coefficient estimates ( $\beta_{86}$ ) are weights for the first term of the decomposition and the 1998 distributions ( $X_{98}$ ) are weights for the second term. This is because in equations 4 and 5, the terms,  $F(X_{86}\beta_{98})$  and  $F(X_{98}\beta_{86})$  respectively, have been added arbitrarily. For this reason, a familiar problem with the



Blinder-Oaxaca decomposition technique known in the literature as index number problem arises from the fact that equations 4 and 5 yield different estimates. This is because the estimated sizes of the explained and residual components will depend on which ER structure (1998 or 1986 coefficient vector) is used as the non-discriminatory structure. Oaxaca and Ransom (1994) and, Neumark (1988) suggest a way to circumvent the index number problem whereby a pooled coefficient vector (in this case, 1986 and 1998) is taken as the non-discriminatory or neutral employment structure. This paper follows their approach in which coefficient estimates from a pooled sample of the two groups/periods in consideration are weights for the first term.<sup>15</sup>

Let  $\beta^*$  be the neutral coefficient structure (estimates from a pooled sample of the two groups) that would prevail in the absence of behavioural differences in the returns to the employment status generating characteristics between the two groups/points in time. Based on this assumption, the probit estimates of the pooled sample represent the determinants of employment in the absence of unobserved group differences, and the difference between the average probability of being employed in 1998 as compared to the average probability based on the neutral structure is given by:

$$F(X_{98}\beta_{98}) - F(X_{98}\beta^*) \quad (6)$$

A comparable expression for 1986 is:

$$F(X_{86}\beta^*) - F(X_{86}\beta_{86}) \quad (7)$$

Thus, the total gap in average 1998 and 1996 probabilities of being employed can be expressed as:

$$Y_{98} - Y_{86} = F(X_{98}\beta_{98}) - F(X_{86}\beta_{86}) = [F(X_{98}\beta^*) - F(X_{86}\beta^*)] + \{[F(X_{98}\beta_{98}) - F(X_{98}\beta^*)] + [F(X_{86}\beta^*) - F(X_{86}\beta_{86})]\} \quad (8)$$

The first term in equation 8 in [ ] uses the neutral-pooled employment structure to predict the employment probabilities of 1986 and 1998, but allows the characteristics of individuals in the 1998 sample to differ from those of the 1986 sample. This expression is the *characteristics' effect*, since it shows the gap in employment probability explained by differences in the individual characteristics of women between the two points in time. The second and third terms together in { } constitute the *coefficients' effect* or *structural part* of the total

---

<sup>15</sup> 'The choice across these alternative methods of calculating the first term of the decomposition is difficult and depends on the application with many studies reporting results for more than one specification' (Fairlie 2003: 3).

gap.<sup>16</sup> The second term shows the difference between returns to women's characteristics in 1998 and those that would exist in the context of a neutral structure, while the third term shows the difference between returns to women's characteristics in 1986 and those that would exist in the context of a neutral structure. The empirical discussion does not draw a distinction between the second and third terms and combines both of them to capture the change in the probability of employment due to changes in structural factors.

The next steps are to determine the contribution of each individual explanatory variable to the observed portion of the total gap (contribution of each of the  $X$ s to the first term of equation 8) and the contribution of each of the coefficients to the unexplained portion of the total gap (second and third terms together). Yun (2004) and, Even and Macpherson (1990, 1993) suggest a detailed decomposition to identify these effects in binary choice models. Their method, applied in this paper identifies the contribution of a specific variable 'k' to the observed differential as follows:

$$Z_k [F(X_{98} \beta^*) - F(X_{86} \beta^*)] \text{ where } Z_k = \frac{(\bar{X}_k^{98} - \bar{X}_k^{86}) \beta_k^*}{(\bar{X}^{98} - \bar{X}^{86}) \beta^*} \text{ and } \sum_{k=1}^K Z_k = 1. \quad (9)$$

The contribution of variable 'k' to the coefficient effect<sup>17</sup> (unobserved differential) is derived as follows:

$$S_k \{ [F(X_{98} \beta_{98}) - F(X_{98} \beta^*)] + [F(X_{86} \beta^*) - F(X_{86} \beta_{86})] \} \text{ and}$$

$$S_k = \frac{(\beta_k^{98} - \beta_k^{86}) \bar{X}_k^*}{(\beta^{98} - \beta^{86}) \bar{X}^*} \text{ with } \sum_{k=1}^K S_k = 1. \quad (10)$$

To recap, the equations estimated are equation 3 to obtain the predicted total gap/change in women's probability of being employed and equation 8,<sup>18</sup> to decompose the total gap into the characteristics' and coefficients' effects; and equations 9 and 10 for the contribution of a specific variable to each of these effects.

---

<sup>16</sup> The compositional (characteristics) effect captures the role of personal, human capital and other endowments in the likelihood of being employed or of getting a job while the structural effect captures an employer's valuation of these characteristics thus the demand-side of the labour market.

<sup>17</sup> As per Yun (2004).

<sup>18</sup> As noted decompositions are done using the weights from pooled samples (pooled 1998 and 1986 sample) for the changes in ER. Results for alternative decompositions (equations 4 and 5) are available upon request.

### 3 Data and Summary Statistics

The paper uses LFS cross-sectional data of 1986 and 1998 and covers women in the age group 15 to 64. The 1986 survey sampled 2697 urban households and included 9605 respondents. The 1998/99 survey sampled 1938 households with 6646 respondents. After dropping observations with incomplete information and restricting the analysis to persons age 15 to 64, 5464 and 4008 observations remained from the 1986 and 1998 data sets respectively.

Table 3 provides mean characteristics for the entire sample of women in the working-age population (both employed and non-employed) while Tables 1.4 and 1.5 provide mean characteristics conditional on a woman's marital status.

**TABLE 3**  
**Descriptive statistics: All women**

Variable	1998 Sample			1986 Sample		
	Obs.	Mean	Std. Dev.	Obs.	Mean	Std. Dev.
Age	1983	28.83	10.51	2319	28.38	10.12
Agesq	1983	941.21	723.79	2319	908.04	699.11
Married	1983	0.57	0.5	2319	0.61	0.49
Head	1983	0.21	0.41	2319	0.2	0.4
Hsize	1983	4.71	2.49	2319	5.44	3.1
None	1983	0.09	0.29	2319	0.2	0.4
Primary	1983	0.43	0.49	2319	0.42	0.49
Secondary	1983	0.46	0.5	2319	0.36	0.48
University	1983	0.02	0.13	2319	0.02	0.13
Relatives	1983	0.24	0.43	2319	0.19	0.39
LFP	1983	0.87	0.33	2319	0.58	0.49
Employed	1983	0.51	0.5	2319	0.39	0.49

Figures in Table 3 show no difference in the overall mean age between women in the 1998 and 1986 samples. This overall scenario differs between married and single women with single women having a lower mean age.

There is a drop in household size (*Hsize*) between the two periods. Some possible explanations for this are a rise in urban to rural migration in which some household members (mainly women and their children), are forced relocate to their rural home to help minimise the costs of urban living in the context of worsening economic conditions (as described in more details in Table 1.9, Section 1.4), and a general fertility decline particularly in urban areas.<sup>19</sup>

<sup>19</sup> Fertility has remained substantially higher in the rural areas than urban areas, a pattern that is evident at every age and widens with age. It is worth noting that although fertility has declined at both national and provincial levels, urban areas recorded the steepest decline between 1989 and 1999 (from a TFR change of 4.5 between 1979-89 to 2.7 between 1989-99 as compared to a TFR change of 7.0 between 1979-89 to 5.8 between 1989-99 for the rural areas).

The proportion of married women in the working-age population decreases between the two periods. In spite of the declining fertility rates in both rural and urban areas, it continues to be true that by far, most women (men) marry. In the Kenyan context, most women marry between ages 20-24. However, Kenya's Demographic Health Survey (DHS) and census statistics reveal a rising trend in the number of single women across all age groups, which might explain the drop in the proportion of married women in the working-age population. For example, the proportion of women aged 15-19, 20-25 and 25-29 who have never married increased from 55 per cent, 13 per cent and 5 per cent to 81 per cent, 38 per cent and 19 per cent respectively between 1962 and 1999. The observed increase in the proportion of single women at younger ages implies an increase in the age at marriage, perhaps and mainly because younger women now have to spend more time in school. This also means that the rate of household formation (children leaving their parental homes to set up their own households) has declined for the young owing to a lack of economic independence (this might partly explain the drop in the number of female-household heads in the sample of single women; Table 5). The increasing number of single women (and men) at lower age groups of the labour-force structure, longer periods of un-employment due to increased job search hence lack of economic independence can contribute to low household formation and therefore a decrease in the proportion of married women. Another probable reason for the drop in married women in the working age population is the rising trend in the number of family break-ups. From a perspective of household economic crisis, the likelihood is that more families break up. DHS reports (1989, 1993, 1998 and 2003) reveal a rising trend in the proportion of divorced persons from 2.7 per cent in 1989 to 6.0 in 2003 and that of widowed women from 2.0 per cent in 1989 to 5.4 per cent in 1999 and to 4.2 per cent in 2003.

The expectation, as with any patriarchal society is that women head few households. The average number of female household-heads is small although their prevalence is higher amongst single as compared to married women. Even so, another trend concurrent with declining fertility is the increase in the number of female-headed households. Tables 1.3 and 1.4, confirm this trend.<sup>20</sup> Among reasons that might explain this trend are: one, women live longer than men and thus are more likely to fend for themselves alone at an older age; two,

---

<sup>20</sup> According to DHS and census statistics, the national proportion of female-headed households increased from 35 per cent in 1989 to 37 per cent in 1999 while male-headed households dropped from 65 per cent in 1989 to 63 per cent in 1999. In rural areas, the proportion of female-headed households dropped from 84 per cent in 1989 to 81 per cent in 1999, while that of urban areas increased from 16 per cent in 1989 to 20 per cent in 1999. Hence, the two per cent national increase in female-headed households was mainly because of the four per cent increase in the proportion of female-headed households in urban areas. The proportion of male-headed households in urban areas increased from 26 per cent to 29 per cent while that in rural areas dropped from 74 per cent to 71 per cent. The drop in the overall number of male-headed households was perhaps due to the drop in the number of male-headed households in rural areas.

an increased age at marriage particularly in urban areas; and three, the rising number of marital dissolutions (divorce and widows).<sup>21</sup>

The proportion of female relatives increased between the two periods and is much higher among single women. This might connote a need to increase the number of earners in a household where female relatives are called to help with domestic work and childcare enabling other women in a household to take up market work.

In terms of education, there is a sharp increase in educational attainment between the two periods. The proportion of women with secondary education increases between 1986 and 1998 by ten percentage points from 36 to 46 per cent (Table 3). At the same time, the proportion of women with no education declines sharply from 20 to 9 per cent. The proportion of university-educated women remained stable during this period.

Regarding characteristics of male spouses (earnings and education), Table 4 reveals considerable improvement in spouse education levels (especially secondary level) and a sharp decline in earnings— among married women, their average real male spouse monthly earnings were about Ksh 4235 in 1986 and about Ksh 2059 in 1998 a decline in value of about 51 per cent.

**TABLE 4**  
**Descriptive statistics: All married women**

Variable	1998 Sample			1986 Sample		
	Obs.	Mean	Std. Dev.	Obs.	Mean	Std. Dev.
Age	1131	31.14	9.4	1410	30.17	9.13
Agesq	1131	1057.85	676.53	1410	993.54	650.47
Head	1131	0.11	0.31	1410	0.09	0.29
Hsize	1131	4.62	2.13	1410	5.33	2.7
None	1131	0.1	0.31	1410	0.22	0.41
Primary	1131	0.41	0.49	1410	0.42	0.49
Secondary	1131	0.46	0.5	1410	0.34	0.47
University	1131	0.02	0.13	1410	0.02	0.15
Relatives	1131	0.16	0.37	1410	0.13	0.34
Hus-None	984	0.06	0.24	1235	0.12	0.33
Hus-Primary	984	0.3	0.46	1235	0.37	0.48
Hus-Secondary	984	0.57	0.5	1235	0.43	0.5
Hus-University	984	0.07	0.25	1235	0.07	0.26
Hus-Log Real Earnings	798	7.12	0.9	1124	7.46	1.05
LFP	1131	0.97	0.18	1410	0.56	0.5
Employed	1131	0.52	0.5	1410	0.36	0.48

<sup>21</sup> According to DHS and census reports, the mean age at first marriage for women in all age groups has risen in both rural and urban areas and remains consistently higher in urban areas. In the urban areas, it increased from 19.8 in 1989 to 21.4 in 2003 and from 18.3 to 19.3 for rural areas.

**TABLE 5**  
**Descriptive statistics: Single women**

Variable	1998 Sample			1986 Sample		
	Obs.	Mean	Std. Dev.	Obs.	Mean	Std. Dev.
Age	852	25.75	11.1	909	25.61	10.94
Agesq	852	786.37	0.4	909	775.43	749.79
Head	852	0.34	0.48	909	0.37	0.48
Hsize	852	4.82	2.89	909	5.61	3.62
None	852	0.08	0.27	909	0.17	0.38
Primary	852	0.44	0.5	909	0.42	0.49
Secondary	852	0.46	0.5	909	0.4	0.49
University	852	0.02	0.13	909	0.01	0.1
Relatives	852	0.34	0.48	909	0.29	0.45
LFP	852	0.75	0.43	909	0.62	0.49
Employed	852	0.51	0.5	909	0.44	0.5

#### 4 Determinants of the Incidence of Employment

This section presents estimates of the determinants of employment in 1986 and 1998. As underlined earlier, most of the rise in employment is due to an increased presence of married women in the labour market. Determinants of employment for married and non-married women are examined separately. Besides, these two groups confront different economic contexts and decisions on whether to work or not.

Probit results for the total sample of women without breakdown by marital status are presented for each year (Table 6), followed by estimates for married women (Tables 7a & 7b) and single women separately (Table 8). The discussion focuses on the estimates for 1986 and then highlights differences over time.

In 1986, the estimates in Table 6 show that the age and age-squared variables have the expected positive and negative signs and are statistically significant. This shows that older women have a higher likelihood of being employed, although beyond a certain peak (at the age of about 31) their probability of being employed declines. Married women are about 12 percentage points less likely to be employed as compared to single women while female heads of household are 36 percentage points more likely to be employed as compared to women who do not head their households.

In terms of the effect of education on employment status, as may be expected, women with any level of education are far more likely to be employed as compared to uneducated women with the marginal effect increasing with education level. Women with university education are about 51 percentage points more likely to be employed than uneducated women are while the marginal effect for women with secondary and primary education is 33 and 24 percentage points respectively. The patterns on the educational coefficients display the large payoffs with acquiring education. Other factors

such as household size and the presence of relatives do not exert an effect on employment.

While there are similarities between the 1986 and 1998 estimates, there are some sharp differences. While the effect of age and being a household head are relatively unchanged, there is a sharp change in the effect of marital status on the probability of a woman working. From a negative marginal effect of 12 percentage points, the 1998 estimates show that being married has no statistically significant effect on employment status, in other words married and single women are equally likely to be employed. There are sharp changes in the importance of education in determining an individual's employment status. While the importance of primary and secondary education in determining employment declines (about 10 percentage points), they continue to exert a statistically significant effect on the probability of finding employment.

**TABLE 6**  
**Estimates: Determinants of the incidence of employment all women**

Variable	1998 Sample			
	Coef.	Std. Err.	ME	Std. Err.
Age	0.191***	0.018	0.076	0.007
Agesq	-0.002***	0	-0.001	0
Marital	-0.156	0.08	-0.062	0.032
Head	0.883***	0.105	0.325	0.033
Hsize	-0.011	0.014	-0.004	0.005
Primary	0.288*	0.113	0.114	0.044
Secondary	0.259*	0.114	0.103	0.045
University	0.208	0.248	0.082	0.095
Relatives	0.149*	0.075	0.059	0.03
Constant	-3.473***	0.281		
Number of obs.	1983			

  

Variable	1986 Sample			
	Coef.	Std. Err.	ME	Std. Err.
Age	0.186***	0.017	0.071	0.007
Agesq	-0.002***	0	-0.001	0
Marital	-0.312***	0.077	-0.12	0.029
Head	0.946***	0.093	0.364	0.033
Hsize	-0.016	0.011	-0.006	0.004
Primary	0.632***	0.088	0.24	0.033
Secondary	0.858***	0.091	0.327	0.033
University	1.533***	0.243	0.515	0.048
Relatives	-0.022	0.079	-0.009	0.03
Constant	-4.097***	0.274		
Number of obs.	2319			

Note: \* p<.05; \*\* p<.01; \*\*\* p<.001.

However, there is no gap between the marginal effects of the two levels of education suggesting the declining importance of education in securing employment. The drastic change in returns to university highlights this point. The large, 51 per cent effect of university education in determining employment in 1986 has been replaced by a zero effect. In other words, in 1998, women with university education are as likely to be employed as those with no education are. The declining importance of education shows that over time, the labour market increasingly places less value on education in determining employment.

**Table 7a**  
**Estimates: Determinants of the incidence of employment married women**  
**– excluding partner's characteristics**

Variable	1998 Sample			
	Coef.	Std. Err.	ME	Std. Err.
Age	0.219***	0.027	0.087	0.011
Agesq	-0.003***	0	-0.001	0
Head	0.825***	0.151	0.3	0.046
Hsize	-0.007	0.021	-0.003	0.008
Primary	0.277	0.141	0.11	0.056
Secondary	0.543***	0.14	0.213	0.054
University	0.36	0.319	0.139	0.117
Relatives	0.222	0.115	0.088	0.045
Constant	-4.418***	0.464		
Number of obs.	1131			

  

Variable	1986 Sample			
	Coef.	Std. Err.	ME	Std. Err.
Age	0.187***	0.026	0.069	0.01
Agesq	-0.002***	0	-0.001	0
Head	1.237***	0.141	0.462	0.044
Hsize	-0.003	0.016	-0.001	0.006
Primary	0.542***	0.108	0.201	0.04
Secondary	1.008***	0.112	0.375	0.04
University	1.630***	0.283	0.552	0.057
Relatives	0.204	0.117	0.077	0.045
Constant	-4.697***	0.439		
Number of obs.	1410			

Note: \* p<.05; \*\* p<.01; \*\*\* p<.001.

Turning to married women and focusing on the results in Table 7b, while there are similarities between the results for married women and the overall sample of women, there are some notable differences. Over time, the importance of age (proxy for experience) in determining employment increases. At the same time, the importance of a woman's education in determining her employment status vanishes between the two periods. For example, in 1986, university education is associated with a 43 percentage point



increase in the probability of being employed while in 1998, there is no statistically significant effect of university education on securing employment. The same pattern applies for other levels of education. The declining importance of education may result from the increase in the supply of educated (married) women as well as the declining role of formal sector employment. In the 1970s and the early 80s, the public sector was the main employer hence the sharp link between education and employment in the 1986 estimates. However, by 1998 public sector employment opportunities had shrunk, the private formal sector did not expand as rapidly and the rise of the informal sector where educational levels are not particularly heavily rewarded probably explains the declining importance of education in determining employment.

**TABLE 7b**  
**Estimates: Determinants of the incidence of employment married women**  
**– including partner's characteristics**

Variable	1998 Sample			
	Coef.	Std. Err.	ME	Std. Err.
Age	0.226***	0.036	0.089	0.014
Agesq	-0.003***	0.001	-0.001	0
Hsize	-0.008	0.027	-0.003	0.011
Primary	0.02	0.21	0.008	0.083
Secondary	0.299	0.219	0.118	0.086
University	0.336	0.478	0.133	0.187
Relatives	0.2	0.143	0.08	0.057
Hus-Primary	0.198	0.256	0.078	0.102
Hus-Secondary	0.31	0.259	0.121	0.1
Hus-University	0.528	0.335	0.208	0.126
Hus-Real Earnings <sup>^</sup>	-0.040*	0.019	-0.016	0.007
Constant	-4.634***	0.622		
Number of obs.	795			

  

Variable	1986 Sample			
	Coef.	Std. Err.	ME	Std. Err.
Age	0.152***	0.032	0.053	0.011
Agesq	-0.002***	0	-0.001	0
Hsize	0.004	0.018	0.001	0.006
Primary	0.447**	0.137	0.157	0.048
Secondary	0.774***	0.156	0.277	0.056
University	1.136**	0.357	0.43	0.12
Relatives	0.247	0.136	0.089	0.051
Hus-Primary	0.193	0.17	0.068	0.06
Hus-Secondary	0.476**	0.18	0.166	0.062
Hus-University	0.835**	0.254	0.319	0.098
Hus-Real Earnings <sup>^</sup>	-0.007	0.017	-0.002	0.006
Constant	-4.417***	0.537		
Number of obs.	1103			

The link between a husband's educational characteristics and a wife's employment status reveals some clear patterns. Similar to the effect of a wife's education, in 1986, women married to men that are more educated were more likely to secure employment; however, by 1998 this effect vanishes. The effect of husband's earning status is exactly the opposite. In 1986, a partner's real earnings had no bearing on a woman's employment, however, in 1998 there is a statistically significant negative effect indicating that higher spousal earnings are associated with a reduction in female employment. Thus, we see that in 1986, the decision to participate was heavily influenced by the educational characteristics of the woman and regardless of the earning capacities of their husbands', educated women sought out work. However, by 1998, this situation was remarkably different with all married women, regardless of their education levels seeking work and the decision to participate is certainly influenced by the earnings capacities of their husbands. A more detailed discussion of these issues is provided in the following section. Briefly, results for single women reveal patterns that are similar to the results for the overall sample of women (see Table 8).

**TABLE 8**  
**Estimates: Determinants of the incidence of employment single women**

Variable	1998 Sample			
	Coef.	Std. Err.	ME	Std. Err.
Age	0.175***	0.026	0.07	0.01
Agesq	-0.003***	0	-0.001	0
Head	1.168***	0.167	0.428	0.052
Hsize	-0.035	0.02	-0.014	0.008
Primary	0.106	0.202	0.042	0.08
Secondary	-0.401	0.208	-0.158	0.081
University	-0.341	0.415	-0.135	0.16
Relatives	0.09	0.103	0.036	0.041
Constant	-2.509***	0.413		
Number of obs.	852			

  

Variable	1986 Sample			
	Coef.	Std. Err.	ME	Std. Err.
Age	0.215***	0.026	0.084	0.01
Agesq	-0.003***	0	-0.001	0
Head	0.604***	0.149	0.236	0.057
Hsize	-0.054**	0.017	-0.021	0.007
Primary	0.745***	0.161	0.289	0.06
Secondary	0.577***	0.163	0.225	0.063
University	1.070*	0.49	0.386	0.133
Relatives	-0.266*	0.111	-0.103	0.042
Constant	-3.981***	0.423		
Number of obs.	909			

Note: \* p<.05; \*\* p<.01; \*\*\* p<.001.

While estimates based on LFS data support the idea that in 1998 women in households where husband's have lower earnings are more likely to participate in the labour force, a more direct picture emerges from fieldwork conducted in Nairobi in 2003. In response to questions on how households cope with difficult economic circumstances, multiple responses were possible. As displayed below (Table 9), respondents provided a wide range of answers, but

**Table 9**  
**Copings strategies of household-heads**  
**(frequency distribution of responses)**

<b>At least one of the Strategies</b>	<b>Middle Income Region</b>	<b>No.</b>	<b>Low Income Region</b>	<b>No.</b>	<b>Total</b>
Work longer hours than usual	8 (11.9%)	67	5 (9.6%)	52	13 (10.9%)
Spouse started working or had to look for a job	19 (28.3%)	67	35 (67.3%)	52	54 (45.4%)
Children having to work	4 (6%)	67	1 (1.9%)	52	5 (4.2%)
Looking for another better paying job	3 (4.5%)	67	3 (5.8%)	52	6 (5%)
Looking for an additional job	9 (13.4%)	67	4 (7.7%)	52	13 (10.9%)
Starting another income generating activity besides usual job and engaging non-working household members	6 (9%)	67	11 (21.2%)	52	17 (14.3%)
Starting another income generating activity, and work during free time/multiple job holding	9 (13.4%)	67	5 (9.6%)	52	14 (11.8%)
Spouse, children forced to move back to the rural area	1 (1.5%)	67	6 (11.5%)	52	7 (5.9%)
Economising consumption/expenditure reduction	25 (37.3%)	67	23 (44.2%)	52	48 (40.3%)
Withdrawing children from school	1 (1.5%)	67	1 (1.9%)	52	2 (1.7%)
Increased reliance on remittances in kind	1 (1.5%)	67	1 (1.9%)	52	2 (1.7%)
Increased reliance on cash remittances from abroad	1 (1.5%)	67	0	52	1 (0.8%)
Sale of assets	2 (3%)	67	1 (1.9%)	52	3 (2.5%)
Sub-letting part of house for rent income	2 (3%)	67	2 (3.8%)	52	4 (3.4%)
Increased reliance on informal credit arrangements	13 (19.4%)	67	8 (15.4%)	52	21 (17.6%)
Increased reliance on informal support networks among households	3 (4.5%)	67	2 (3.8%)	52	5 (4.2%)
Diminished savings	5 (7.5%)	67	3 (5.8%)	52	8 (6.7%)
Increased reliance on formal loans	11 (16.4%)	67	1 (1.9%)	52	12 (10.1%)
Increased reliance on farming activities	4 (6%)	67	2 (3.8%)	52	6 (5%)
Other unspecified strategies	2 (3%)	67	21 (40.4)	52	23 (19.3%)
None	2 (3%)	67	2 (3.8%)	52	4 (3.4%)

Note: Interviews with 119 household-heads: 67 from the middle-income cluster and 52 from the low income cluster.

the most frequent response was the increasing labour market insertion of the spouse (about 45 per cent of the responses) followed by cuts in consumption (about 40 per cent of the responses).

Beyond the figures above, vivid illustrations of the increasing reliance on women and their role as breadwinners come from the following cases:

### **Box 1 Crisis and coping strategies**

#### **Case 1, middle-income household (Isaac, male age 53):**

Isaac is a police officer, married to two wives and has 4 children. He moved to Nairobi in 1971 after completing secondary level education to look for a job. He joined police training and in 1972 after completing the training, he was hired. This is his first and current job. He rates his earnings in relation to cost of living for the following periods as, 'In the periods, 1975-79, 1980-85 and 1986-89, the cost of living was low but rising. Salaries were low also but the fact that the cost of living was relatively low especially in the 70s and early 80s as compared to later periods made life very cheap. I could even afford to marry a second wife! Thereafter, the cost of living increased drastically. In order to cope with tough economic times, I have had to diversify my income sources, first, by starting another income generating activity and engaging my first wife who resides in the rural area where she takes care of a transport and fish business; she sends fish to Nairobi for sale by my second wife who resides with me here in Nairobi. She also does some farming for subsistence and cash. My second wife has had to operate a second-hand clothes business in addition to her involvement in the fish business'.

#### **Case 2, middle-income household (Margaret, age 40 and husband Ebrahim, age 50):**

Married couple (monogamous marriage) and have four children all attending school. Margaret has secondary level education and is a paid employee in a private sector firm. She is the household's main breadwinner. Ebrahim was laid-off in 1997 at the age of 44. He says, 'I have tried to look for another job but could not find one. Jobs are not easy to come-by as in the past when I was first hired with only primary level education and with no additional training'. Ebrahim has moved back to the couple's rural home and engaged in farming. During the off-farming season, he comes to Nairobi to take care of the children.

#### **Case 3, low-income household (Elizabeth, age 53 and husband Richard, age 63):**

A polygamous household comprised of 2 wives and 9 children. Neither wives nor husband completed primary level education. After marriage, neither wife worked for cultural reasons and because there was no need. Richard first worked in the private sector from 1956 to 1962 and quit due to low pay. Since then, he has been self-employed running a fish and vegetable business. He rates his earnings in relation to cost of living for the following periods as follows: 'The period 1975-79 was very good due to low living costs and a small family size. I started the fish business with only Ksh.300 but today it requires Ksh.20,000-25,000. The period 1980-85 was good (sufficient) due to a low cost of living though it had started to rise. The periods 1986-89 and 1990-95 onwards have progressed from bad to worse due to increased living costs and a big family size'.

To cope with increasing living costs the household adopted various strategies; his wives started working in the family business, part of his family (wife with younger and more children) relocated to the rural area to cut down on the cost of living in Nairobi, withdrew children from school and increased reliance on informal credit arrangements.

## 5 Decomposition Analysis

The aim of this section is to identify the sources, structural and compositional, of the rise in the incidence of employment between these two periods. Results of the decomposition set out in equation 8 appear in Tables 10-12. The first row in each table contains the predicted differences in employment between 1986 and 1998. Between the two years, the gap is 12 per cent for women as a whole, 6.9 per cent for single women, and ranges from 12.8 per cent to 15.2 per cent for married women with and without controlling for partner's characteristics. These predicted differentials in employment are each decomposed into compositional and structural effects (rows 2 and 3).

Decomposition shows that the rise in employment for the sample of women, which does not distinguish between marital status (Table 10) and for single women (Table 11) may overwhelmingly be attributed to changes in the labour market valuation of various factors that influence employment status (structural effect) and accounts for about 68.3 per cent and 82.6 per cent of the rise respectively. The remaining 31.7 per cent and 17.4 per cent respectively, are due to changes in the observable characteristics (compositional). Amongst married women, the results differ and the increase in employment status of women may be equally attributed to compositional and structural effects. Based on equations 9 and 10, considering the importance of individual variables and or groups of variables in influencing the compositional and structural effects may bring further insights. The remainder of this section is dedicated to this.

For the total sample of women, with regard to the compositional effect, women in 1998 had far more secondary education than women in 1986 and a large part of the compositional effect may result from the temporal increase in the educational endowment of women. Other variables such as household-head, marital status, household size and the presence of female relatives account for the remainder of the compositional effect.

Turning to the structural effect, all the education variables exert a negative effect on employment status (jointly reduce incidence by 151 per cent). Thus, although women in 1998 had a higher incidence of employment than in 1986, the importance given to women's education in determining employment declined and these variables worked towards reducing the probability of employment. While there was a decline in the importance given to education in determining employment, the importance given to age increased suggesting that the labour market valued experience more heavily in 1998 than in 1986. The constant term has a positive sign and by far, displays the largest variation between the two time periods. It may be interpreted literally as the change in the probability of being employed for single, uneducated women who are not heads of households. A broader interpretation is that the constant captures the economy-wide increase in the tendency for women to join the labour force and seek employment, which may be driven by temporal changes in factors that influence the reservation wages for all women/households.

Among single women, most of the rise in employment may result from structural factors. In particular, once again education works to-wards reducing the probability of being employed while age/experience is more heavily valued and exerts a greater influence on being employed than it did in 1998. Although

the compositional effect explains only 17 per cent of their total rise in employment, most of it is due to a less favourable structure in household-headship (by -40 per cent) and a more favourable structure in household size and education: primary, secondary, university levels together (by about 86 per cent and 60 per cent respectively). For example, if single women in 1998 had the same house-hold-headship structure as in 1986, then the likelihood of employment in 1998 would be 40 per cent higher. Similarly, if single women in 1998 had the same education characteristics as in 1986, then the likelihood of employment in 1998 would be 60 per cent less. Hence, as far as the characteristics' effect is concerned it shows that the level of education increases the probability that a woman works while its place in the structural component shows that over time the importance attached to education in determining employment has declined.

**Table 10**  
**Decomposition analysis: Rise in the incidence of employment all women**

<b>Total Change</b>	<b>12</b>	<b>100</b>		
Change due to Characteristics' Effect (CHE)	3.8	31.7		
Change due to Coefficients' Effect (COE)	8.2	68.3		
<b>Variable</b>	<b>Contribution to CHE</b>	<b>% Share</b>	<b>Contribution to COE</b>	<b>% Share</b>
Age	0.026	68.4	0.049	60
Agesq	-0.024	-62.8	-0.072	-88
Marital	0.003	7.8	0.028	33.6
Head	0.003	8.2	-0.004	-4.7
Hsize	0.006	14.5	0.007	8.8
Primary	0.001	3.5	-0.043	-52.9
Secondary	0.022	56.5	-0.074	-89.9
University	0	-0.4	-0.007	-8.4
Relatives	0.002	4.3	0.011	13.4
Constant			0.188	228
Sum	0.038	100	0.082	100

**Table 11**  
**Decomposition analysis: Rise in the incidence of employment single women**

<b>Total Change</b>	<b>6.9</b>	<b>100</b>		
Change due to Characteristics' Effect (CHE)	1.2	17.4		
Change due to Coefficients' Effect (COE)	5.7	82.6		
<b>Variable</b>	<b>Contribution to CHE</b>	<b>% Share</b>	<b>Contribution to COE</b>	<b>% Share</b>
Age	0.007	56.6	-0.256	-446.2
Agesq	-0.007	-58.6	0.023	39.8
Head	-0.005	-40	0.05	87.2
Hsize	0.01	85.5	0.024	41.2
Primary	0.003	25.8	-0.069	-119.5
Secondary	0.003	28.9	-0.105	-182.7
University	0.001	5.4	-0.005	-8.4
Relatives	0	-3.7	0.028	48.8
Constant			0.367	639.8
Sum	0.012	100	0.057	100

Tables 12a and b provide decomposition results for married women with and without controlling for partner's characteristics. As mentioned earlier, in contrast to single women, about half the increase in the employment rate of married women may be attributed to changes in composition and half to changes in structural factors. Focusing on the composition effect, the results in Table 12a show that the higher educational endowment of women in 1998 is responsible for a large proportion of the compositional effect (about 44 per cent – primary, secondary and university levels). The effect of their education is followed by the effect exerted by the higher educational endowment of their partners (about 32 per cent for primary, secondary and university levels together). Changes in husband's real earnings account for nine per cent of the compositional effect. Since husband's real earnings have declined during this period, the estimates support the idea that a decline in husband's real earnings is associated with an increase in women's work participation.

In terms of the structural effect, the decomposition shows that employers are far more likely to seek experienced workers. Given the sharp increase in the labour supply of married women, it seems that employers are using experience as a device to screen potential employees and accordingly the importance of experience in determining employment status increases sharply between 1986 and 1998. As in the case of single women the effect of all levels of education in securing employment declines sharply (the proportion of women's own education in the structural effect is negative by about 162 per cent). With regard to partner's characteristics, reflecting the effect of lack of employment opportunities for educated individuals, partner's education is associated with a reduction in the probability of securing employment (a negative 44 per cent effect from partner's education primary, secondary, university levels together).

Turning to the effect of partner's earnings, the decomposition shows a 32 per cent decline in the role played by a spouse's earnings in determining a woman's employment status. To interpret this consider the probit results reported in the previous section, which show that in 1986, partner's earnings had no effect on a woman's employment status while in 1998, the effect was negative and statistically significant suggesting that lower levels of partner's earnings are associated with a higher probability of employment. One may interpret these numbers from both a demand and supply side perspective. From a demand-side perspective, these numbers suggest that in 1986, the earnings status of a woman's husband had no bearing on employer's hiring decisions. However, in 1998, employers were more likely to hire women married to husbands with lower earnings. From a supply-side perspective, in 1986, the earnings status of a woman's partner played no role in her decision to seek work while in 1998 women married to partners experiencing income losses may have sought jobs more intensively driving the negative relationship between partner's earnings and women's employment status. Considering the composition and valuation effect together, it seems that changes in the level and valuation of partners' earnings are accountable for about 41 per cent (8.8+31.8) of the increase in female work participation between 1986 and 1998.

**Table 12a**  
**Decomposition analysis: Rise in the incidence of employment married women-  
including partner's characteristics**

<b>Total Change</b>	<b>12.8</b>	<b>100</b>		
Change due to Characteristics' Effect (CHE)	6.2	48.5		
Change due to Coefficients' Effect (COE)	6.6	51.5		
<b>Variable</b>	<b>Contribution to CHE</b>	<b>% Share</b>	<b>Contribution to COE</b>	<b>% Share</b>
Age	0.028	45.3	0.6	908.4
Agesq	-0.019	-30.6	-0.299	-452.4
Hsize	0.003	4.4	-0.017	-25.9
Primary	-0.001	-2.3	-0.05	-75.3
Secondary	0.031	49.4	-0.054	-80.9
University	-0.002	-2.9	-0.004	-6.1
Relatives	0.003	4.4	-0.002	-2.5
Hus-Primary	-0.006	-9	0	0.7
Hus-Secondary	0.021	33.9	-0.023	-35.1
Hus-University	-0.001	-1.3	-0.006	-9
Hus-Real Earnings	0.005	8.8	-0.021	-31.8
Constant			-0.059	-90
Sum	0.062	100	0.066	100



**Table 12b**  
**Decomposition analysis: Rise in the incidence of employment married women –**  
**excluding partner's characteristics**

<b>Total Change</b>	<b>15.2</b>	<b>100</b>		
Change due to Characteristics' Effect (CHE)	6.3	41.4		
Change due to Coefficients' Effect (COE)	8.9	58.6		
<b>Variable</b>	<b>Contribution to CHE</b>	<b>% Share</b>	<b>Contribution to COE</b>	<b>% Share</b>
Age	0.067	106	0.304	341.3
Agesq	-0.052	-81.9	-0.183	-205.7
Head	0.006	10	-0.013	-14.1
Hsize	0.004	6.9	-0.007	-8.1
Primary	-0.001	-1.1	-0.034	-37.9
Secondary	0.037	58.2	-0.056	-63.2
University	-0.002	-2.6	-0.008	-8.7
Relatives	0.003	4.5	0.001	0.9
Constant			0.085	95.5
Sum	0.063	100	0.089	100

## 6 Conclusion

Focusing on urban Kenya, this paper attempted to identify the sources of the temporal increase in women's employment rate between 1986 and 1998. The paper relied on labour survey data, household responses to coping strategies and case studies. The decomposition analysis presented in the paper showed that over the period under scrutiny, women's higher educational endowments, particularly the increase in secondary level education, accounted for an improvement in the employment prospects of women. However, since the rise in women's educational endowments took place in a context of declining modern-wage employment opportunities, there was a sharp decline in the importance given to education in determining employment. Indeed, in 1998, university graduates were as likely to be employed as individuals with no education were.

Focusing on marital status, the analysis found that despite their probably higher burden of household duties and their ability to rely on a partner, married women were as likely to work as single women, over time. While in 1986, single women were 12 percentage points more likely to be employed, by 1998, this difference had vanished and single and married women were equally likely to be employed. The increased entry of married (educated) women into the labour force at a time of declining job opportunities was probably responsible for the declining returns to education. At the same time, the

increase in importance given to experience (age) in determining employment outcomes in 1998 may be attributed to the use of experience as a way of screening potential employees.

Finally, the analysis displayed that at least for married women, the decline in their husbands' real earnings as well as the role played by this variable in influencing employment outcomes may have accounted for about 41 per cent of the overall increase in married women's labour force participation. The fieldwork undertaken for this study also identified the increased insertion of (married) women into the labour market as the most common strategy in terms of coping with difficult economic circumstances.

Conventional explanations for the rising incidence of women in the labour market underline the effects of progress in female education, changes in cultural values and beliefs, expansion and diversification of occupational opportunities. While some of these factors such as the effect of increased educational endowment appear to hold in the current case, other factors such as better labour supply conditions or a diversification of the composition of work prospects accessible for women do not seem to play a role. Indeed, as discussed in the introduction, the period between 1986 and 1998 witnessed civil service reforms, restructuring in the private sector, firm closures and increasing job insecurities. Declining opportunities for males who in 1986 were the primary bread-winners and the accompanying income and employment insecurities within households seems to be a key factor prompting the sharp increase in the labour supply of (married) women.

## Bibliography

- Becker, G.S. (1965) 'A Theory of the Allocation of Time', *Economic Journal* 75: 299.
- Blackaby, D.H., D.G. Leslie, P.D. Murphy and N.C. O'Leary (1998a) 'The Ethnic Wage Gap and Employment in the 1990s: Evidence for Britain', *Economics Letters* (58): 97-103.
- Blackaby, D.H., D.G. Leslie, P.D. Murphy and N.C. O'Leary (1998b) 'Unemployment among Britain's Ethnic Minorities', *Manchester School* 67(1): 1-20.
- Blackaby, D.H., K. Clark, D.G. Leslie and P.D. Murphy (1994) 'Black-White Male Earnings and Employment Prospects in the 1970s and 1980s: Evidence for Britain', *Economics Letters* 46: 273-279.
- Blinder, A.S. (1973) 'Wage Discrimination: Reduced Form and Structural Estimates', *Journal of Human Resources* 8(4): 436-455.
- Cerruti, M. (2000) 'Economic Reform, Structural Adjustment and Female Labour Force Participation in Buenos Aires, Argentina', *World Development* 28(5): 879-891.
- Clark, K. and S. Drinkwater (2006) 'Dynamics and Diversity: Ethnic Employment Differences in England and Wales, 1991-2001', Discussion Paper No. 12. UK: University of Surrey.
- Even, W.E. (1987) 'Career Interruptions Following Childbirth', *Journal of Labour Economics* 5(2): 255.
- Even, W. E. and D.A. Macpherson (1990) 'Plant Size and the Decline of Unionism', *Economics Letters* 32(4): 393-398.
- Even, W.E. and D.A. Macpherson (1993) 'The Decline of Private-Sector Unionism and the Gender Wage Gap', *Journal of Human Resources* 28(2): 279-296.

- Fairlie, R. W. (2003) 'An Extension of the Blinder-Oaxaca Decomposition Technique to Logit and Probit Models', Working Paper No. 873. New Haven, CT: Yale University: Economic Growth Center.
- Gilbert, N. (ed.) (2006) *Gender and Social Security Reform, What's Fair for Women?*. New Brunswick, NJ: Transactions Publishers.
- Golden, L. and M.D. Figart (2002) *Working Time: International Trends Theory and Policy Perspectives*. USA: Routledge.
- Gomulka, J. and N. Stern (1990) 'The Employment of Married Women in the United Kingdom 1970-83', *Economica* New Series 57(226): 171-199.
- Gray, M., L. Qu, F. Renda and D. de Vaus (2003) 'Changes in the Labour-force Status of Lone and Couple Australian Mothers, 1983-2002', Research Paper No. 33. Melbourne: Australian Institute of Family Studies.
- Gray, M., L. Qu, D. de Vaus and C. Millward (2002) 'Determinants of Australians Mothers' Employment: An analysis of Lone and Couple Mothers', Research Paper No. 26, Melbourne: Australian Institute of Family Studies.
- Greene, W. (2000) *Econometric Analysis*, 4th edition, New Jersey: Prentice Hall.
- Gutierrez- Domenech, M. and B. Bell (2004) 'Female Labour Force Participation in the United Kingdom: Evolving Characteristics or Changing Behavior', Working Paper No. 221. UK: Bank of England.
- Haddad, L., J. Hoddinott and H. Alderman (1997) *Intrahousehold Resource Allocation in Developing Countries: Models, Methods, and Policy*. Baltimore, MD: John Hopkins University Press.
- Haddad, L. and J. Hoddinott (1995) 'Does Female Income Share influence Household Expenditures: Evidence from Cote d'Ivoire', *Oxford Bulletin of Economics and Statistics* 57(1):77-96.
- Heckman, J. (1979) 'Sample Selection Bias as a Specification Error', *Econometrica* 47(1): 153-162.
- Joshi, H. and H. Davies (1992) 'Day Care in Europe and Mothers' Forgone Earnings', *International Labour Review* 132: 561-579.
- Killingsworth, M. (1983) *Labour Supply*, Cambridge University Press.
- Killingsworth, M. and J. Heckman (1986) 'Female Labour Supply: A Survey', in O. Ashenfelter and R. Layard (eds), *Handbook of Labour Economics*. New York: Elsevier Science Publishers.
- Ikiara, G.K. and S.N. Ndung'u (1999) 'Employment and Labour Markets During Adjustment –Kenya', in R. Van der Hoeven and W. Van der Geest (eds), *Adjustment Employment and Missing Institutions in Africa: The Experience in Eastern and Southern Africa*. Geneva: ILO.
- Ikiara, G.K. and S.N. Ndung'u (1997) *The Labour Market during Adjustment: The Case of Kenya*. Geneva: ILO.
- ILO (2009) *Global Employment Trends for Women*, Geneva: ILO.
- ILO (2007) *Global Employment Trends for Women*, Geneva: ILO.
- ILO (2004) *Global Employment Trends for Women*, Geneva: ILO.
- ILO (2003) *Key Indicators of the Labour Market 2002–2003*, Geneva: ILO.
- Milne, W.J., G.M. Barber and G. Ongile (1990) 'Determinants of Urban Labour Force Participation in Kenya', *Eastern Africa Economic Review* 6(2): 83-93.
- Manda, D.K (1997) *Labour Supply, Returns to Education, and the Effect of Firm Size on Wages: The Case of Kenya*. Sweden: University of Gothenburg.

- Oaxaca, R.L. and M.R. Ransom (1999) 'Identification in Detailed Wage Decompositions', *Review of Economics and Statistics* 81(1): 154-157.
- Oaxaca, R.L. and M.R. Ransom (1998) 'Calculation of Approximate Variances for Wage Decomposition Differentials', *Journal of Economic and Social Measurement* 24(1): 55-61.
- Oaxaca, R. (1973) 'Male-Female Earnings Differential in Urban Labour Markets', *International Economic Review* 14: 693-709.
- Oppenheimer, V.K. (1976) *The Female Labour Force in the US: Demographic and Economic Factors Governing its Growth and Changing Composition*. Westport, CT: Greenwood Press.
- Newmark, D. (1988) 'Employers Discriminatory Behavior and the Estimation of the Wage Discrimination', *Journal of Human Resources* 23: 279-95.
- Nielsen, H.S. (1998) 'Discrimination and Detailed Decomposition in a Logit Model', *Economics Letters* 61: 115-120.
- Nielsen, H. S. and P. Jensen (1997) 'Child Labour or School Attendance? Evidence from Zambia', *Journal of Population Economics* 10: 407-24.
- Pollin, R., M. Githinji and J. Heintz (2007) *An Employment Targeted Economic Program for Kenya*. USA: Political Economy Research Institute, Amherst.
- Smith, K. (2008) 'Working Hard for the Money. Trends in Women's Employment: 1970 to 2007', Reports on Rural America, Vol. (5). Durham: The Carsey Institute, University of New Hampshire (available at: <http://www.carseyinstitute.unh.edu/publications/Report-Smith-WorkingHard.pdf>).
- Smith, S.P. (1976) 'The Changing Composition of the Labour Force', *FRBNY Quarterly Review/Winter* 24.
- Republic of Kenya (2003) *Report of 1998/99 Labour Force Survey*, Nairobi: Central Bureau of Statistics.
- Republic of Kenya (1977) *Labour-Force Survey Report*, Nairobi: Central Bureau of Statistics.
- Republic of Kenya (1986a) *Labour-Force Survey Report*, Nairobi: Central Bureau of Statistics.
- Republic of Kenya (1986b) *Sessional Paper No. 1 of 1986 on Economic Management for Renewed Growth*, Nairobi: Government Printer.
- Republic of Kenya (1985) *Sessional Paper No. 2 of 1985 on Unemployment*, Nairobi: Government Printer.
- Republic of Kenya (1999a) *Analytical Report on Education*, Vol. 3, Nairobi: Central Bureau of Statistics.
- Republic of Kenya (1999b) *Census Report*, Nairobi: Central Bureau of Statistics.
- Republic of Kenya (1989a) *Census Report*, Nairobi: Central Bureau of Statistics.
- Republic of Kenya (1989b) *Development Plan, 1989-93*. Nairobi: Government Printer.
- Republic of Kenya (1979) *Census Report*, Nairobi: Central Bureau of Statistics.
- Republic of Kenya (1969) *Census Report*, Nairobi: Central Bureau of Statistics.
- Republic of Kenya (1965) *Sessional Paper No. 10 African Socialism and Planning*, Nairobi: Government Printer.
- Republic of Kenya (*Various Issues*) *DHS Report*, Nairobi: Central Bureau of Statistics.
- Republic of Kenya (*Various Issues*) *Economic Survey*, Nairobi: Central Bureau of Statistics.

- Republic of Kenya (*Various Issues*) *Statistical Abstract*, Nairobi: Central Bureau of Statistics.
- Van den Brink, H.M. (1994) *Female Labour Supply Child Care and Marital Conflict*, Amsterdam: Amsterdam University Press.
- Wen-Hao, C.M. Corak (2005) 'Child Poverty and Changes in Child Poverty in Rich Countries Since 1990', IZA, Discussion Paper No. 1574. Bonn: Institute for the Study of Labour (IZA).
- Yun, M.S. (2004) 'Decomposition Differences in the First Moment', *Economics Letters* 82(2): 275-280.