WOMENS' LABOUR FORCE PARTICIPATION AND FERTILITY IN NAIROBI

BY

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Declaration

I declare that this research is my original work and has not been presented in part or whole to any other institute/university for the award of a diploma/degree.

Signature _____

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I have carried out this work under the supervision of Dr A.T.A, Otieno and Dr A.Khahasala of PSRI.

We certify that the above declaration is true to the best of our knowledge.

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Dedication

To Dr A J. Muyumbu for giving me a foundation that has culminated to this achievement and to my family.

Abstract

The past two decades have witnessed notable advances in studies seeking to illuminate potential connections between women's roles and demographic phenomena. Whereas in more developed countries, an inverse relationship is most often observed between women's productive and reproductive activities, in less industrialised countries the relationship is not clear.

This study used data from the Nairobi Urban Integration Project to examine the relationship between women's labour force participation and fertility in Nairobi. Specifically, the study examined the extent to which labour force participation influences fertility and the extent to which participation in the formal/ informal sector influences fertility. The study was based on a sub sample of 864 women covering three generations aged 25-54 from whom retrospective data on birth and employment histories were collected. The analysis was based on an additive model used by Mason (1981) but with modification to suit the variables of interest. Descriptive statistics were used to show the distribution of observation periods and a summary of survival data showed that 417 of the women had experienced a birth at end of the reference period with 50% having at least one birth. The main method of data analysis was event history analysis. Specifically, Cox's proportional Hazards model was used to establish the effect of several covariates on the hazard rate of getting a next child during the observation period. The risk involves multiple failures since childbearing is a repeated event. It was important to restrict the analysis to women who had continuously lived in Nairobi from the age of fifteen since social and demographic analyses ignore the effects of time and space relationships.

The study provides evidence of a relationship between women's labour force participation and fertility in Nairobi. The most important finding is that the relationship is only clear when the settings in which the work is done is considered. This finding indicates that both the employment status and the type of economic sector in which the work is done may have some impact on the extent to which work affects childbearing. The study found no fertility differentials between employed and unemployed women despite unemployment reducing the relative risk of getting an additional child. But this observation did not persist when the type of employment sector was considered. At this stage there were significant fertility differentials between employed and unemployed women. Of special interest is the finding that women in the informal sector were less likely to get an additional than those in the formal sector. The observed effects are inconsistent with the role incompatibility theory, but indicate that working conditions in the informal sector in Nairobi may not be compatible with childbearing and childrearing as hypothesized. It could also reflect the current problem of unemployment that has forced people with training suited to the formal sector to enter the informal sector. The exact mechanism of this observed effects were not very clear. There were no fertility differentials between homemakers and employed women in Nairobi but the exact mechanism was not clear. Availability of paid childcare was found to increase the relative risk of getting an additional child, which could be due to the fact that where childcare substitutes are available and considered acceptable women do not feel pressured by time constraints to limit their fertility.

This study may have been limited but it has far reaching implications for policy makers. It suggests that policies be put in place to promote women's labour force participation especially in the informal sector since work in this sector has the greatest impact on the rate at which women

give birth. For further research the study recommends the inclusion of number of children ever borne, fertility regulation behaviour, women's education, age at marriage, husbands' income, precise timing of women's and organisation of work in the informal sector for better results.

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CHAPTER ONE: GENERAL INTRODUCTION

1.0. Introduction

While economic activity generally (though not always) provides women with a resource base, its influence on women's reproductive decision making is largely determined by the underlying institutional structures that govern the value of women's labour in any society and the conditions under which women engage in economic activity. The relationship between gainful employment and greater reproductive and sexual choices is dependent on a myriad of factors such as type of occupation, income, motivation, whether the woman works for someone or is self employed, duration and continuity of work, and whether the work is full or part time.

In the course of 1997, the number of females in wage employment within the modern sector rose by 26% to 47.3% per thousand persons, with their share in wage employment edging up marginally from 28.5% in 1996 to 28.7% in 1997 (CBS, 1998). Female employment in the formal sector though showing some increase over the years, has remained low. Nairobi had the highest wage employment among other towns, but its share in urban wage employment declined from 49.2% in 1992 to 46.7% in 1997. According to 1994-1996 National development plan, women account for 25.1% of the total labour force most of the employment is in the public sector or doing unpaid work on the farms. Most informal activities are based in urban areas, and distribution shows that Nairobi province had the highest informal sector employment of 71.64 per thousand persons and accounted for 24 % of the total persons engaged in the sector in 1997 (CBS, 1998).

Pastoralist mothers recorded the highest total fertility rate of 6.9 children per woman followed by subsistence farmers with 6.6 children per woman and community farmers 6.3 children per woman. The lowest fertility rate was from the formal sector that registered 3.6 children per woman followed by businesswomen with 4.2 children per woman (CBS, 1998). Empirical observation suggest that the impact of women's non-domestic work on fertility differs by type and magnitude of remuneration, workplace, type of activity and occupation, but there is been little consistency in either the strength or the direction of the direction of the relationship (Youssef, 1982). Modernization alongside economic adversity male migration and spousal separation appear to have increased women's economic burden in the recent past. The on going government rationalisation has drastically reduced the number of women public servants through retrenchment, throwing many of them into the informal sector. Where pressure for economic survival forces women to take up market employment, women not only continue to bear the burden of domestic work, but also suffer the consequences of gender based inequities in the labour market, such as lower wages, less regular employment, and higher level of underemployment than men. In such situations women's employment may do little if anything to strengthen their capabilities to implement their reproductive preferences (Bruce and Dwyer, 1998). It is against this background that the study sought to investigate the relationship between women's labour force participation and employment in Nairobi.

1.1. Statement of the Problem

A simple view expressed frequently and supported with large data sets has been that fertility is inversely associated with women's labour force participation. This has led to the idea that expansion of female employment would lead to fertility reduction (Oppong, 1980). This idea is also supported by Isaac's et al (1985) who stated that women's employment should be fostered, not only because of the real benefits to the individual and the economy but also because regular employment for women may have a dampening effect on family size. This view has been well supported by various studies in the developed world. According to Blake (1965) the strength of the relationship between fertility and female labour force participation, in fact has been equalled or surpassed by very few other socio-cultural differences. However, empirical analysis have repeatedly demonstrated and consequently the realisation has grown, that this relationship is complex and depends upon the context to which work and child rearing are in conflict or compatible (Standing, 1978; Oppong, 1981).

By now there's ample evidence that the ways in which women's work however defined, is associated with childbearing and levels of fertility and its regulation around the world differs widely around the world in various contexts according to an array of factors. In developing societies findings vary from rural to urban context, from class to class or even from occupation to another (Safilois-Rothschild, 1977). One cannot therefore generalise the findings based on USA and other industrialised countries to the experience of developing countries. In agricultural areas there might even be a positive relationship and "white collar work" may not necessarily be associated with lower fertility (e.g. Ware, 1977 on Nigeria). The conflicting and diverse evidence

indicates that the elements constituting "role incompatibility" required important definition and evidence not usually available in employment data (Standing, 1983).

Factors leading to incompatibility of the two roles include distribution of work from home, length of working day, availability and acceptability of child care support e.t.c. The probability of observing a negative relationship between female employment and fertility is described as being higher in more modern countries than in the developing ones. In the latter, the probability of observing a negative relationship was greater in urban areas than in the rural areas (Weller, 1983). Indeed it is becoming increasingly recognised that how these several factors interact is very different both within sectors of the same society and in different cultural and national populations (Oppong, 1980). According to Standing (1983), there's been considerable debate about the relationship and the explanation of causality. While Groat *et.al.* (1976) state that the extent to which fertility or work experiences should be considered the independent variable is the major issue. These reported variations have led some of the analysts of this relationship to say that the relationship between women's work and fertility is itself a variable, and as such under some conditions it may be positive under others negative, and still under other conditions null. (Weller, 1977).

An argument by the new home economics hypothesis is that education influences women's employability and wage levels, these in turn influencing the opportunity cost of children. Although the opportunity cost connection between female education and child costs has been argued not only by economists largely unfamiliar with developing countries but also by experts on the third world, for many third world women, the assumption that they cannot easily work and rear children simultaneously

is questionable (Mason, 1984). There has been significant criticism logged against the assumption implicit in this argument especially for less developed countries. First the opportunity cost is said to be low in these countries. For many families there are other household members who can and do help care for children. Even if this is not possible, unskilled wage rates are low, and therefore, pay for nannies are low. Thus the nannies wage not the wife's income foregone becomes the opportunity cost of raising children (Anker, 1980). According to Anker and Knowles (1978), childcare burdens did not significantly affect female labour force participation in Kenya. Even women employed in relatively well paid, modern sector jobs often have servants or relatives who care for their children while they work, meaning the opportunity cost connection they face may be no greater than those faced by their rural counterparts. According to (NCPD, 1998) house girls or older children assume responsibilities for childcare in Nairobi. Employed women in urban areas (especially Nairobi) and among women with more education, a woman's young child is more likely to be taken care of by a hired worker and less likely by some other relative. Thus although the opportunity cost connection between female education and child costs may become important in the future, its current role in determining fertility in Nairobi can be questioned.

Fertility rates in Nairobi have been declining from 4.6 children per woman in 1989, 3.4 children in 1993 (NCPD, 1993) to the current level of 2.6 children in 1998 (NCPD, 1998). On the other hand, women have also made considerable gains in their labour force activity over the years. Nairobi had the highest wage employment in 1997 among other towns at 49.2% in 1997 (CBS 1994-96). It is difficult however to establish the causal direction between the observed fertility decline and increase in

female labour force participation since recent trends show an increase in women migrants to the city. Women migrants particularly those who migrate for work have contributed substantially to growth of large cities. According to Duah (2000), women who migrate from rural areas to urban areas have generally more children and are less likely to use modern contraceptives than long-term urban residents. Migrant women workers constitute a particularly vulnerable group as they are often in occupations that are not effectively protected by the labour laws such as domestic work and they may also lack family support (ILO, 1983).

It is shown that family size and female labour force are among a number of endogenous choice variables of family that are jointly influenced by a common set of exogenous parameters. Thus it is possible that despite a negative simple correlation between female labour force participation and fertility, changes in some exogenous variables may have same qualitative effect on the two variables (McCabe and Rozenweig, 1976). One important factor is occupational distribution. In Nairobi a large portion of the female labour force is in the domestic work, retail occupations and food a vendor where on job childcare can be accommodated (Women's bureau, 1993). In many areas, manufacturing enterprises often prefer female employees because they are thought to be more suited to repetitive manufacturing tasks, less likely to engage in labour disputes, easier to fire and willing to accept lower wages (Duah, 2000). This puts into question the general assumption that an increase in women's opportunities outside the home will influence childbearing patterns among women in Nairobi.

An important variable taken into account in analysing women's ability to work and rear children is the extent to which childcare is shared or delegated, thus diminishing

potential occupational/maternal role conflicts which have featured prominently in many hypothesis (Oppong, 1991). In analysing the relationship therefore, it must be remembered that parental surrogates for childcare or domestic housework can be provided not only by live-in relatives but also by older children living in the household. As Delancy 1982 states, " wage employment is compatible with childcare, when sufficient alternative solutions are available which allow most of the women to continue to work". Secondly, work and child incompatibility varies according to whether the work is done in or around the home, on a farm or business. The relevance of the two points above varies with the woman's residence. In urban areas alternative sources of costless childcare are less common since the extended family system is weaker and older children are more likely to be attending school. In urban areas it is also difficult to combine childcare and work. Also, possibly important in determining the relationship are lactation practices, since a woman who is breastfeeding cannot easily work especially away from home. Again the effect of lactation on reducing labour-force participation rates is likely to be stronger in urban areas than in rural areas because most urban employment is more likely to be away from home. Thus the question would be if the mother/worker role conflict hypothesis would hold in the case of Nairobi.

It is therefore against this background that the study seeks to explore the relationship between females labour force participation and fertility in a different socio-economic and cultural setting, as opposed to most of related studies that have been based on the developed countries. Three questions that are of concern therefore to this study are:

1. Does female labour force depress fertility and if so what type of participation is most likely to do so?
2. If female labour force participation depresses fertility when does it do so and to what extent?
3. What is the nature of the relationship if any?

1.2. Objectives

1.2.1 General Objective

The overall objective of this study is to examine the nature of the relationship between women's labour force participation and fertility in Nairobi.

1.2.2 Specific Objectives

1. To examine the extent to which women's labour force participation influences fertility.
2. Controlling for other competing factors, to examine how labour force participation for older cohorts influenced fertility.
3. Controlling for other competing factors, to examine how labour force participation for younger cohorts influenced fertility.
4. To examine the extent to which participation in the formal/ informal sector influences fertility.

1.3 Justification of the Study

It is generally recognised that fertility rates are related to socio-economic and demographic factors such as mortality rates, education levels, degree of urbanisation, health and economic condition as well as customs and traditions. In particular women's status, education, health and productive activities are considered to be central determinants of fertility levels and unless there are changes in these areas fertility rates are unlikely to decline in high fertility areas.

The ultimate aim of this study was to enhance the understanding of the recent demographic and economic changes processes at the micro-level in Nairobi, focusing on women as the central actors in the drama of change. It is important to understand the aspect of women labour force participation in a particular socio-economic context especially with regards to cultural role behaviours and for understanding of demographic issues, including fertility and labour force participation and for the design and execution of policies meant to affect these. The importance of female labour force participation to economics and demography is two fold: one, labour force participation rates link the size and structure of a population to its economic activity and thus play an important role in determining how demographic changes affect employment and income distribution patterns. Two, labour supply is one of a number of interacting household decisions which include decisions to migrate and to have children.

This study is relevant to the current widespread debate attempting to link education, employment and urban residence of women in high fertility areas like Kenya with signs of a fertility transition. Documentation and understanding of such social

processes will be relevant not only to researchers of demography but to government policy makers and programme administrators who have the arduous task of trying to balance national resources of various kinds and the needs of a country's population. It is essential for policy makers to understand how women combine the roles of labour force participation and mother if they are to devise appropriate and effective policies. As Tabah. (1979) remarked there is much scope for research and large gains might be made concerning vital aspects of demographic innovation. in a sphere which is of interest to a wide array of nations in the developed and developing worlds. as an attempt or hope to either to lower or increase or change the size of female labour force or to raise or lower the fertility levels of their female population. This study is important as it relates to women status. which is relevant to the widespread debate of gender equality. which is a fundamental aspect of achieving balanced socio-economic development

1.4 Scope and Limitation

This study was based on primary data collected from the Nairobi Urban Integration Survey. which covered greater Nairobi area. in an attempt to explore the relationship between female labour force participation and fertility. The total sample was 1535 individuals aged 25-54 but this study only drew a sub sample of the women. which was 864. The restriction of the survey to an urban area and to the area that is most developed in the country. prevents the study from being representative of Kenya as a whole. The limits of agglomeration were defined according to the geographic criterion that is beyond the administrative limits of the district. Coverage beyond the limits of the district would have been expensive in view of the number of researchers involved

in the survey. Due to constraints of time and finances to collect primary data, a sample of 864 was appropriate for the study.

There are obvious limitations to the use of retrospective information, particularly for the periods in the distant past. Retrospective questions may be subject to significant memory biases. With respect to these questions, the direction of the bias is unclear, as it is uncertain whether women have forgotten work, which they performed at particular life cycles stages or whether they have overstated work participation for remote time periods that tend to blur together. Since the propensity to forget is stronger for events that occurred in the more distant past, this analysis was limited to fertility of women who have been married for at least six months before the survey.

The study data does not deal with systems of conjugal and familial relationships, kin networks or community organisation and resources, which is important in understanding the dynamics of fertility or its regulation. Such a static survey approach can tell little if anything about control, conflict and choice. Indeed very little information on the women interviewed or their social partners was collected yet this may have brought about a deeper understanding of fertility differentials among women in Nairobi. The study did not include the variable on the number of children ever borne yet this could have explained better the relationship between women's labour force participation and fertility.

Due to logistical problems, time and financial constraints the greater Nairobi was not covered reducing the spatial representation of the sample since 15% of the total population in Nairobi reside in these areas. Logistical problems were brought about by

refusals, transport problems and poor co-ordination. The failure of the study to cover greater Nairobi area could be a source of biasness and may affect interpretation of the results since it reduced the sample size from the proposed 2400 biographies to 1535.

CHAPTER TWO: LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.0. Introduction

In this chapter, a review of relevant studies that have been carried out is done. The reviews look at the objectives, types of data used, the methodologies used for analysis and their findings. The review looked at studies done in developed countries and developing countries.

2.1 Studies In Developed Countries

Blau and Robins (1988), in a study in USA used a sample of labour market and birth histories to estimate the effects of childcare costs on employment and fertility decisions. They performed a reduced empirical analysis, which is based on hazards functions for transitions among various fertility-employment statuses. Childcare costs are estimated to have significant effects on both birth and employment transitions. Higher childcare costs are estimated to lower the birth rate for non-employed women, but not for employed women. They also increase the rate of leaving employment and reduce the rate of entering employment.

Stolzenburg and Waite (1984) did a study in California to establish how the characteristics of geographic areas structure the relationship between properties of individual women and their probability of labour force participation. They used analysis of covariance and their analysis showed that the behaviour of individuals involves substantially and statistically significant effect of local areas on the impact of those most powerful constraints on a mother's employment and her children's.

Shapiro and Mott (1979) did a study in USA to examine the labour force participation of young mothers in the months immediately preceding and following the birth of the first child. The study also analysed in a multivariate framework the independent effect of several factors of interest on the probability that a young woman will be in the labour force during various intervals surrounding the first birth. The results indicate that a large number of young mothers particularly blacks, choose to retain close ties to the labour market during their early childbearing years. Over time it was likely that increasing numbers of women would have work careers that are substantially continuous.

Felmlee (1984) did a study to examine women's rates of leaving a job to be non-employed, unemployed or out of the labour force. The study used a stochastic, continuous time model. The data consisted of employment histories of white women constructed from National Labour Survey of young women. The results found several differences between the determinants of employment exits and what might be expected from the cross sectional and panel literature on female labour force participation. The findings also provide evidence of the inter-dependence of fertility and employment, with young children increasing rates of employment exits and with high wages on a job decreasing rates of leaving a job because of pregnancy. Finally, on examination of involuntary employment termination their transitional rates are found to decrease with job wages and job tenure, and to increase when a woman has children. Fertility influences leaving employment at least in the short run. Employment activity also appears to influence fertility in the short-term. The strongest evidence for this is the negative effect of job wages on the rates of leaving a job because of pregnancy.

Cramer (1980), used data from the panel study of income dynamics to investigate the causal relationship between fertility and employment in USA. The study investigated four possible explanations or the contradictions

- Multicolinearity in non-recursive models.
- Misspecification of models.
- Discrepancies between attitudes or intentions and behaviour
- Differences between static and dynamic models

The study found that the dominant effects were from fertility to employment in the short run and from employment to fertility in the long run.

Desai and Waite (1991), used data on women's employment in the USA to examine the argument that predominantly "female" occupations attract women because they are relatively easy to combine with family responsibility. They examined women's employment choices at a point of maximum conflict between work and fertility roles, the first pregnancy and birth. The study used two different event history analysis models-a discrete time hazard model estimated using logistic regression, and a continuous time, piecewise constant exponential hazard model. The study found no effect of occupational sex composition on the likelihood that possible or prospective recent mothers are employed. Occupational characteristics that raise the cost of labour force withdrawal tend to decrease the probability of women's withdrawal from work, as do non-monetary occupational characteristics. All women were influenced by the cost of labour force withdrawal but women with low work commitment were also influenced by financial pressures and convenience of work setting.

2.3 Studies In Less Developed Countries

Using the World Fertility Data, the UN (1985) examined the work fertility relationship in 27 developing countries. The study was based on data collected from 38 surveys conducted between 1974 and 1981 in countries in Africa, Latin America, the Caribbean, Asia and Oceania. The main objective was to explore the work fertility relationship under a broad spectrum of conditions. The variables used were work before and after marriage, and occupation categories such as modern, transitional, mixed and transitional. The study used multivariate analysis to determine whether the work fertility relationship persisted when other factors were controlled, such as marital duration, age at marriage, place of residence, and status of first marriage and husbands occupation. It was found that occupation was significantly associated with fertility in over three quarters of the countries in the analysis. Where the effect was not significant the study suggested that it could be due to the high value placed on bearing children in such countries.

Mason, (1980) using data from the Malaysian Fertility and Family Survey did a study to examine the relationship between wives gainful employment and fertility in Peninsula Malaysia. Approximately 6400 ever-married women aged 50 and under were interviewed. The study used single equation regression models. Multivariate analysis of the 1974 Malaysian Fertility Survey tested the hypothesis that an inverse relationship between women's work and fertility occurs only when there are serious conflicts between work and caring for children. The results are only partly consistent with the hypothesis and suggest that normative conflicts between working and mothering affect the employment fertility relationship in Malaysia more than spacio-temporal conflicts do. Due to lack of consistent evidence for the hypothesis as well as

some conceptual problems the study proposed an alternative framework for understanding variation in the employment fertility relationship both in Malaysia and elsewhere

In rural Thailand, Podhista (1990) did a survey among 612 currently married couples, whose family size was likely to be complete, and whose reproductive experience corresponded with the period of fertility decline. The aim was to examine the consequences of family size on women's employment. The study combined a survey component to provide quantitative data with focus group discussion to provide qualitative data. A general conclusion drawn from the study is that reproductive health does not prevent rural Thai women from working, but does have some impact on women's work through temporarily interrupting economic activity and through young children interfering with their work after economic work is resumed. To the extent that interruption and interference cumulate with each birth, it can be that family size also has an impact.

A study by Kishor, (1996) examined the employment of urban women in Ghana and Bolivia from two different stand points: a single point of time as reflected in women's current employment status and a continuum as reflected in women's work trajectories defined across birth intervals. The study used Demographic and Health Survey data of 1988 in Ghana and 1989 in Bolivia. The study was restricted to a maximum sub sample of 1520 Ghanaian urban women and 4672 Bolivian urban women. The objectives were to understand how women in different cultural and development, but similar demographic contexts pattern their labour force participation over their reproductive life course, and to compare what is learned about women labour force

participation from their current employment from what is learned from their employment trajectories. The study found that no single theoretical model explains women's labour force participation patterns. In Ghana, women's current employment and the patterning of women's labour force participation appears to be most independent of modernising influences such as education: instead cultural factors not captured by the tested models appears to account for the high levels of labour force participation, and for the differences in trajectories among Ghanaian women. In Bolivia, by contrast, current labour force participation and patterning of interactions are better correlated with both modernizing influences and life cycle factors. The study used maximum likelihood techniques appropriate for logit regression to estimate the current employment equation given its binary form. While maximum likelihood multinomial models were used to analyse the four category labour force cycling patterns.

Lloyd (1991) used World Fertility Survey data to review its contribution to understanding the relationship between women's work and fertility. A multivariate model was used to regress cumulative marital fertility (Children Ever Borne per year of marriage) on occupational work experience since marriage using dummy variables for the four occupational categories with demographic controls for education and residence. The study found that for developing countries in Asia and Africa women's work experience in modern occupations bore somewhat fewer children on average than did women with no record of work activity. This was in marked contrast to experience of many Africa countries where no such relationship was observed. On the other hand, the majority of women working in agricultural settings had fertility levels similar to non- women. The fertility of women in the transitional and mixed category

was also, by and large lower than that of non-working women but differences were smaller than in the in the case of working women. The study concluded that the relationship between women's economic activity and their fertility varies widely across the developing world and even within cultures.

In a study in Ghana where high rates of cash employment for women exist with high fertility, Blanc and Lloyd in (1990) examined women's childrearing strategies in relationship to their fertility and employment. The study used data from 1988 Ghana Demographic and Health Survey. The questionnaire incorporated a special module on women's employment. The module included detailed questions on women's current work, and such questions as occupations hours worked per day, travel time to work, regularity of work, earnings, control over earnings, and childcare arrangements while working. Information was also collected on employment before marriage and between births. The study used multivariate analysis and overall the results paint a picture of remarkable equilibrium between women's productive and reproductive roles. Nonetheless, the growing importance of cash economy and rising aspiration for children may threaten the traditional autonomy of Ghanaian mothers by raising the costs of children and increasing dependence on the earnings of others.

Anker and Knowles (1974), from their study on female labour force participation in Kenya using data from a National house hold survey of 3081 households, argued that the childcare burden did not effect female labour force participation. Using multiple regressions to analyse differences in reported female participation separately for rural and urban areas, the study found out that in urban areas better educated women, single women and most women from high-income families were most likely to be in the

labour force. In addition, macro urban labour market conditions were also found to have a significant effect on urban female labour force participation rates. Interestingly, in neither urban nor rural areas did fertility, the presence of children less than five years or presence of another adult female appear to make significant difference in the labour force participation.

Odege in 1993 did a study in Kenya to provide a basis for determining the potential demographic effect of female educational attainment and labour force participation on reducing fertility. The data used was derived from Kenya Health and Demographic Survey (1989). The study examined the relationship between education and employment and selected fertility variables. Percentages, cross tabs and chi-square test were used in the analysis. It was found that there was a relationship between employment of women and fertility and between education and fertility. The study concluded that if women are highly educated they will have the chances to pursue job opportunities that exist in the labour market and consequently this may change their fertility behaviour, bringing about fertility differentials.

Johnson (1970), in a study to examine a number of demographic, education, and economic factors affecting labour force participation rates in Ghana, found that fertility did not appear to be associated with higher participation rates among either sex. The analysis included the estimation of multiple regression models from cross sectional data.

Family formation, as several researches have pointed out, may be viewed as an ongoing system in which fertility is in part a function of events and states defined at

earlier stages and in part determined by events and re-evaluation as the process unfolds through time. Nonetheless, most research on the work fertility hypothesis has tended to focus on the relationships between a given dimension of work activity and one or two dimensions of fertility behaviour. What is needed, among other things is more research on various points of possible integration between female employment and fertility along different dimensions of the life cycle (Groat et.al. 1976). Most of the studies reviewed like the present study attempt to investigate the relationship between female labour force participation and fertility in an effort to establish the causal direction. This study builds on these studies but uses event history data and analysis to be able to connect labour force and fertility events along the life cycle of a woman since most is known about women's current employment only. The study not only explored the relationship between fertility and female employment but also tried to establish the differences if any in fertility rates between women in the informal or formal sector as opposed to female employment in general.

2.3 Theoretical Framework

This section is intended to provide a background against which results of the study may be interpreted. The various frameworks currently used to outline the nature of the relationship between women's work and fertility are reviewed.

A number of different explanations have been suggested to account for the relationship between fertility and female employment. One major theoretical formulation found in demographic literature is the role incompatibility hypothesis. This hypothesis views the inverse relationship between fertility and labour force

participation as a result of the conflicts between the roles of the mother and worker, for those who jointly occupy these two roles (Stycos and Weller, 1967; Mason, 1981). Stated briefly, this hypothesis posits that an inverse relationship between women's work and fertility occurs only when the roles of worker and mother conflict, this being a situation in which women are forced to make trade-offs between their participation in productive employment and the number of children they bear. Two institutions are said to determine the level of conflict between working and mothering. First, the organisation of production and two, the organisation of childcare, in particular, the availability to women of inexpensive and reliable parental surrogates. Inverse employment-fertility relationships are found in industrial settings, it is argued, first, because the industrial organisation of production removes work from the home and organises labour in terms of interests of the employers rather than the household. For this reason most industrial workers cannot be close to their children while working and cannot remove themselves from the work place at short notice, as childcare needs demand.

The other factor is the greater availability of parental surrogates in or near women's homes. Because third world women often have female relatives or servants living with them or close by, they are thought to enjoy inexpensive, reliable baby sitting help to a much greater extent than do women in urban and industrial settings. Thus, regardless of whether their work combines easily with caring for children, third world women are argued to be able to work without feeling pressures to limit their fertility and to be able to bear children without being forced to curtail their productive activities (Safilios-Rothschild, 1977). Insofar as modernisation entails not only the industrialisation of employment, but also a decline in extended kin ship households

and a decreasing pool of domestic servants, modernisation is expected to bring with it an inverse employment-fertility relationship. That both the type of work available to women and the composition of households would affect the degree to which working and childcare conflict, the statistical nature of the employment fertility relationship makes a good deal of sense. It should be noted that type of work and composition of households, however, are not the only factors that affect role incompatibility, nor is role incompatibility the only possible explanation for the employment-fertility relationship. Role incompatibility, for example, may be influenced by a society's educational institutions as well as by its predominant forms of production and household structure. Where formal schooling is widely available and is important for individual welfare, parents are likely to keep children in school rather than at home helping to care for their siblings; mothers may also spend more time actively caring for infants and toddlers out of belief that their inputs are critical for the child's cognitive development and hence success in school and in later life. In this way, then, the development of the formal educational system in an agrarian society is likely to create conflicts between maternal employment and childcare where they did not formerly exist.

Regardless of whether either education or the structure of economic opportunities in fact accounts for the variation in the employment fertility relationship, that they might do so requires empirical tests of the role incompatibility hypothesis to measure the supposed determinants of role incompatibility precisely enough for empirical results to have unambiguous implications for the hypothesis. Unfortunately, most past investigations have been unable to measure either the organisation of work or the structure of households directly and have consequently produced ambiguous results.

Probably the most common way in which role incompatibility has been measured is through use of an urban-rural dichotomy, the presumption being that conflicts between working and mothering are greater in urban areas than in most rural ones (Stycos and Weller, 1967). Although this assumption seems reasonable, residence may be associated with educational institutions and with mobility opportunities as much as it is associated with women's occupations or with household composition. Thus, even when these studies find inverse employment fertility relationships among women and they often do not (e.g., Hass, 1972; Stycos and Weller, 1967) the implications for the role incompatibility hypotheses are unclear. This hypothesis suffers some conceptual problems both as an explanatory of variation in the female labour force participation relationship and as part of a more general theory of modernisation and demographic transition (Mason, 1981).

As an explanation of variation in the employment fertility relationship, the hypothesis is incomplete. While it speaks to the issue of when to expect a negative versus a non-negative employment relationship it does not speak to the question of when to expect a positive relationship. Yet, indeed, in some third world settings, conflicts between working and caring for children are not only minimal, but, fertility itself may be an incentive for wives gainful employment. This, at least, is one of the explanations for the positive employment fertility relationship observed in a number of developing countries. (Peek, 1975).

It is also dissatisfying as part of a theory of modernization and demographic transition, as it does not integrate other ideas about the variables that undergo change during modernisation e.g. the rise of formal education systems and the shift in net

intergenerational transfers emphasised by Caldwell (1976) or the changes in status allocation and so called social mobility. This is also particularly dissatisfying in light of the most glaring conceptual problem in the traditional role incompatibility hypothesis. In replying, the question of what "childcare" consists of and what influences childcare standards that parents adopt. As usually stated, the role incompatibility hypothesis assumes that childcare is similar everywhere and that if mothers themselves are unable to minister to small children, the substitute adults probably females, must do so. Yet this assumption violates the reality in much of the rural third world where children themselves often provide the childcare. (Mason, 1981). One study points out that the role incompatibility hypothesis is incomplete in that it does not offer any explanation for positive relationship between work and fertility and does not take into account variations in childcare practices and standards. (Standing, 1983).

Another major perspective is the micro-economic theory. This perspective has its basis on the early works of Becker (1960) and Mincer (1963), in which children are viewed as consumer durables and parents are thought to maximise the utility function of children. This perspective assumes that women who have children will have to forego employment, at least for a period of time. The income foregone when a woman stops working is considered as an indirect cost of children, namely the "opportunity cost". Micro-economic theories explain the inverse relationship between fertility and female employment primarily in terms of the "opportunity costs", that is what a woman who is considering having a child would have to forego in order to have a child. It is suggested that the opportunity cost correlates positively with women's earnings and that fertility is an inverse function of the opportunity costs. Under

similar conditions. the utility of children decreases along with a rise in the cost of childbearing and the opportunity cost for mothers (Becker and Tomes. 1976; Mincer. 1963). It is. however. argued that the existence of a direct causal relationship from economic activity to have children would lower their expected lifetime earnings. Wife's preference for children and work has a more important role in some later works (Easterlin. 1973). A Woman's taste for work represents the degree of her motivation for employment independent of the wage rate. The stronger the "taste" for work the more likely a woman will opt for working and having a smaller family. With expanding opportunities for women to gain income. prestige and psychic gratifications outside the family. childbearing becomes an alternative that exerts a heavy price. A high opportunity cost may encourage a shift in preference for market over domestic activity and thus lead to lower fertility. As it would appear that role incompatibility increases with rising opportunity cost. the two approaches are entirely consistent. They can be treated as complementing each other. Each perspective places emphasis on different aspect of the employment fertility relationship. Implicit in these theories is the assumption that fertility is the dependent variable in the relationship (Yeung. 1988). In recent work in this area. however. these perspectives are criticised as inadequate explanations for what seems to be a complex relationship. In addition. their applicability to developing countries is uncertain (UN. 1985).

In another effort to expand and improve the role incompatibility and opportunity cost hypothesis. the concept of women's roles has been expanded to include seven roles women play in social life. the maternal. conjugal. domestic. occupational. kin. community and individual roles. (Oppong.1983). Both the behaviour and the

expectations associated with each of these roles is hypothesised to have an impact on the opportunity costs of children and hence on fertility.

A number of studies have posited the reverse order of causation. That is, fertility determines labour force participation. Although the reasoning behind this causal order is not as well developed, the underlying rationale is that childbearing is the primary normative activity for young women and every thing else is secondary to this task (UN, 1985).

Several researchers maintain, while some provide evidence, that reciprocal effects exist between fertility and employment (e.g. Cramer, 1980; Willis, 1973). On the one hand, a large family size constraint women from participating in the labour force. On the other hand, a woman's employment outside the home reduces the number of children she has.

The causal linkages go in both directions simultaneously. When faced with the actual problem of coordinating work and home life, a couple's decision about wife's work and children influence each other (Yeung, 1988). Since children, especially young children, make great demands in attention and responsibilities on parents, particularly on the mother, it is not surprising that fertility has a temporary negative effect on the mother's employment status. On the other hand, as economic and psychological rewards from work place become increasingly available and attractive, it is also reasonable to expect women to prefer a smaller family size. (Yeung, 1988). It appears to be most likely that both events influence each other simultaneously.

Given the small number of studies done and the inconsistent findings, the interrelationship between fertility and employment remains unclear. To summarise this discussion, the role incompatibility hypothesis, is sensible but is by no means the only sensible explanation in the variation in the employment fertility relationship. For this reason, precise measurement of the factors said to determine the employment fertility relationship is important. Most past studies, however have used relatively crude measures and have thereby left unclear the extent to which the organization of work and the composition of households influence fertility relationship. This study used the role incompatibility hypothesis as it was deemed appropriate and the fact that the data used contained several relatively direct measures of women's employment opportunities and household compositions.

2.3.1 Conceptual Model

The conceptual model underlying the analysis is concerned with the long term, per unit of time relationship between work and fertility, in other words, with how the total supply of time devoted to productive work or enumerative labour over a post married life span of some given length is related to the total number of children born in that period. In the model, fertility is chosen as the dependent variable and women's employment experience as the independent variable, reflecting the interest of demographers in fertility.

The role incompatibility theory logically posits relationships appropriately tested by analysis of covariance models. In other words, the nature of employment fertility relationship is expected to vary according to the level on a third variable, namely, role incompatibility. Given this and the availability of data on cumulative fertility and

cumulative employment experience. an estimate of a model of the following form is done.

$$F=\alpha + \beta E_i + \sum\gamma_i 0_i + \sum_j L_j + \sum\lambda_k C_k + \sum\mu_m X_m + \epsilon' \ldots (2.1)$$

Where:

F is fertility.

E_i is a non zero-one "dummy" variable measuring whether the respondent has ever worked since first marrying.

The O_i form a dummy variable classification of ever employed women's occupations.

The L_j form a dummy variable classification of ever employed women's usual location of work (home versus away).

The C_k form a classification of ever employed women's class (e.g. employee. self employed or family worker).

The X_m are again control variables and the remaining terms are the structural co-efficient including a disturbance term. ϵ'.

The model allows two comparisons to be made. one between women who have never worked and those who have. and another between those working in compatible versus incompatible occupations or locations. The expectation here is that the "incompatible" workers will have fewer children then either the "compatible" workers or non-workers. while the "compatible" workers will have at least as many children as the non workers have. In the analysis of this study. then. the additive type of model is used. both because it allows the handling of occupational variables i.e. whether formal or informal. more easily and also because it more closely parallels past analyses.

2.2.1 Theoretical Statement

From the model above the following conceptual statement can be drawn i.e. fertility is a direct function of women's cumulative work, type of economic sector, type of work and location of work.

2.2.2 Operational Model

The study uses the model proposed by Mason (1980), but with some modification to suit the study variables:

$$F = \alpha + \beta E_i + {}_jCC_j + {}_kC_k + {}_mX_m + \epsilon \text{"} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2.2)$$

Where:

F=hazard rate of getting another child.

E_i= dummy variable for marital employment i.e. if woman has ever worked since first marrying.

CC_j= availability of child care

C_k= classification of ever employed women's employment i.e. type of economic sector formal versus informal

X_m= controls: age at marriage, wife's educational attainment, religious affiliation, urban residence.

2.2.3 Hypothesis

To make sense out of the data collected and analysed leading to an understanding of relationship between fertility and female labour force participation, the following hypotheses are tested:

1. Labour force participation has a negative effect on the risk of getting an additional child.
2. The more the availability of childcare support, the more likely is a woman to get an additional child.
3. Work in productive settings, which are compatible with childcare and childbearing, has a positive effect on the risk of getting an additional child.

2.2.4 Definition Of Key Concepts

In order to examine the above hypotheses, the following variables are defined and indexed for measurement.

1. **Fertility**: refers to the number of live borne children had by the respondent, as reported in the fertility history.
2. **Labour force participation**: refers to participation in any activity other than "normal housework whether performed for pay in cash or kind payment, or as an employee or employer.
3. **Type of economic sector**: this is whether it is the formal or informal sector.
4. **Informal sector**: referred to as "jua kali sector", this will cover all the semi organized and unregulated small-scale and household activities undertaken by self employed or those who employ a few workers.
5. **Formal sector**: refers to jobs in the public service, parastatals, private companies, and export processing zones, NGO'S and international organizations sector.

6. **Marriage**: a loose definition of this term will be adopted, that is any union between a man and woman whether formalized or not
7. **Marital employment**: the approximate number of years in which respondent has done any kind of 'work' since first marriage, including any years worked between marriages or, since last marriage was terminated
8. **Availability of childcare**: shall be measured through a proxy, that is, whether there was someone other than the member of household who helped with housework during different periods as reported.
9. **Younger cohorts**: married women aged 25-34
10. **Older cohorts**: married women aged 35-44.

CHAPTER THREE:
METHODOLOGY OF DATA COLLECTION AND ANALYSIS

3.0. Introduction

This chapter presents the methodology of data collection and analysis used in the study. It outlines the data source, the quality of data used and the sampling procedure.

3.1 Data Source

This study used data drawn from the Nairobi Urban Integration project, which was designed to measure the medium or long term effects of the macro economic changes on the job market, on access to housing, and on demographic behaviour. It was based on biographical data collected from married women of three generations aged 45-54, 35-44 and 25-34. Questions on wives' employment and fertility in the reference period 1945 to 2001 were obtained using a biographical questionnaire. To allow a period of time of interactions between female employment and fertility, the analysis will be restricted to those women who have been married for at least six months.

3.1.1 Quality Of Data

The study data had some errors that were handled to minimise the biasness that could arise before the analysis. These problems were as a result of poor editing of questionnaires at supervision level but mainly at data entry level. One of the problems was in-variable error. These included out of range values, missing values and birth dates before 1946 or after 1976. These errors were identified during data entry. In period errors were also detected in the data. A programme designed to merge the modules checked the problem of incomplete modules. To solve this the data was re-

entered. if the data was available or the particular cases were deleted. A special programme checked inconsistencies in dates and particular questionnaires used to verify the information since most of the errors occurred at data entry level. Another problem was between module errors and missing modules. Various mechanisms were used to check for these errors. Out of range values were identified using a special programme and corrected manually by going back to the questionnaire to verify the information. Double entry was used to detect errors too. A special written programme was used to check in period errors. between module errors and missing modules. Revisiting the questionnaire to verify the information and entering it again where the information was available corrected the errors. In cases of duplicated information or cases. the data was cleaned manually by deleting such cases.

3.1.2 Sampling Procedure

The procedure used was multistage proportional to population size (PPS) sampling. The first stage was stratification of the administrative divisions and extra areas drawn from greater Nairobi. In this study greater Nairobi was defined according to the geographical and social limits. using the nearest neighbour criteria rather than by administrative limits criteria. This was necessary to get a representative sample of the diverse population of greater Nairobi in terms of socio-economic status and density. The administrative area of Nairobi has 8 divisions. 51 locations and 110 sub-locations. The additional areas drawn from the environs of Nairobi were treated as one division because they constitute about 15% of the total population of greater Nairobi

Hence the total number of administrative divisions was nine. The boundaries of greater Nairobi were adjusted using the satellite image. To avoid high clustering effect 150 Enumeration areas scattered among the nine divisions were sampled. This number of clusters was arrived at based on the experience from cities in Africa (Dakar, Bamako, Yaounde, Antananarivo, Lome). Given the uneven distribution of households and enumeration areas in Nairobi, the selection used was proportionate to the number of households in each division (PPS sampling) obtained as follows: 130 × No. of HH's / Total No. of HH's, where HH is household. The number of selected enumeration areas per division is shown in table 3.1 below.

Table 3.1: Number of selected enumeration areas and household by division.

Division	No. of EAs	No. Of HHs	5 HHs per division	Target No. Of EAs
Central	394	68849	10.7	14
Makadara	368	59156	9.1	12
Kasarani	799	108533	16.6	17
Embakasi	1001	134719	20.7	27
Pumwani	346	54458	8.4	11
Westlands	539	62601	9.6	12
Dagoretti	508	73974	11.3	15
Kibera	528	88571	13.6	18
Total	**4481**	**651861**	**100.0**	**130**

Source: Kenya Population Census 1999.

NB: HH is household, and EA is enumeration area.

The second stage was to randomly select the Enumeration areas in each division from the 1999 Census list of Enumeration areas, using random number generator from the SPSS program version 9.0, followed by updating of household listing from Central Bureau of Statistics for each Enumeration area. In the third stage, 35% of the households were selected randomly using systematic random sampling from the

updated household listing from Central Bureau of Statistics (CBS). The actual total number of households was 2915.

The fourth stage was to sample the biographies (individuals) drawn from the sampled households using a criterion based on age and generation. The age structure of Nairobi according to 1999 census showed great disparity in each generation compared to most African Cities where the age structure forms a pyramid. The pyramid is highly skewed implying fewer females compared to males in each generation. In particular, there were unusually fewer women in the age range
45-54.

Using the Census data, it was assessed that on average there were 3.28 persons per household. Given this observation the expected sample population in the household was obtained as follows: 150 (Enumeration areas) * 35% (households * 3.28 (persons) =24600) persons. This expected number of persons formed the target population from which the individual biographies were drawn. The actual sample size from which individual biographies were sample was 11031. The criteria used to draw the desired sample of individuals (eligible to the biographical questionnaire) by generation and gender was as follows:

Table 3.2: Eligibility criteria for biographies by generation and gender.

Generation	Males	Females
45-54	1 out of 2	1 out of 1
35-44	1 out of 4	1 out of 2
25-34	1 out of 8	1 out of 5

Source Nairobi Urban Integration Project, 2001

The expected distribution of individual biographies by generation and gender is shown in Table3.3

Table 3.3: Distribution of expected biographies by generation and gender

Generation	*Males*	*% Males*	*Females*	*% Females*	*Total*	*% Total*
45-54	429	31.7	319	27.3	748	29.6
35-44	460	33.9	417	35.7	877	34.8
25-34	466	34.4	432	37.0	898	35.6
Total	1355	100.0	1168	100.0	2523	100.0

Source Nairobi Urban Integration Project, 2001

However, these target numbers were not attained due to various reasons. One, the study did not cover the greater Nairobi, which accounts for 15% of the population in Nairobi. This was due to logistical problems, time and financial constraints. Refusals led to a lot of time being spent on follow-ups in the areas in Nairobi, this took more than the planned period for data collection. Lack of personnel at the end of this period further slowed down the work leading to these areas being left out of the study. In some areas the age structure was not as expected, either the population was very young old or very young leading to unexpected numbers. Some of the enumeration areas e.g. Mlango Kubwa, Mathare 4A were not covered further reducing the sample from which the biographies were drawn. (See Appendix I for problems encountered). As a result the number of biographies obtained by generation and gender were as follows.

Table 3.4: Distribution of actual biographies for males by generation and gender

Generation	*Males*	*% Males*	*Females*	*% Females*	*Total*	*% Total*
45-54	221	33.4	317	36.3	538	29.6
35-44	224	33.89	261	29.8	485	34.8
25-34	216	32.7	296	34.0	512	35.6
Total	661	100.0	874	100.0	1535	100.0

Source: Nairobi Urban Integration Project, 2001

The expected figure of 400 could not be attained only for the females aged 45-54. To attain 400 in this group we would have needed a sample of 30,846 individuals through the household questionnaire. i.e. 25% more than we could afford. However from previous research in other areas a minimum sample of 200 is respected for all sex and age groups and can suffice for the analysis.

3.2 Method of Data Collection

A household questionnaire of the census type was used to collect basic information on the sampled households. Undergraduate's interviewers who were trained for one week did this. An age event recording form was integrated into the interview. It comprised the first part of the interview. It is a separate document that amalgamates the charts for a number of different event histories. The advantage is that it enables the researcher to relate and cross check the timing of events across several different domains. It is also useful for detailing inconsistencies. Family events such as births, marriages, deaths were first recorded as they are usually the best remembered and also because they are usually officially recorded. A biographical questionnaire was then used to collect information on aspects of individual lives including the changes over time and that could be well remembered. The questionnaire (see appendix iv) had five modules relevant to various aspects. This study was based on module 1 for basic characteristics, module 3 on productive activities including schooling, training, and changes in status for the same employment and module 5 pertaining to fertility history. Module 1 provided information on basic socio-demographic characteristics.

3.2.1 Method of Data Analysis

The analysis involves examining the relationship between female labour force participation and fertility among women in Nairobi. The main method of analysis was event history analysis. Frequency distributions were used to show the distributions of the respondents by various characteristics and distribution of periods since the interest is in periods and not the individual.

Event history analysis was used to examine the changes in employment status of married women and fertility along their life cycles. It is an appropriate method since the study data is in the form of event histories and due to its ability to connect different kinds of events along the time path. It is a statistical method used to measure the length of time before the occurrence of subsequent events.

However, this kind of data usually includes some cases, which the information on the event is not recorded or is incomplete. This can happen for several reasons. In some cases, the event does not occur before the end of the study. In other cases, we loose track of their status sometime before the end of the study. Still other cases may be unable to continue for reasons unrelated to the study. Collectively, such cases are known as *censored* cases. (see appendix II for examples of censored cases) and they make this kind of study inappropriate for traditional techniques such as ordinary linear regression. Hence the use of survival analysis or more generally transition data analysis.

Given the date of entry, failure date and date of censoring, the first step in the analysis was to create life survival tables by calculating durations to termination and to interview by counting the units of time elapsed between pertinent dates. These durations were calculated in months and portrayed the survival experience of the various cohorts. The basic idea of the life table is to subdivide the period of observation into smaller time intervals. For each interval, all people who have been observed at least that long are used to calculate the probability of a terminal event occurring in the interval. The probabilities estimated from each of the intervals are then used to estimate the overall probability of the event occurring at different time points. To test the differences between survival curves of the younger and older cohorts, or any other groups the Breslow test (also called the Wilcoxon test) which is based on as ordering of failure times from earlier to later date was used. The baseline hazard rate and the effects of covariates are modelled by Cox's regression.

3.3 Hazard Rate Analysis

Life table techniques have for a long time been used to test whether different samples of failures times represent different survival functions. This method involves estimating survival functions for each sample and then making comparisons either directly or using summary statistics. Applying this procedure to answer questions involves sub classifying the sample on the basis of the covariates of interest and estimating survival function in each subclass separately for comparison. When none of the subclasses is small this procedure is workable. But very often many of the subclasses are likely to be small, especially when several covariates are to be taken into account simultaneously. When there are many covariates, cell sizes become too

small to allow the computation of a life tables. Under such circumstances it is advisable to use for comparison of survival functions comprehensive models in which the effects of factors affecting failure times are represented by unknown parameters. hence the use of hazard models or simply life tables with regression

3.3.1 Definition And Assumptions Of a Proportional Hazards Model

The term hazard in ordinary use means risk. A hazard rate is the instantaneous risk of occurrence or experiencing a given event. In this study the women are assumed to be continuously subject to the risk of a birth. The risk is given by the hazard rate function. defined as the conditional probability of a birth at time t given no birth immediately before **t**. The hazard rate may vary randomly across the population (referred to as heterogeneity) and may vary over time spent in a birth. In the analysis of survival data. an event such as death can be viewed as a failure with the time at death of that particular individual being viewed as the failure time and the total duration of time lived by that particular individual viewed as the survival time. The distribution of survival times is described by three functions. If a unit begins at time *t*=0 and fails at time t=T. we call the random variable the survival time or time to failure of the unit. The distribution function of T is denoted by F (*t*). its the probability density function and is denoted by f (*t*). The function S (*t*) =1 is called the survivorship function and gives the probability that an individual will survive until time t or beyond before experiencing the event. The hazard function is $h(t) = f(t)/S(t)$. Knowledge of any one of the four quantities f(*t*). F(t). S(*t*). and h(*t*) is sufficient to know all four. The hazard function is the instantaneous failure rate at the time given that the individual survives until time t.

A proportional hazard model for the relationship between and employment and fertility can be defined briefly as follows. Let duration be measured as time in months since the age of fifteen. we assume the duration can be broken into K categories during which the risk is constant for individuals with the same values of the covariates such as childcare and economic activity. Let r_{ik} be the risk of getting a child in duration category k (or period k) for i^{th} individual with vector of covariates X_i. Then under the proportional hazard assumption:

$$\ln (r_{ik}) = a_k + X_i'b \qquad k=1,\ldots,k \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3.1)$$
$$= a_k + b_1X_{i1} + b_2X_{i2} + \ldots b_nX_{in}$$

The risk in duration category k is given by $e^{ak} e^{xi'b}$. where e^{ak} may be considered an underlying duration specific risk. The covariates of individuals i shift this risk up or down depending on whether $e^{xi'b}$ is greater or less than 1.0. For individuals with different values of their covariates X_i this multiplicative factor is the same at every duration. so that the ratio of hazards of any two individual is the same no matter what the duration.

In the extended model. values of the covariates may be allowed to change over time. With time varying covariates. the model for individual I with covariates vector W_{ik} in period k become:

$$\ln(r_{ik}) = a_k + W_{ik}'c \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3.2)$$

Note. that there is no duration subscript on c. so the model is still a proportional hazard model in the sense that a given value of a covariate has some effect at each duration. W_{ik} varies with time but the effects do not. When the covariates changes over time. then the ratio of hazards for two individuals will not necessarily stay constant.

Finally the effect of a particular covariate on the hazards may change over time. even though the covariate itself stays the same. Under the time dependent effects assumption. the model for individual *i* in period *k* with covariates vector Y*i* becomes

$$\ln (r_{ik}) = a_k + Y_i d_k \quad \ldots\ldots (3.3)$$

In this case. there is a duration subscript on the coefficients (so that the effects changes across intervals) but not on the covariates. Note. however. that it is possible for a time varying covariate to have time dependent effects. A general model encompassing all these assumptions can be written as follows:

$$\ln(ri_k) = a_k + X_i b + W_{ik}'c + Y_i' d_k + Z_{ik}'e \quad \ldots\ldots (3.4)$$

Where the term $Z_{ik}'e_k$ has been added to allow for the possibility of time varying covariates with time dependent effects. We have one fixed covariate with time dependent effects i.e. sex during labour force participation. Education attainment. age. age at marriage. religion and urban residence will be used as controls in the analysis.

Multivariate hazards analysis was used to evaluate the effects of demographic and socio-economic variables on fertility. The variables of interest are marital status, employment, and type of economic sector and availability of childcare. As the model of analysis, the study chose a proportional hazard regression method introduced by Cox and modified by Breslow, called the Cox's proportional hazards regression model. This was used to model time to event in the presence of censored cases. It allows the inclusion of predictor variables (covariates) in the model. Cox regression handles the censored cases correctly, and provides estimate coefficients for each of the covariates, allowing one to assess the impact of multiple covariates in the same model. It can also be used to examine the effect of continuous covariates.

It can be defined as, let t_i be the survival time of the i^{th} individual and x_{1i}, x_{2i},.....x_{pi} be the values taken on by explanatory variables for the i^{th} individuals , the *Cox's model* gives the hazard for the i^{th} individual as $\boldsymbol{hi(t) = h_0(t)exp(..b_jx_{ji})}$, so that the hazard for any individual is proportional to a baseline hazard function, $h_0(t)$, and the risk factors x_{ij} modify the hazard. The object is to estimate the parameters β_i and test hypothesis about them.

In this study all the covariates are treated as time varying and/or as having mixed effects. The proportional hazards method estimates the effect of the independent variables on the hazard rate under the assumption that the effects are proportional and constant through each interval. The model estimates the risk of bearing a child during labour force participation. When the β_is are significantly different from zero, they indicate that the risk factor is important. If β=0 it means the covariate has no effect on

the dependent variable. If the value is below 1, it means the covariate has a reducing effect on the event occurring.

The study estimated two models: the first model included all the control variables and employment status while the second had all the control variables and the interaction effects between employment status and type of economic sector.

3.3.3 Testing And Checking Assumptions Of The Model

The most important assumption of the Cox model is that the hazard ratio is proportional over time. Since the model by definition is constructed to follow this assumption it was important to evaluate its validity before modelling (Namboodiri et al. 1987). The assumption was checked using "log-log", plots represented as l_n (-l_n|s(t)|). Details of the test and the graphs are shown in the appendix III.

CHAPTER FOUR
COX REGRESSION ANALYSIS AND DISCUSSION OF FINDINGS

4.0. Introduction

This chapter presents the findings of the study and the data analysis results. The analysis was restricted to women who had lived in Nairobi continuously from the age of fifteen. The analysis is divided into two levels. the first level is the preliminary analysis of the data by use of descriptive statistics and the second is multivariate regression analysis.

4.1 Cox Regression Analysis

The main objective of the study is to examine the relationship between women's labour force participation and fertility in Nairobi. That is whether there exist differences in fertility between women who are working and those who are not. The study uses Cox Proportional Hazards model to test the effects of various covariates on the risk of getting an additional child in the presence of censored cases. The model assumes that the hazard ratio is proportional over time, such that all the systematic differences in fertility between women in and out of labour force are accounted for by covariates without distinguishing the differences due to the timing of the event.

The hazard rate model reflects two distinct features associated with high or low hazards. These are:

i. Acceleration or deceleration in the timing of the event and
ii. High or low limiting survival probability (i.e. proportion eventually experiencing or not experiencing the event)

The limiting survival probability implies a limiting value of the survivor fraction when time tends to infinity. The Cox model is compatible with non-zero limiting survival probability. However, the interpretation in proportional models is often ambiguous with regard to the distinction between the timing and limiting survival probability of the events occurrence. Thus proportional hazards model do not permit a useful distinction between the effects of covariates on the timing of the event and on the limiting survival probability of the event. However Cox Proportional model is still a useful and powerful method for analysing duration data. (Otieno, 1999). It does not rely on specification of the parametric form of the distribution and is relatively easy to interpret, especially when analysis does not require specifying the time of the event of interest.

The coefficients of the Cox Proportional Hazards model can be interpreted as the proportional effect of each independent variable on the risk of having an additional child. Positive coefficients increase the value of the hazards function or the risk of having another child and therefore denotes an inverse relationship between the values of the independent variable. It therefore implies that a larger positive value of the independent variable parameter implies higher propensity of getting another child and vice versa. The coefficients can be transformed to percentage change $100 \times |\beta^{exp} - 1|$ in the hazard rate for a unit increase in the explanatory variable. In case the explanatory variables are categorical it is the change in the hazard rate of the respective category relative to the reference category (Otieno, 1999).

4.2 Variable Specification

The analysis is restricted to women who have experienced the event and subsequent events from the age of fifteen in Nairobi during the reference period. The total number of children ever born is the censoring event for these women. The analysis controls for migration, that is periods for individuals who went out and came back into Nairobi during there observation period. A total of 874 female respondents covering three generations aged between 25 and 54 years constitute the sample. Their descriptive statistics according to explanatory variables is presented in the Table 4.1 below.

Table 4.1 Distribution of respondents according to covariate

Variable name	Biographical cases	Frequency	Missing cases
Age group			
45-54	317	36.27	
35-44	261	29.86	
25-34	296	33.87	
Total	**874**	**100.00**	
Current Religion			
Traditional	26	2.97	4(0.46%)
Hindu	4	0.46	
Muslim	72	8.24	
Catholic	243	27.80	
Protestant	316	36.16	
Other	209	23.91	
Total	**874**	**100.00**	
Ethnicity			
Central Bantu	464	55.17	33(3.77%)
Western Bantu	159	18.91	
Coastal Bantu	15	1.78	
Nilotic	129	15.34	
Hamites	66	4.16	
Other	8	4.64	
Total	**841**	**100.00**	
Marital Status			
Ever married	525	60.07	
Never married	349	39.93	
Total	**874**	**100.00**	

Childcare Availability			
No childcare	545	62.36	80(9.15%)
Yes not paid	48	5.49	
Yes paid	201	23.0	
Total	**874**	**100.00**	
Employment status			
Homemaker	207	23.68	11(1.26%)
Unemployed	99	11.33	
Employed	522	59.72	
Other	35	4.00	
Total	**874**	**100.00**	
Economic sector			
Formal	215	24.60	11(1.26%)
Informal	307	35.12	
Other	341	39.01	
Total	**874**	**100.00**	
Employment sector			
Employment formal	215	35.13	11(1.26%)
Employment informal	307	24.60	
Homemaker	207	23.68	
Unemployment	99	11.33	
Other	35	4.00	
Total	**874**	**100.00**	

Source: Nairobi Urban Integration Project, 2001

4.2.1 Description of Survival Data

The use of frequency analysis is not very useful since the unit of interest in survival analysis is observation periods and not the individual. This section presents a description of the observation periods by variables of interest then a summary description of the survival data.

Table 4.2: Distribution of observations by variables of interest.

Variable	Frequencies	Percent	Missing observations
Age group			
45-54	5151	44.03	
35-44	3435	29.36	
25-34	3113	26.61	
Marital status			
Ever married	4303	36.78	
Never married	7396	63.22	
Economic sector			
Formal sector	9362	80.02	118(1.01%)
Informal sector	2219	18.97	
Childcare availability			
No childcare	6615	56.54	2271(19.41%)
Yes not paid	577	4.93	
Yes paid	2236	19.11	
Employment status			
Homemaker	2051	17.53	
Unemployed	3295	28.16	
Employed	4002	34.21	
Other	2351	20.10	
Employment sector			
Employment formal	2196	18.77	118(1.01%)
Employment informal	1688	14.43	
Homemaker	2051	17.53	
Unemployed	3259	28.16	
Other	2351	20.10	
Children ever born			
0	9250	17.53	
1	2449	20.93	
Total	**11699**	**100.00**	

Source: Nairobi Urban Integration Project, 2001

NB: Column total represents total for each variable

4.2.2 Summary of survival data

A summary description of the survival data is presented in Table 4.3. It shows that 611 women out of the sample of 864 were used in the analysis. These are the women who had continuously lived in Nairobi from the age of fifteen and were at risk of experiencing birth. 28 women had migration records into and out of Nairobi in their histories during reference period. 417 women had experienced the event at the end of the reference period with 50% having at least one birth. Total number of children ever born to the women was 1746 with 50% of the women having at least a minimum of 1 birth record and a maximum of 11 birth records. The total time at risk of getting a child was 47824 months. Their minimum entry time into the risk was 0 months while the maximum 305 months. Their minimum exit time was 2 months while the maximum was 470 months. The minimum number of recorded children per woman was 1 while the maximum was 11.

Table 4.3: Summary of the survival data.

Category	Total	Min	Median	Max
No. of women	611			
No. of birth records	1746	1	2	11
(first) entry time		0	43	305
(final exit time		2	112	470
Women with gap	28			
Time on gap if gap	1502	5	41	162
Time at risk	47824	1	54	447
failures	417	0	1	1

Source: Nairobi Urban Integration Project, 2001

4.2.3 Coding Of Variables For Inclusion In The Model

In many analysis regressors are entered in the form of categorical variables because specification of categorical variables permits the examination on non-linearity of effects. The dependent variable is the hazard rate of getting a child in the next period in the sequence of records. This creates a dummy variable for children ever born with the value 1, if this condition is true or 0 if otherwise. We model the instantaneous risk of getting another child in the next period. This risk involves multiple failures since childbearing is a repeated event. The variable specification and coding for explanatory variables is presented in Table 4.4.

Table 4.4: Variable specification definition and coding.

Variable name	Definition and coding of variables
Age cohorts	This variable is included to examine the relationship between labour force participation and fertility for different cohorts. The categories are 45-54=1 (ref) older generation 35-44=2 middle generation 25-34=3 younger generation
Marital status	This variable is included to measure the exposure to the risk of conception through coital frequency. When censoring in the context of children ever born regression it is important to control for exposure by introducing an independent variable to represent it. Thus since fertility varies with age, the dependence of Children Ever Borne on exposure variable is non-linear. Marital status refers to whether a woman has ever been married or is cohabiting or not. The categories are: Ever married=0 (ref) Never married=1
Availability of childcare	This variable is included because it is documented to lower the opportunity cost of women who are in employment. This variable is measured through a proxy that is whether anyone other than a member of the household helped with the household work. The categories are: Yes not paid=0 (ref)

	No childcare=1 Yes paid=2
Employment status	Employment status is included to measure the influence that employment has on fertility, since it is documented that there is a relationship between the two variables. The categories are: Employed=0 (ref) Homemaker=1 Unemployed=2 Other=3
Employment sector	This variable is included to measure the effect of type economic activity on fertility. It is created from employment status and type of economic sector and is included to measure the interaction effects between employment in the formal and informal sector. The categories are: Employment formal=0 (ref) Employed informal=1 Homemaker=2 Unemployed=3 Other=4

4.3 Description Of The Results Of The Analysis

This section describes the results of the application of Cox's model allowing for mixed effects. The standard errors were adjusted for the fact that individuals had periods with clusters. Breslow method was used to deal with ties. The summaries of parameter estimates of the Cox's model are shown in Table 4.4.1.

Effects of marital status

The effect of never married women relative to ever-married lowers the hazard rate of getting an additional child. The effect is highly statistically significant at 99% confidence level. The reduction effect is marginal and varies over time as the marital status changes. The observed effects on the likelihood of having children shows that fertility differentials between women may be as a result of marital status irrespective of women's employment status.

Effects of generational groups

The effect of the middle age (34-44) and younger (25-34) generation both lower the relative risk of having a child. The effect of the age (25-34) group is highly significant at 99% confidence level. while the effect of the age (35-44) group is highly significant at 95% confidence level. The effects of the likelihood of having an additional child are slightly higher for the third age (25-34) group relative to the first as expected due to the differences in exposure to coital frequency.

Effects of availability childcare

Not having childcare reduces the relative risk of having another child while having paid childcare increases the relative of having a next child. The observed effects indicate that women who have paid childcare are more likely to have more children ever born than those who do not have childcare. However the effects of childcare are not (statistically) significant in explaining fertility differentials among women who do not have and those who have paid childcare in Nairobi.

Effects of employment status

The effect of homemaker increases the relative risk of having another child, while unemployment and other category reduce the relative risk. The positive effects of homemaker imply higher probability of having more children compared to the other employment status. Homemaker and other category are (statistically) significant while effects of unemployment are not significant in explaining the relative risk of getting an additional child.

Table 4.4.1: Cox's Model parameter estimates for main and interaction effects on the risk of giving birth to an additional child.

Variable name	Model a		Model b	
	coefficients	z-value	coefficients	z-value
Marital status (ref=ever married)				
never married	-0.0128(0.00)	-9.25***	-0.013(0.01)	-9.83***
Availability of childcare (ref=yes not paid)				
nochildcare	-0.064(0.22)	-0.28	-0.073(0.22)	-0.32
yes paid	0.353(0.24)	1.45	0.182(0.25)	0.72
Age group (ref=45-54)				
35-44	-0.392(0.16)	-2.47**	-0.371(0.15)	-2.48
25-34	-0.449(0.13)	-3.38***	-0.456(0.13)	-3.48***
Employment status (ref=employed)				
homemaker	0.267(0.16)	1.70*	na	na
unemployed	-0.247(0.19)	-1.27	na	na
other	-0.980(0.22)	-4.42***	na	na
Employment sector (ref=employment formal				
Employment informal			-0.489(0.18)	-2.59**
Homemaker			0.033(0.17)	0.19
Unemployed			-0.455(0.20)	-2.22**
Other			-1.160(0.23)	-5.09***
Log like hood	-1884.23		-1834.03	
Prob> chi2	0.000		0.000	

Source Nairobi Urban Integration Project, 2001

*** means p<0.01

** means p<0.05

* means p<0.1

NB: Figures in parentheses are standard errors obtained from robust estimations adjusting for clustering on individual.

4.4 Discussion of The Results

In this section the study results are discussed in an attempt to evaluate whether the set objectives have been met by the study findings. A common theme in the literature of female employment and fertility is that employed women will have fewer children than non-employed women only when there are conflicts between working and caring for children (as in industrial countries). If there are no conflicts employed women may actually have more children than non-employed women if the economic burden of childrearing is an important incentive for wives labour force participation. As a result there may be few fertility differentials according to wives labour force status.

The relative risks implied in Table 4.4.1 are mostly in the direction one would expect. Homemakers increase the relative risk of having children while informal sector; unemployment and other category are less likely to have a child in any given period of observation. Homemaker probably combines well with childcare therefore increasing the relative risk of having more children. There are no significant fertility differentials between women in employment and the unemployed. When the type of economic sector is included in the model however, unemployment becomes significant in explaining the fertility differentials between women in Nairobi. Employment in the informal sector reduces the relative risk compared to the formal employment, these results are inconsistent with the role incompatibility theory. Being employed portrays consistent results and lends support to Mason's (1980) results, who found out that employed wives have fewer children than other wives if they resided in urban areas.

Effects of availability of childcare

An important variable increasingly taken into account in the analysis of work fertility relationship is the extent to which childcare is shared or delegated. thus diminishing potential occupational/maternal role conflicts which have featured prominently in many hypotheses (Oppong. 1991). At first glance it seems fertility and family size should be negated to labour force if there is no childcare. Among women in Nairobi. no childcare reduces the relative risk of having an additional child. while having paid childcare increases the risk. The findings agree with Blau and Robins results from a study in USA where higher childcare costs were estimated to lower the birth rate for non-employed women but not for the employed.

Interestingly. the findings reveal that availability of childcare does not significantly explain the differences in fertility among women in Nairobi. These findings imply that there may be no fertility differentials between women with paid childcare and those without childcare. The findings confirm Mason's results in Peninsular Malaysia. where measures of household composition that were used were not found to be consistent with the role incompatibility theory. If sheer availability of child care had an impact on women's work and fertility as suggested. we would have expected to see more consistent results than we have. These observed effects might be explained by the fact that availability and acceptability of childcare reduces time costs for working mothers (Oppong. 1981) and hence women can have additional children while working. If childcare substitutes are available and considered acceptable alternatives to maternal care. women who are employed will not feel pressured by time constraints

to limit their fertility. It could also be due to the fact that in many urban areas there is low cost domestic help.

Effects of generational groups.

Age is known to influence fertility through many mechanisms such as education and first marriage. It is used as a control in the analysis and shows consistent results in explaining the fertility differentials between women. The age group 25-34 is statistically significant at 99% confidence level while the age group 35-44 is significant at 95%. This finding may be conclusive because older women have virtually completed their fertility. But modelling the risk as a hazard, the differences probably reflect the fact that older cohorts may have accelerated their time to next birth compared to younger cohorts. The differences imply probably that younger cohort were slower in getting their next birth.

Effects of employment status

The results of the regression of rate of getting another child onto employment status are shown in Table 4.4.1. Among women in Nairobi the results of employment status show that the unemployed and the employed women had similar birth characteristics where as the homemakers were more likely to get another child than the rest of the group. Those belonging to the other group had the least chance of getting a next child. This group includes women who were studying, invalids and those who were sick. The observed results of unemployed and employed women are not consistent with the role incompatibility theory. This could be due the number of living children a variable that was omitted in the analysis. This could influence the rate at which a woman get an additional child whether she is employed or not. Being a homemaker is highly

significant at 95% confidence level implying significant fertility differentials between homemakers and employed women. The negative coefficient for unemployment may imply that the women are seeking employment, which competes for time with childrearing. These results do not conform to expectations but confirm Mason's (1981) whose study results for women's employment characteristics in Malaysia provided less clear evidence for the role incompatibility theory. The results imply that there are no fertility differentials among unemployed and employed women in Nairobi. This may be associated with residence, being in the urban area unemployed women may adopt fertility limiting behaviour found in urban areas. These findings suggest that in further analysis of the work fertility relationship, it is important to distinguish clearly the type of activity or setting in which work is done. For the employed, employment sector should be considered together to obtain better results. The results of a model including employment sector are discussed below.

Effects of type of economic sector

When the type of economic sector is included in the model, never married status delays subsequent births for employed women and is still significant in determining the risk of birth hence fertility differentials between women. Age cohorts reduce the hazard rate but the (35-44) cohort is not (statistically) significant relative to older age cohort in explaining the risk of getting additional children. These results are consistent. While lack of childcare lowers the hazard rate of getting an additional child, having paid childcare does not, but availability of childcare is not significant in explaining the risk of getting an additional child among working women in Nairobi. Women who are in the other category are at the lowest risk of getting an additional

child hence no fertility differentials are expected between them and working women in Nairobi.

Results from the model (b) show that there are significant fertility differentials between employed women and the unemployed. These results are consistent since they confirm UN (1985) findings where women who had never worked at all since marriage tended to have a greater average number of children ever born than women in the modern sector. They also lend support to Week's (1993) findings in USA where on average, each 1000 working wives aged 30-34 had 516 fewer children than each non-working wives of the same age. The negative coefficient of unemployment, however, indicates that this status reduces the relative risk of women getting an additional child. These results support Mason (1991) whose results for women work characteristics in Peninsular Malaysia provided less clear evidence for role incompatibility theory. The observed effects of unemployment may be because seeking employment competes for time with childbearing. This could also be due to the fact that women who work may be more independent and enjoy a more egalitarian marital relationship, which allows them to exercise control over their fertility decisions. Women who work outside the home may also find it difficult to combine childbearing and rearing with the demands of a job, that require them to spend a lot of time away from home each day (UN, 1985). On the other hand this could reflect the economic status of household or the effect of number of living children that a woman has which was however not included in the analysis.

The inclusion of employment sector in the model greatly affects the earlier observed significance of homemakers. It is found to have a positive effect on the hazard rate of

getting an additional child as expected but it is not (statistically) significant implying that there are no significant fertility differentials between women employed in the formal sector and homemakers in Nairobi. This may be explained through husbands' income effect that was not considered among the covariates. Income effects according to Leibenstein (1977), affect the utilities and costs of an additional child. The conventional cost of child costs maintenance is expected to raise as per capita income increases. The style in which a child is maintained depends on the position and income of parents, therefore we expect such costs to rise as the income rises. The indirect costs are expected to behave in a similar manner. Opportunities for engaging in productive or various time consuming consumption are likely to grow as income increase, therefore, the opportunity cost of having to tend an additional child rise accordingly as income increases.

This explanation can be supported further by Becker's Micro economic theory of fertility, where the time for the mother can be either is used for producing income or for raising children. An increase in the wife's income is expected to have two off setting effects. Firstly, positive income effects, and, secondly, negatives effects. If a wife has the primary responsibility for time in puts to childbearing, the theory emphasizes that the fertility effects of an increase in family income will be positive if the extra income comes from the husband with relatively little childcare responsibility and indeterminate in the case of the spouse who spends a great deal of time with the children. If homemakers in Nairobi have working husbands therefore we expect that their fertility will be influenced by the income effects of their spouses bringing about significant fertility differentials with women working in the formal sector.

The regression coefficient for the variable that indicates participation in the informal sector reduces the hazard rate of getting an additional child. This implies that women employed in the informal sector are less likely to have another child than those in the formal sector. This does not conform to expectation. These results do not lend support to findings of UN (1985) based on 27 developing countries, where women in the modern occupations had the lowest number of children ever born. These findings are also inconsistent with the role incompatibility theory and disagree with the results of Lloyds (1991) who found that on average, the level of cumulative fertility was higher among women in the traditional occupations. These results indicate that working conditions in the informal sector in Nairobi may not be flexible in terms of time as hypothesised. Work in the informal sector does not seem to reduce time costs. The type of economic sector may be associated with fertility in other ways. Being in an urban area the results could be that the women in the informal sector are exposed to modern ideas about contraception, childbearing, family life, and in jobs that demand more time.

The observed effects of women in the informal sector can be attributed to the opportunity cost of reproduction. Women who work away from home are the presumed to experience greater degrees of work and role incompatibility, to possess a stronger commitment to the work role and to have more capital (e.g. education, work experience and training), than those who work in home industries or women who do not work at all (Zsembik, 1990). These results therefore imply that most informal work in Nairobi is away from home and women on average experience greater degrees of work and role incompatibility. It could also be due to the fact that many women have education and training but cannot find work in the formal sector due to

the economic situation. This implies that the influence of women's work on fertility decision making is largely determined by the underlying institutional structures that govern the value of women's labour in a society not just role incompatibility.

However, no firm conclusions can be drawn from these results since the level of development most clearly influences the shape of the relationship between work and fertility in the modern and mixed sectors (Lloyd, 1991). The effect of development, except in the case of informal sector becomes more incompatible as the society becomes more developed. According to CBS (1997), Nairobi had the highest level of informal sector employment of 71.64 per thousand. Women accounted for 25.1% of the total labour force most of which was in the informal sector. This situation coupled with the problem of unemployment and the recent retrenchment brings into question the need to consider structural backgrounds and opportunity structures in analysing the relationship between women's work and fertility.

The analysis of the work-fertility relationship in Nairobi can be summarised as follows: employment status in Nairobi clearly displays expected effects in the relative risk of getting an additional child for the employed, but not those in informal employment. Homemakers too, do not show expected results. Whether this reflects the spacio-temporal difference of combining employment with childcare said to exist for urbanised populations is however unclear. Childcare displays results that do not conform to expectations, the variable is not significant in explaining the relationship. This calls for a combination of working status and childcare to bring out the differences clearly. Overall the results are consistent and agree with the fact that the existence and strength of measured relationship between women's work and fertility

are clearly linked to socio-economic development. However lack of information on the number of living children, precise timing of women's work during their childbearing period limit investigation of how the relationship changes over a woman's life cycle.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0. Introduction

This chapter presents a summary of the study findings on the relationship between women's labour force participation and fertility in Nairobi. conclusions and recommendations.

5.1 Summary

In this study, an attempt was made to examine the relationship between women's labour force participation and fertility in Nairobi. The study also made an attempt to examine the extent to which labour force participation influences fertility and the extent to which labour participation in the formal and informal sector influences fertility.

The study found no significant fertility differentials between women who had no childcare and those who had paid childcare in Nairobi. This confirms Mason (1981) findings and may be explained by the fact that availability and acceptability of childcare reduces time cost for working mothers Oppong (1981) and hence women can have additional children while working.

The findings also revealed that never married women were less likely to have an additional child irrespective of their employment status. These results are consistent since never married women are at a lower risk of exposure to coital frequency. The findings are consistent with UN (1985) results.

The study found that homemakers were more likely to have an additional child than the employed, unemployed and other group. The observed fertility differentials however did not persist when the type of employment sector was considered. At this stage there were no fertility differentials between women employed in the formal sector and homemakers. This could imply the effect of husband occupation and income, which were not included in the analysis. This could also explained by Becker's Micro Economic Theory, where a mother time can either be used for producing income or for raising children. The effects of incomes is expected to be more positive if the extra income comes form the husband who ahs little childcare responsibility.

The study findings revealed that there were no fertility differentials between employed and unemployed women in Nairobi when the type of economic sector was not included. These results are consistent Mason's finding in Peninsular Malaysia where women's employment characteristics provided less clear evidence for the role incompatibility. This however may be due to the fact that the unemployed women were in the process of seeking employment, which competes for time with childrearing.

However, when the type of employment sector was included significant fertility differentials were observed between employed and unemployed women. This suggests that there are significant fertility differential between unemployed women and employed women. These results confirm findings of UN (1985), Weeks (1993), and Llyods (1991). Work in the informal sector reduces the relative risk of getting an

additional child compared to women in the formal sector. The observed effects may suggest that working conditions in the informal sector in Nairobi are not relatively flexible with respect to time and to entering and leaving the labour market as hypothesized. Being in an urban area, the observed effects could also be due to the fact that these women are exposed modern ideas about contraception and childbearing, and that the jobs demand more time than hypothesized. The exact mechanism through which the observed effects occur are not clear since the level of education was not considered.

The analysis of the work fertility in Nairobi can be summarised as follows: Employment status and employment sector clearly displays expected results in explaining fertility differentials between unemployed and employed women but effects for women in the informal sector are not consistent. From theory work in this sector is expected to be incompatible with childbearing and childrearing with respect to time. However no firm conclusions can be drawn from these results since the level of development most clearly influences the shape of relationship between work and fertility in modern sectors. Overall the findings are consistent and agree with the fact that the existence and strength of measured relationship between women's work and fertility are clearly linked to socio-economic development.

5.2 Conclusions

The findings of the study provide evidence that indeed there exists a relationship between women's labour force participation and fertility in Nairobi. As predicted by a number of hypotheses in demographic literature, the analysis revealed that labour

force participation influences fertility in Nairobi and the influence is most significant when the employment is in the informal sector.

The study found that homemakers were more likely to have more children followed by the unemployed women than those employed in the informal sector and in the other group. There were no fertility differentials between women employed in the formal sector and homemakers despite the fact that being a homemaker increased the relative risk of getting an additional child. The mechanism through which these observed effects occur are however unclear since the husbands income was not considered in the analysis.

The most important finding is that the relationship between women's work and fertility in Nairobi is only clear when the settings in which the work is done is considered. This finding indicates that both the employment status and the type of economic sector in which the work is done may have some impact on the extent to which work affects childbearing.

Availability of childcare did not bring about significant fertility differentials between women who had no childcare and those with paid childcare. despite the fact that not having childcare lowered the risk of getting an additional child. This may be attributed to the fact that when childcare substitutes are available and considered acceptable alternatives to maternal care. women who are employed will not feel pressured by time constraints to limit their fertility. It could also be due to the fact that in many urban areas there is low cost domestic help.

Marital status displayed expected results since never married women were less likely to have more children than ever-married women. The observed fertility differentials are associated with lower risk of exposure to coital frequency. The most important ways that work experience can affect actual fertility is through age into marriage and through fertility regulation behaviour. However it was difficult to establish how these mechanisms cause the observed effects among women in Nairobi due to lack of information and the fact that the study did not consider age into marriage.

Generational groups showed consistent results with younger (25-34) group having a higher probability of having an additional child compared to the middle (35-44) group. These findings may be conclusive because older women have virtually completed their fertility but modelling the risk as a hazard, the differences probably reflect the fact that older cohorts may have accelerated their time to birth to next child compared to younger cohorts. However, it was difficult to establish the exact mechanisms through which the observed fertility differentials occurred since education and first age at marriage were not considered in the analysis.

5.1.1 General Conclusion

The relationship between women's labour force participation and fertility is clearly a complex one and it is important to recognise that it is mutually dependent one. That is, the number of children ever born a woman has and the rate at which she has them determines in part whether she works, when she works and the type of work she does. Childbearing on the other hand could be endogenous i.e. choosing to work may as well be motivated by the presence of several children in the household, hence a family chooses to work in order to support the increased number of children. This study may

have been limited in some areas but its contribution to understanding the work fertility relationship in Nairobi has not been inconsequential.

5.2 RECOMMENDATIONS

From the conclusions, the study suggests recommendations for policy makers and for further research.

5.2.1 Recommendations for policy makers

i. It is evident from the study that women's employment influences fertility, the study therefore recommends that a policy be put in place to promote women's labour force participation as one mechanism of accelerating the fertility transition in Kenya.

ii. The study also recommends that a policy and programme be put in place to equip women with knowledge, skills and expertise to enable them work in the formal sector since work in this sector has the greatest impact on the rate at which women give birth.

iii. Finally the study recommends that policies be put in place to speed up the level of development since it clearly shapes up the relationship between work and fertility in the formal and informal sector.

5.2.2 Recommendations for further research

A proper investigation of the work-fertility relationship would require more detailed data than the one used in this study, therefore for further research the following

factors should be incorporated to provide valuable insights that would aid in formulation and testing of finer hypotheses:

i. Information on number of children living, fertility regulation behaviour of women, education and first age at marriage should be included since they are important in any fertility analysis.

ii. Further investigation of the work fertility relationship should consider the organization of work in the informal sector to clearly explain the mechanism through which the observed effects on fertility occur.

iii. Information on husband's occupation and income should be included in further investigation to explain the fertility differentials between homemakers and the unemployed and those employed in the formal sector.

iv. In further research the precise timing of women's work during childbearing, that is before and after marriage, should be included to establish how the relationship changes over a woman's life cycle.

References

Anker, R and Knowles, J.C. (1978). "A Micro Analysis of Female Labour Force Participation in Kenya." World Employment Programme. Working Paper No. 62.Geneva. ILO

Anker, R. (1980). "Female Labour Force Participation Rates In Kenya." World Employment Programme. Working Paper No. 62.Geneva. ILO

Arroyo, R.C. (1997). "Dynamic Micro-Economic Models Of Fertility Choice: A Survey." Journal Of Population Economics 1997 10:23 65

Becker and Tomes, (1976) c.f Yeung, W. (1988). "The Reciprocal Effects of Female Labour Force and Fertility." Dept. of Sociology. University of Alberta. Canada.

Becker, G.S. (1960) c.f **Yeung, W. (1988).** "The Reciprocal Effects of Female Labour Force and Fertility." Dept. of Sociology. University of Alberta. Canada.

Becker, G.S. (1965). "A Theory of Allocation of Time." Economic Journal 75:493-517

Blake, J. (1965). c.f Groat. H.T. Workman. A.G and Neal. A.G. (1976). "Labour Force Participation And Family Formation: A study of Working Mother's." Demography Volume 13 No. 1 February 1976

Blanc, A.C and Lloyd, C.B (1990). "Women's Childrearing Strategy In Relation To Fertility and Employment In Ghana." Working Papers No 16. Population Council. New York

Blau, A.K.and Robin, P.K (1984). "Fertility and Employment and Childcare Costs." Demography Vol. 26 No. 2 May 1984

Bruce, J. and Dwyer, D. (1998) c.f Sen. G. German. A. and Chen. L.C. (eds) "Women's Status Empowerment and Reproductive Outcome." In: Population Policies Reconsidered: Health Empowerment and Rights (1994). Havard University Press

CBS. (1998) "Economic Survey." Ministry of Planning And National Development. Government of Kenya. Government press

CBS. (1998). "National Development Plan 1994-1996". Ministry of Planning. Government of Kenya Government Press

Cramer, J.C. (1980). "Employment Trends of Young Mothers and The Opportunity Cost of Babies in the US". American Sociological Review

Delancy, O. (1982). c.f Sen. G. German. A and Chen. L.C. (eds) "Women's Status Empowerment and Reproductive Outcome." In: Population Policies Reconsidered: Health Empowerment and Rights (1994). Harvard University Press

Desai and Waite, L.J. (1991). "Women's Employment During Pregnancy After The First Birth: Occupational Characteristics and Work Commitment." Working Papers No 26 (1991). Population Council. New York

Duah, O.S. (2000). "Gender Aspects Of The Population Of Sub Saharan Africa: Map of Africa Programme." UNFPA

Easterlin, R. (1973). c.f Yeung, W. (1988). "The Reciprocal Effects of Female Labour Force and Fertility." Dept. of Sociology. University of Alberta. Canada.

Felmlee, D.H (1984). "A Dynamic Analysis of Women's Employment Exits". Demography Volume 21 No .2 May 1984

Groat, H.T, Workman, A.G and Neal, A.G. (1976). "Labour force Participation and Family Formation: A Study Of Working Mothers." Demography Volume 13 No. February 1976

Hass, (1972). c.f Yeung, W. (1988). "The Reciprocal Effects of Female Labour Force and Fertility." Dept. of Sociology, University of Alberta, Canada.

Heckman, J.J. and Walker, J.R. (1991). "Economic Models OF fertility Dynamics: A study of Swedish Fertility." In: Arroyo, R.C. (1997). "Dynamic Micro-Economic Models Of Fertility Choice: A Survey." Journal Of Population Economics 1997 10:23-65

International Labour Organization, (1983). "Women, Work and Development Issues: report of ILO/UNITAR." Geneva ILO

Isaac, S.L, Cairns, G.S and Hockel, N.I. (1985). " Population Policy A Manual for Policy Makers and Planning." Population Family Health, Columbia University

Johnson, G. (1970). "Factors Affecting Labour Force Participation Rates In Ghana." In: Labour Force participation in Low income Countries. Standing and Sheehan, (eds). ILO, Geneva

Kishor, S. (1996). "Urban Women's Employment Trajectories In Ghana And Bolivia". Occupational Papers No.5. Macro International. Calverton Maryland, USA

Kong, S. K. (1989). "Labour Force Participation and Married Women In Contemporary Korea". East West Population Institute

Leibenstein, H. (1977). "The Economic Theory of Fertility" In: Johannes, O. (eds). The Evolution Of Population Theory: A Documentary Source Book. Westport. Greenwood Press 1997

Llyod, C.B. (1991). "The contribution Of World Fertility Survey To An Understanding Of The Relationship Between Women's Work And Fertility." In: Studies In Population 1999: 22.3:144-161 Population Council, Research Div. N.Y

Mason, .K. O and Palan, V.T (1981). "Female Employment and Fertility In Peninsular Malaysia: The Maternal Role Incompatibility Hypothesis Reconsidered, Research Report

Mason, K.O. and Vasmin, D.V. (1980). "Trends and Differences In Peninsular Malaysia Fertility," No. 81-2 Research Report. March 1990 University of Michigan

Mason, K .O (1984). "Female Employment and Fertility in Peninsular Malaysia. The Maternal Role Incompatibility Hypothesis Reconsidered". Demography Vol. 18 No.4 Nov.1981

McCabe, J and Rozenzweig, M. R. (1976). "Female Employment Creation and Family Size." in Population and development. R. Ridker .eds. (Baltimore John Hopkins Press)

Mincer, J. (1963). c.f. Yeung, W. (1988). "The Reciprocal Effects of Female Labour Force and Fertility." Dept. of Sociology. University of Alberta. Canada.

Mott .F. L (1972). "Fertility, life cycle stage and female labour force participation in Rhodes Island," A retrospective overview. Population Association of America

Namboodiri, K and Suchindran, C. M. (1987) "Life Table Techniques And Their Application". Academic Press. Inc

NCPD, CBS (Office of the Vice President and Ministry of Planning and National Development) [Kenya] and Macro International 1997. KDHS. 1998. Claverton. Maryland. USA

NCPD, CBS (Office of the Vice President and Ministry of Planning and National Development) [Kenya] and Macro International 1992. KDHS. 1993. Claverton. Maryland. USA

Odege, D.W. (1993) "Female Educational Attainment, Labour Force Participation And Fertility In Kenya." Unpublished M.A Thesis. PSRI. University of Nairobi

Ogawa. N. (1991). "Female Labour Force Supply and Family Life Size Aspirations In Contemporary Japan." Nupri. Tokyo Japan

Oppong. C. (1980). "A Synopsis of Seven Roles and Status of Women: An Outline of Conceptual and Methodological Approach." World Employment Programme Working Paper No. 94. Geneva ILO

Oppong. C. (1983). "Determinants of Fertility In Developing Countries" in: "Determinants Of Fertility In Developing Countries: FERTILITY REGULATION AND INSTITUTIONAL INFLUENCES volume 2." Bulatao.R.A and Ronaldo L. (eds). Academic Press. 1983

Oppong. C. (1981). c.f. UN. (1985). "Women's Employment and Fertility: A comparative Analysis of World Fertility Survey Results for 38 Developing Countries." United Nations

Oppong. C. (1991) "Relationship Between Women's Work and Demographic Behaviour: Some Research Evidence In West Africa." World Employment Programme Research Working Papers No. 175 ILO. Geneva

Oppong.C. (1984). "The Changing Maternal Role of Ghanaian Women: Impacts of Education. Migration and Employment". Geneva ILO

Otieno. A.T.A. (1999). "Timing and Spacing of Births In Kenya". unpublished PHD Thesis. International Institute for Population Sciences. Mumbai. India

Peek. (1975). c.f. "Mason (1981). "Female Employment and Fertility In Peninsular Malaysia: The Maternal Role Incompatibility Hypothesis Reconsidered. Research Report

Podhisita.C. (1990). "Women's Work and Family Size in Rural Thailand." Population Studies Centre. University of Michigan

Safilois-Rothschild, C. (1977). "The Relationship Between Women's Work and Fertility: Some Methodological and Theoretical Issues". In the Fertility of Working Women: A Synthesis of International Research. Kupsinky, S (Eds) Praegar Publishers New York

Shapiro, D and Mott, F. (1979). "Labour Supply Behaviour Of New and Prospective Mothers." Demography 16:199-208

Standing, G. (1983). "Labour Participation and Development." International Labour Organization. Geneva

Stolenzberg, R.M and Waite, L.J. (1984) "Local labour markets, children and labour force participation of wives." Demography Volume 21 No 2 May (1984). Population Association of America

Stycos, J. M and Weller, R.H (1967). "Women's Working Roles and Fertility." Demography 4: 210-217

Terry, G.B. (1976). "Labour Force and Family formation: A Study of Working mothers." Demography Volume 13 No. 1 Feb 1976

Trussel, J. (1983). "A Hazards Model Analysis of The Covariates of Infant And Child Mortality in Sri Lanka." Demography Volume 20, No. 1 February 1983. Population Association Of America

Trussel, J. and Guinane, T. (1993). "Techniques of Event History Analysis." Department of Economic and Office of Population Research, Princeton University

UN, (1985). "Women's Employment and Fertility: A comparative Analysis of World Fertility Survey Results for 38 Developing Countries." United Nations.

Ware, H. (1977). c.f. Kupsinky, S (eds). "The Relationship Between Women's Work and Fertility: Some Methodological and Theoretical Issues". In the Fertility of

Working Women: A Synthesis of International Research. Praegar Publishers. New York

Weeks, J.R. (1993). Population "An Introduction To Concepts and Issues." San Diego State University. Wardsworth Publishers

Weller, H.R. (1977). c.f. Safilois-Rothschild. C. (1977). "The Relationship Between Women's Work and Fertility: Some Methodological and Theoretical Issues". In the Fertility of Working Women: A Synthesis of International Research. Kupsinky. S (Eds). Praegar Publishers New York

Weller, H.R. (1983). "The Gainful Employment of Females and Fertility: With Specific Reference to Rural Areas of Developing Countries." Centre for The Study of Population Institute for Social Research. Florida State University.

Willis, R. (1973) c.f. Yeung, W. (1988). "The Reciprocal Effects of Female Labour Force and Fertility." Dept. of Sociology. University of Alberta. Canada.

Women's Bureau, (1993). "A Gender Analysis of Employment And Earnings." Issue No. 8. Ministry Of Culture And Social Services. Government of Kenya

Women's Bureau, (1993). "A Gender Analysis Of Participation In Community Development. Public Affairs. Politics and Decision Making. Issue No. 7 Ministry Of Culture And Social Services. Government of Kenya

Yeung, W. (1988). "The Reciprocal Effects of Female Labour Force and Fertility." Dept. of Sociology. University of Alberta. Canada.

Yuossef, N.H. (1982). c.f Sen. G. German. A. and Chen. L.C. (eds) "Women's Status Empowerment and Reproductive Outcome." In: Population Policies Reconsidered: Health Empowerment and Rights (1994). Harvard University Press

Zembik, B.A. (1990) "Labour Market Structure and Fertility Differences Among Peurto Rican Women: The Effects of Economic And Social Policies On Opportunity Cost." Population Studies Centre. University of Michigan

Appendices

Appendix I: Problems Encountered In The Field

The Nairobi Urban Integration Project was affected by a myriad of problems from the onset. The data collection was delayed by three weeks due to logistical problems. Such problems were due to delay by the Central Bureau of statistics who were to help in the identification of the enumeration areas. Once they were available there was also the problem of transport co-ordination leading to wastage of time. The maps used were also not up to date hence taking a lot of time in identifying the areas.

Another problem was insecurity in certain areas leading to poor coverage of the proposed areas or complete omission. Such areas included Mathare 4A, Mukuru Kwa Njenga, Mlango Kubwa, Korogocho and Bangaldesh.This problem reduce the sample size, since the expected 35% household numbers were not achieved, which is bound to introduce biasness in the sample.

The rains sometime in March rendered areas in slum areas inaccessible causing delays in the data collection. Such areas were Mashimoni, korogocho, Laini Saba and Lindi in Kibera division. Poor transport systems also paused problems in areas where homes were distant apart like in Karen area and Thome v. This meant that the research assistants had to walk long distances in order to get respondents. This resulted in a lot of time being wasted and more money being spent than had been budgeted for.

In some mid level estates there was the problem of missing respondents due to engagement in work or travel. This forced research assistants to make repeated call

backs leading to fatigue. Examples of such areas were Ngei, Madaraka and Akiba. Due to this many of this respondents were left out of the sample. Secondly, some areas such as Tangole had deserted structures. In areas such as Habib, ThomeV, the research assistants were denied access to the areas greatly reducing the number of respondents.

Suspicion caused by the sensitive issue of land grabbing caused some respondents not to participate, thinking that the research assistants were interested in finding out their tenure status e.g. in Dandora area. In areas such as Mathare North, Hazina and Baba dogo most of the inhabitants who were interviewed were below 34 years. This reduced the number of respondents qualifying for biographies.

Some supervisors neglected their work slowing down the data collection process and poor editing of questionnaires. This was a source of problems, as questionnaires were not checked for incompleteness and errors at this level.

The problem that greatly affected the sample the sample size was the total omission of some greater Nairobi due to time, financial constraints and logistical problems. This is expected to be a source of bias in the sample since these areas were to constitute 15% of the entire sample.

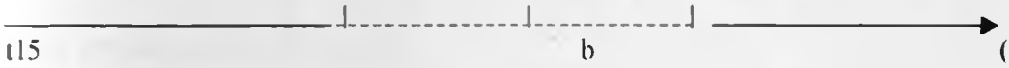
The data collection exercise was planned for seven and a half weeks from mid January to mid March but due to problems mentioned above and delays in paying the research assistants the exercise took twelve weeks in total.

Appendix II: Censoring

The study of survival data is complicated by incomplete data, which occurs when the outcome of a particular unit is unknown at the end of the study. When this happens, we refer to it as censoring. That is for some individuals brought under observation the available information on failure time may be incomplete due to migration or death. We have right censoring when the time for the end of the spell is unknown given that it was known at the beginning of the study and left censoring when the start is unknown. There exists also an aspect when we have both left and right censoring. The major aspect of censoring is that we have incomplete data. In the study we had several cases of censoring which were omitted from the analysis.

In this study the space of observation is Nairobi, while the time of entry into observation is 15 years since this is the time when a woman is first at risk of experiencing a birth. The observation period is terminated at the time of interview. The respondents who have not experienced a birth at time of interview are also censored cases, the censoring time being the interval between age of entry and end of survey.

The study was restricted to women who had continuously lived in Nairobi from the age of fifteen and had experienced a birth or subsequent births before the censoring date. The censoring event in this case is experiencing a birth. Restriction was important due to the fact that social and demographic analysis ignores the effect of time space relationships. Below are examples of censored cases that were controlled for in the study.



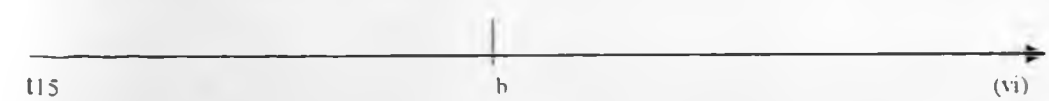
These individuals were in Nairobi from age fifteen but left and experienced a birth outside Nairobi before coming back under observation again.

These individuals came into Nairobi after age 15 and experienced a birth in Nairobi.

These individuals were out of Nairobi at age 15. they experienced abirth ooutside and later moved into Nairobi.

These were out of Nairobi at age 15. they came under observation. they went out of obseravtion where they experienced a birth before coming back under observation again.

These individuals were out of Nairobi at age 15. they came under observation then went out and later came back into nairobi where they experienced a birth.



These individuals continuously lived in Nairobi from age 15 to the time of interview and experienced a birth in Nairobi.

The periods for individuals numbered (i) –(v) were censored it the study. it is only the period for individuals numbered (vi) that were considered in the analysis of work fertility relationship in Nairobi. The type of censoring in this study is referred to as random censoring. In the survey respondents enter the observation randomly with respect to age. To deal with random type. the product-limit estimate of survival function is used since all respondents are kept under observation until the end of the survey. If $t_1,...,t_n$ are the exact survival times of n individuals in the sample. an estimate of the survival function. S(t) is the observation proportion of individuals in the sample who survive longer than t: i.e.|

Appendix III: Testing and Checking Assumptions of the Cox Model

If a variable is dichotomous with the values 1and 2. and acts upon the hazard function in accordance with the proportionality assumption then $l_n(-l_n|s_{01}(t)|)$ and $l_n(-l_n|s_{02}(t)|)$ must have parallel plots. Departure from time invariant separation of the two plots is an indication of possible violation of the assumption. The test of the hazard assumption assumes homogeneity of variance across the risk sets. If the plotted lines are reasonably parallel. the proportionality assumption has not been violated. and it is appropriate to base the estimation for that variable on a single baseline survivor function. if not alternative modelling choices have to be used. The graphs showing whether the variables hold the assumption are presented below.

Figure 1: Test of hazard assumption for generational groups

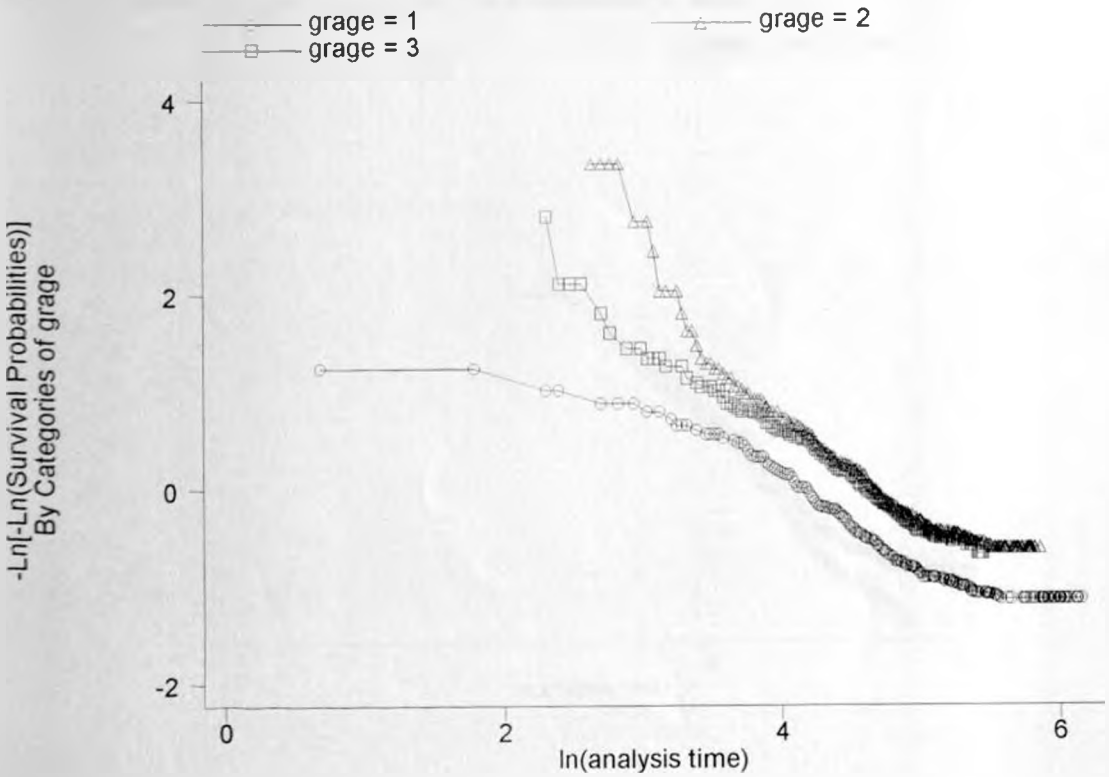


Figure 2: Test of hazard assumption for marital status

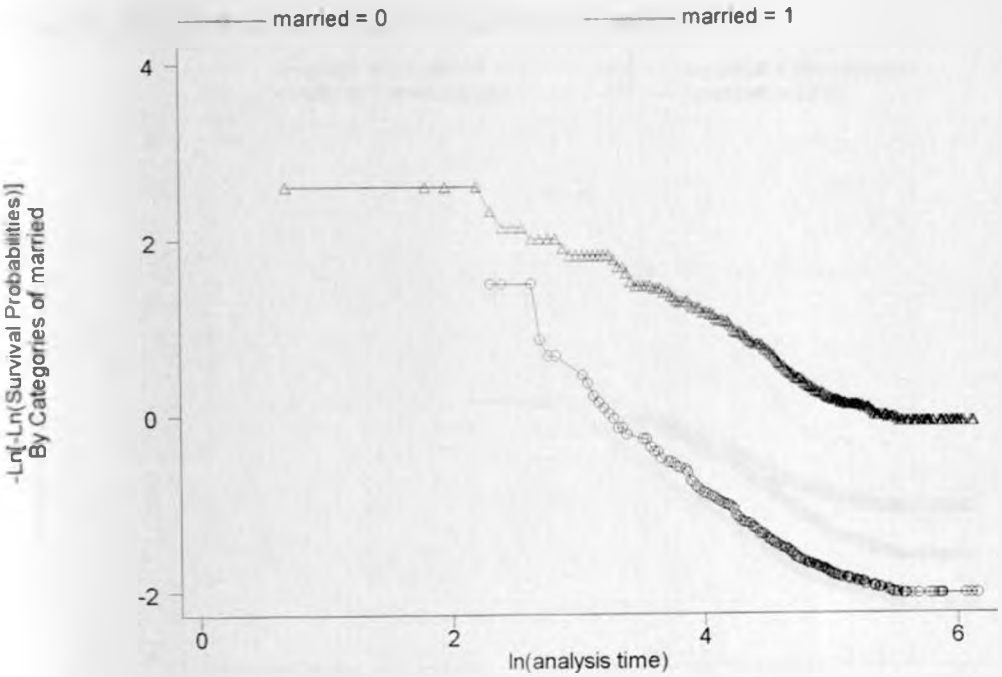


Figure 3: Test of hazard assumption for availability of childcare

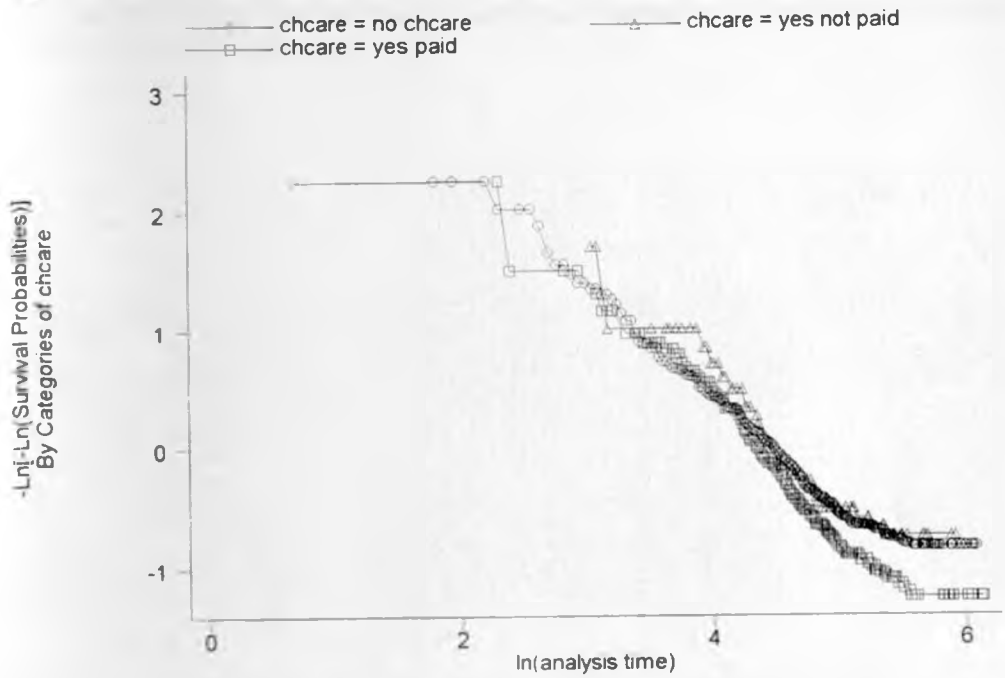
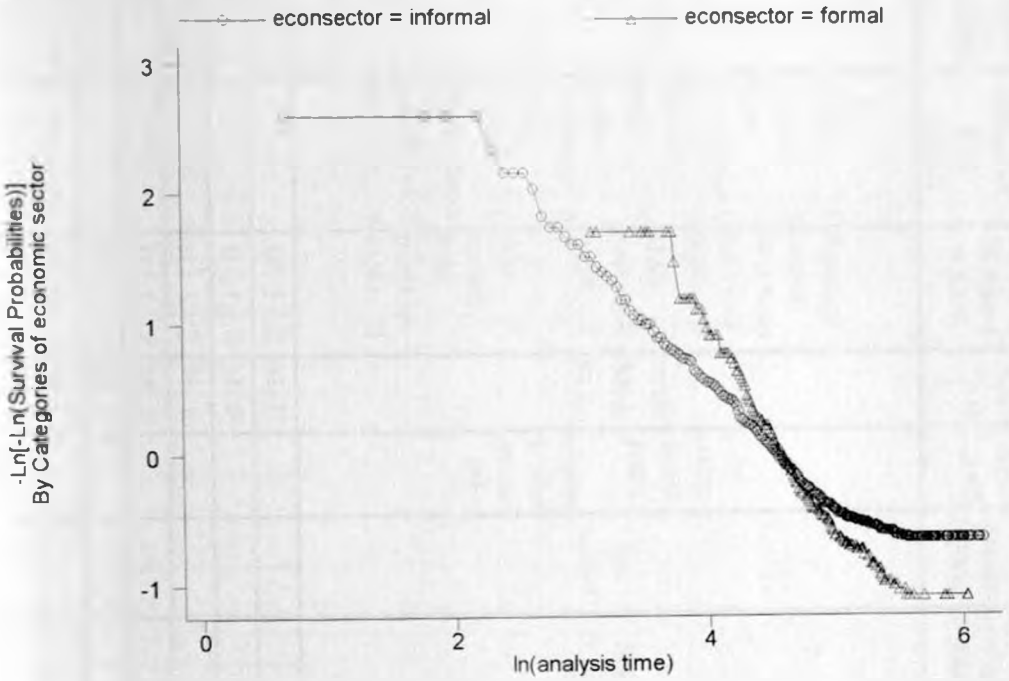


Figure 4: Test of hazards assumption for employments status

Note: the plots violate the assumption: therefore an interaction was created with economic sector to form employment status

Figure 5: Test for hazards assumption for economic sector



Note: the plots violate the assumption. therefore an interaction was created with economic sector to form employment status.

Appendix IV

HOUSEHOLD QUESTIONNAIRE

Name (Q000)	Serial N° (Q001)	Relation to Head of hhd (Q002)	Residential status (Q003)	Sex (Q004)	Age (Q005)	Ethnic group (Q006)	Nationality (Q007)	Religion (Q008)	Marital status (Q009)	Birth place (Q010)	Residence 5 years ago (Q011)	School attend (Q012)	Level at school (Q013)	Labour particip (last 7 days) (Q014)	Biography	
															Eligible Q015)	Select (Q01
		Head 1 Spouse 2 Son /daughter 3 Brother / sister 4 Father /mother 5 Other relative 6 Non relative Employee 8 NS /DK 9	*Regularly present::* Not here previous night 0 Here previous night 1 *Not resident:* here previous night 2	circle **M**ale **F**emale	In completed years. Under 1 year write 00	See codes	See codes	See codes	Never married 1 Staying together 2 Monog3 Polyg 4 Widow5 Divorced 6 Separated 7 NS/DK 9	See codes	*Residence in January 1996* See codes	Never went 0 Attend now 1 Left school 2	**Primary**: uncompleted 1 completed2 **Secondary** uncompleted 3 completed- **High school** 5 **Post-second. training** 6 **University** NS/DK 9	Work for pay 0 Leave/sick 1 Family/own buz 2 Seek 1st job3 Seek job (worked before) 4 Student 5 Retired 6 Incapacitated 7 Homemaker 8 Other (*specify*) 9	*To be filled only by supervisor*	*To b filled o by supervi*
	0 1		0 1 2	M F								0 1 2			Yes No	Yes
	0 2		0 1 2	M F								0 1 2			Yes No	Yes
	0 3		0 1 2	M F								0 1 2			Yes No	Yes
	0 4		0 1 2	M F								0 1 2			Yes No	Yes
	0 5		0 1 2	M F								0 1 2			Yes No	Yes
	0 6		0 1 2	M F								0 1 2			Yes No	Yes
	0 7		0 1 2	M F								0 1 2			Yes No	Yes
	0 8		0 1 2	M F								0 1 2			Yes No	Yes
	0 9		0 1 2	M F								0 1 2			Yes No	Yes
	1 0		0 1 2	M F								0 1 2			Yes No	Yes

	1	1		0	1	2	M	F							0	1	2			Yes	No	Yes	N
	1	2		0	1	2	M	F							0	1	2			Yes	No	Yes	N
	1	3		0	1	2	M	F							0	1	2			Yes	No	Yes	N
	1	4		0	1	2	M	F							0	1	2			Yes	No	Yes	N
	1	5		0	1	2	M	F							0	1	2			Yes	No	Yes	N

Fill a continuation form if more than 15 people in the household

NUMBER FEMALE: Q017 [|] **NUMBER MALE:** Q018 [|] **TOTAL NUMBER:** Q019 [|]

HOUSEHOLD CONDITIONS AND AMENITIES (to be asked of the household head or any other responsible person)

Dwelling units		Main dwelling unit **tenure status** (Q022)	Dominant construction **materials of main dwelling unit**			Main source of **water** (Q026)	Main **human waste disposal** (Q027)	Main **cooking fuel** (Q028)	Main type of **lighting** (Q029)
(Q020) How many dwelling units does this household occupy?	(Q021) How many habitable rooms does (do) this (these) dwelling units contain?	*If owner occupied:* Purchased 1 Constructed 2 Inherited 3 *If rented/provided* Govnt 4 Local auth. 5 Parastatal 6 Private comp 7 Individual 8 Other 9	**Roof** (Q023) Corrugated iron sheet 1 Tiles 2 Concrete 3 Asbestoes sheets 4 Grass 5 Makuri 6 Tin 7 Other 9	**Wall** (Q024) Stone 1 Brick/block 2 Mud/wood 3 Mud/cement 4 Wood only 5 Corrugated iron sheets 6 Grass/reeds 7 Tin 8 Other 9	**Floor** (Q025) Cement 1 Tiles 2 Wood 3 Earth 4 Other 9	Well 1 Borehole 2 Piped/tap 3 Private vendors 4 Community-owned kiosk 5 Other 9	Main sewer 1 Septic tank 2 Pit latrine 3 Bucket latrine 4 Field/Bush 5 Paid toilet 6 Drains 7 Other 9	Electricity 1 Paraffin 2 Gas 3 Firewood 4 Charcoal 5 Solar 6 Other 9	Electricity 1 Pressure lamp 2 Lantern 3 Tin lamp 4 Fuel wood 5 Solar 6 Other 9
[|]	[|]								

CHARACTERISTICS OF THE DECEASED OF THE FIVE (5) PAST YEARS (FROM 1996 TO 2001) AT THE TIME OF THEIR DEATH

"In the last five years, from January 1996 to today, did any resident of this household died for any particular reason?"

Name	Serial N° (Q030)	Relation to Head of hhd (Q031)	Residential status at death (Q032)	Sex (Q033)	Age at death (Q034)	Year death (Q035)	Ethnic group (Q036)	Nationality (Q037)	Religion (Q038)	Marital status (Q039)	Birth place (Q040)	Residence 5 years ago (Q041)	School attend (Q042)	Level at school (Q043)	Labour partic before death (Q044)	Cause of dea (Q045)
		Head 1 Spouse 2 Son /daughter 3 Brother / sister 4 Father /mother 5 Other relative 6 Non relative Employee 8 NS /DK 9	*Regularly present::* Not here previous night 0 Here previous night 1 *Not resident:* here previous night 2	circle **M**ale **F**emale	In comp-leted years. Under 1 year write 00		See codes	See codes	See codes	Never married 1 Staying together 2 Monog3 Polyg 4 Widow5 Divorced 6 Separated 7 NS/DK 9	See codes	*Residence in January 1996* See codes	Never went 0 Attended at the time of death 1 Left school 2	**Primary**: uncompleted 1 completed2 **Secondary** uncompleted 3 completed4 **High school** 5 **Post-second. training** 6 **University** 7 NS/DK 9	Work for pay 0 Leave/sick 1 Family/own buz 2 Seek 1st job3 Seek job (worked before) 4 Student 5 Retired 6 Incapacitated 7 Homemaker 8 Other (*specify*) 9	Transport accident Other accide Attack Suicide Illness up to: - 1 month - 6 months + than 6 months Recurrent illness Other (*specify*
	1		0 1 2	M F									0 1 2			
	2		0 1 2	M F									0 1 2			
	3		0 1 2	M F									0 1 2			
	4		0 1 2	M F									0 1 2			
	5		0 1 2	M F									0 1 2			
	6		0 1 2	M F									0 1 2			
	7		0 1 2	M F									0 1 2			

Fill a continuation form if more than 7 people deceased in the household

NUMBER FEMALE DECEASED: Q046 ☐☐

NUMBER MALE DECEASED: Q047 ☐☐

TOTAL NUMBER DECEASED: Q048 ☐☐

Name of interviewer and code: _____ /__/__/ Q050

Name of field supervisor and code: _____ /__/__/ Q051

DATE OF INTERVIEW /___/___/2001 Q052 Q053

Time at the beginning of the interview /____h/____mn/ Q054 Q055

Identifier /_1/ **EA** /__/__/__/ **CLUSTER** /__/__/ **STRUCTURE** /__/__/ **HOUSEHOLD** /__/__/ **RESPONDENT** /__/__/

MODULE 1: SOCIAL AND DEMOGRAPHIC CHARACTERISTICS OF RESPONDENT

Name of the respondent ***(not coded, confidential)***	*First name*	*Last (family) name*
101-102 Date of birth	Month /__/__/	Year /__/__/
103 Gender	Male 1 Female 2	
104 What was your mother's religion at your birth?	*(see hhold questionnaire)* /__/__/	Specify if other Christian or other religion *(coded* 13 or 14*)* _____
105 Have you ever changed religion since birth?	Yes **1 Go to 106** No **0 Go to 114**	
106-107 When did you first change religion?	Month /__/__/	Year /__/__/
108 What was your new religion then?	*(see hhold questionnaire)* /__/__/	Specify if other Christian or other religion *(coded* 13 or 14*)* _____
109 Do you have the same religion now?	Yes **1 Go to 114** No **0 Go to 110**	
110 How many religions did you have since birth?	Number of religious affiliations /__/__/	
111-112 When did you last change religion?	Month /__/__/	Year /__/__/

113 What is your religion now?	*(see hhold questionnaire)* /__/__/	Specify if other Christian other religion *(coded* 13 14*)* _____

114 **What was/is your father's last level of education?**	No school 0 Primary 1 Secondary 2 High school 3 Post-secondary training 4 University 5 DK 9
115 From which ethnic group is your father? *(specify)*	_____ /__/__/__/
116 Father's main profession when respondent was 15 years old *(specify)*	_____ /__/__/__/
117 **What was/is your mother's last level of education?**	No school 0 Primary 1 Secondary 2 High school 3

	Post-secondary training 4 University 5 DK 9
118 From which ethnic group is your mother? *(specify)*	_____ /__/__/__/
119 Mother's main profession when respondent was 15 years old *(specify)*	_____ /__/__/__/
120 What is your present nationality?	*(see hhold questionnaire)* /__/__/

MODULE 3: SCHOOL, APPRENTICESHIP & ACTIVITY

/_3/ EA /__/__/__/ CLUSTER /__/__/ STRUCTURE /__/__/ HOUSEHOLD /__/__/ RESPONDENT /__/__/

INTERVIEWER: THIS MODULE IS ABOUT ACTIVITIES OF THE RESPONDENT. REGARDLESS HIS/HER PLACE OF RESIDENCE YOU MUST NECESSARILY FILL IN AT LEAST ONE COLUMN FOR EVERY ACTIVITY OR STATUS IN THE SAME COMPANY.
PLEASE REFER TO THE AGEVENT FORM TO FILL IN QUESTIONS 301 TO 304.

FROM THE AGE OF 6 ONWARD	A 01	A 02	A 03	A 04	A 05
301 No of the period *(see AGEVENT form)*	/__/__/	/__/__/	/__/__/	/__/__/	/__/__/
302 How many months are there between the end of the last period and the current one? *or* How many months did you spend unemployed before finding this job?		N° of months/__/__/ *(if more than 6 months and if necessary fill in an unemployment period)*	N° of months/__/__/ *(if more than 6 months and if necessary fill in an unemployment period)*	N° of months/__/__/ *(if more than 6 months and if necessary fill in an unemployment period)*	N° of months/__/_ *(if more than 6 months and if necessary fill in an unemployment period)*
303-304 When did you start this activity?	/__/__/ /__/__/ Month Year	/__/__/ /__/__/ Month Year	/__/__/ /__/__/ Month Year	/__/__/ /__/__/ Month Year	/__/__/ /__/_ Month Yea
305 Was it a period of...?	Study 1-> 306 Illness 2-> 309 Invalidity 3-> 309 Retirement 4-> 309 Homemaker 5-> 309 Unemploym. 6-> 309 Other inactiv. 7-> 309 Apprenticeship or employment 8-> 310	Study 1-> 306 Illness 2-> 309 Invalidity 3-> 309 Retirement 4-> 309 Homemaker 5-> 309 Unemploym. 6-> 309 Other inactiv. 7-> 309 Apprenticeship or employment 8-> 310	Study 1-> 306 Illness 2-> 309 Invalidity 3-> 309 Retirement 4-> 309 Homemaker 5-> 309 Unemploym. 6-> 309 Other inactiv. 7-> 309 Apprenticeship or employment 8-> 310	Study 1-> 306 Illness 2-> 309 Invalidity 3-> 309 Retirement 4-> 309 Homemaker 5-> 309 Unemploym. 6-> 309 Other inactiv. 7-> 309 Apprenticeship or employment 8-> 310	Study 1-> 3(Illness 2-> 3(Invalidity 3-> 3(Retirement 4-> 3(Homemaker 5-> 3(Unemploym. 6-> 3(Other inactiv. 7-> 3(Apprenticeship or employment 8-> 3
306 EDUCATION LEVEL *(only for period of studying)* What was your level of education reached at the end of this period?	Primary 1 Secondary 2 High school 3 Post-secondary educ. 4 University 5	Primary 1 Secondary 2 High school 3 Post-secondary educ. 4 University 5	Primary 1 Secondary 2 High school 3 Post-secondary educ. 4 University 5	Primary 1 Secondary 2 High school 3 Post-secondary educ. 4 University 5	Primary Secondary High school Post-secondary educ. University

307 **What was the highest certificate or degree you attained during this period?**	None 0 KCPE/CPE/KAPE/ KPE 1 KJSE 2 KCSE/KCE/EACE/ CSC 3 KACE/EAACE/HSE Diploma/certificate 5 Bachelor's degree 6 Masters degree 7 Other ________ 9	None 0 KCPE/CPE/KAPE/ KPE 1 KJSE 2 KCSE/KCE/EACE/ CSC 3 KACE/EAACE/HSE Diploma/certificate 5 Bachelor's degree 6 Masters degree 7 Other ________ 9	None 0 KCPE/CPE/KAPE/ KPE 1 KJSE 2 KCSE/KCE/EACE/ CSC 3 KACE/EAACE/HSE Diploma/certificate 5 Bachelor's degree 6 Masters degree 7 Other ________ 9	None 0 KCPE/CPE/KAPE/ KPE 1 KJSE 2 KCSE/KCE/EACE/ CSC 3 KACE/EAACE/HSE Diploma/certificate 5 Bachelor's degree 6 Masters degree 7 Other ________ 9	None KCPE/CPE/KAPE, KPE KJSE KCSE/KCE/EACE CSC KACE/EAACE/HS Diploma/certificate Bachelor's degree Masters degree Other ________
308 **What type of educational establishment were you in?**	Public 1 Private religious 2 Private non-religious 3 **Go to 309**	Public 1 Private religious 2 Private non-religious 3 **Go to 309**	Public 1 Private religious 2 Private non-religious 3 **Go to 309**	Public 1 Private religious 2 Private non-religious 3 **Go to 309**	Public Private religious Private non-religious **Go to 30**
309 SUPPORT OF STUDENTS AND INACTIVES (illness, invalidity, retirement, homemaker, unemployment, other period of inactivity)					
How were you mainly supported during this period?	Retirement or other benefits 1 Private/property income or savings 2 Scholarship only 3 Scholarship & stipend 4 Spouse 5 Older gen. relatives 6 Younger gen. relatvs 7 Other relatives 8 Welfare 9 Petty jobs 10 Other ________ 99 **Go to 333**	Retirement or other benefits 1 Private/property income or savings 2 Scholarship only 3 Scholarship & stipend 4 Spouse 5 Older gen. relatives 6 Younger gen. relatvs 7 Other relatives 8 Welfare 9 Petty jobs 10 Other ________ 99 **Go to 333**	Retirement or other benefits 1 Private/property income or savings 2 Scholarship only 3 Scholarship & stipend 4 Spouse 5 Older gen. relatives 6 Younger gen. relatvs 7 Other relatives 8 Welfare 9 Petty jobs 10 Other ________ 99 **Go to 333**	Retirement or other benefits 1 Private/property income or savings 2 Scholarship only 3 Scholarship & stipend 4 Spouse 5 Older gen. relatives 6 Younger gen. relatvs 7 Other relatives 8 Welfare 9 Petty jobs 10 Other ________ 99 **Go to 333**	Retirement or other benefits Private/property income or savings Scholarship only Scholarship & stipend Spouse Older gen. relatives Younger gen. relatvs Other relatives Welfare Petty jobs Other ________ **Go to 33**
310 FOR ALL EMPLOYED OR APPRENTICES					
What was your main occupation? *or* **What was the trade/craft/profession that you were learning?** *(specify)*	________ /__/__/__/	________ /__/__/__/	________ /__/__/__/	________ /__/__/__/	________ /__/__/__

311 **What was your status during this period of activity?**	Salaried 1-> 318 Apprentice 2-> 317 Family business3-> 317 Own business 4-> 312	Salaried 1-> 318 Apprentice 2-> 317 Family business3-> 317 Own business 4-> 312	Salaried Apprentice 2-> 317 Family business3-> 317 Own business 4-> 312	Apprentice 2-> 317 Family business3-> 317 Own business 4-> 312	Apprentice 2-> 31 Family business3-> 3 Own business 4-> 31
312 FOR OWN BUSINESS **How many employees/apprentices worked for you at the beginning of this period?**	0 (self-employed) 1 1-2 persons 2 3-5 persons 3 6-10 persons 4 More than 10 5	0 (self-employed) 1 1-2 persons 2 3-5 persons 3 6-10 persons 4 More than 10 5	0 (self-employed) 1 1-2 persons 2 3-5 persons 3 6-10 persons 4 More than 10 5	0 (self-employed) 1 1-2 persons 2 3-5 persons 3 6-10 persons 4 More than 10 5	0 (self-employed) 1-2 persons 3-5 persons 6-10 persons More than 10
313 **How many employees/apprentices worked for you at the end of this period?**	0 (self-employed) 1 1-2 persons 2 3-5 persons 3 6-10 persons 4 More than 10 5	0 (self-employed) 1 1-2 persons 2 3-5 persons 3 6-10 persons 4 More than 10 5	0 (self-employed) 1 1-2 persons 2 3-5 persons 3 6-10 persons 4 More than 10 5	0 (self-employed) 1 1-2 persons 2 3-5 persons 3 6-10 persons 4 More than 10 5	0 (self-employed) 1-2 persons 3-5 persons 6-10 persons More than 10
314 How did you keep your accounts record?	Personal book 1 Formal accountancy 2 No written accounts 3	Personal book 1 Formal accountancy 2 No written accounts 3	Personal book 1 Formal accountancy 2 No written accounts 3	Personal book 1 Formal accountancy 2 No written accounts 3	Personal book Formal accountancy No written accounts
315 Was your company registered? *(PIN, VAT)*	Yes 1 No 0	Yes 1 No 0	Yes 1 No 0	Yes 1 No 0	Yes No
316 **To set up this business what was the main source of finance you resorted to?**	None 0 Own savings 1 Inheritance 2 Family assistance 3 Spousal support 4 Merry-go-round 5 Association 6 Credit from suppliers7 Bank loan 8 NGO loan 9 Co-operative loan 10 Personal loan 11 Shylock 12 Other ____________ 99 **Go to 325**	None 0 Own savings 1 Inheritance 2 Family assistance 3 Spousal support 4 Merry-go-round 5 Association 6 Credit from suppliers7 Bank loan 8 NGO loan 9 Co-operative loan 10 Personal loan 11 Shylock 12 Other ____________ 99 **Go to 325**	None 0 Own savings 1 Inheritance 2 Family assistance 3 Spousal support 4 Merry-go-round 5 Association 6 Credit from suppliers7 Bank loan 8 NGO loan 9 Co-operative loan 10 Personal loan 11 Shylock 12 Other ____________ 99 **Go to 325**	None 0 Own savings 1 Inheritance 2 Family assistance 3 Spousal support 4 Merry-go-round 5 Association 6 Credit from suppliers7 Bank loan 8 NGO loan 9 Co-operative loan 10 Personal loan 11 Shylock 12 Other ____________ 99 **Go to 325**	None Own savings Inheritance Family assistance Spousal support Merry-go-round Association Credit from suppliers Bank loan NGO loan Co-operative loan Personal loan Shylock Other ____________ **Go to 32**

317 FOR APPRENTICES AND FAMILY BUSINESS

How were you mainly supported during this period?	Older gen. relatives 1 Younger gen. relatvs 2 Other relatives 3 Manager/boss 4 Welfare 5 Petty jobs 6 Other ______ 9 **Go to 321**	Older gen. relatives 1 Younger gen. relatvs 2 Other relatives 3 Manager/boss 4 Welfare 5 Petty jobs 6 Other ______ 9 **Go to 321**	Older gen. relatives 1 Younger gen. relatvs 2 Other relatives 3 Manager/boss 4 Welfare 5 Petty jobs 6 Other ______ 9 **Go to 321**	Older gen. relatives 1 Younger gen. relatvs 2 Other relatives 3 Manager/boss 4 Welfare 5 Petty jobs 6 Other ______ 9 **Go to 321**	Older gen. relatives Younger gen. relatvs Other relatives Manager/boss Welfare Petty jobs Other ______ **Go to 32**
318 FOR SALARIED EMPLOYEES					
How did you obtain this job?	Family relations 1 Personal relations 2 Employment bureau 3 Adverts 4 Association 5 Own initiative 6 Other ______ 9	Family relations 1 Personal relations 2 Employment bureau 3 Adverts 4 Association 5 Own initiative 6 Other ______ 9	Family relations 1 Personal relations 2 Employment bureau 3 Adverts 4 Association 5 Own initiative 6 Other ______ 9	Family relations 1 Personal relations 2 Employment bureau 3 Adverts 4 Association 5 Own initiative 6 Other ______ 9	Family relations Personal relations Employment bureau Adverts Association Own initiative Other ______
319 How was your main record of payment?	No record 0 Logbook 1 Payment voucher 2 Payslip 3	No record 0 Logbook 1 Payment voucher 2 Payslip 3	No record 0 Logbook 1 Payment voucher 2 Payslip 3	No record 0 Logbook 1 Payment voucher 2 Payslip 3	No record Logbook Payment voucher Payslip
320 **What was the main mode of payment?**	Fixed salary/wage 1 Pay per job 2 Commission or % 3 In kind 4	Fixed salary/wage 1 Pay per job 2 Commission or % 3 In kind 4	Fixed salary/wage 1 Pay per job 2 Commission or % 3 In kind 4	Fixed salary/wage 1 Pay per job 2 Commission or % 3 In kind 4	Fixed salary/wage Pay per job Commission or % In kind
321 PROMOTION (for salaried/employee, apprentices and family business)					
Since the beginning of this period have you been promoted?	Yes 1 **Go to 322** No 0 **Go to 325**	Yes 1 **Go to 322** No 0 **Go to 325**	Yes 1 **Go to 322** No 0 **Go to 325**	Yes 1 **Go to 322** No 0 **Go to 325**	Yes 1 **Go to 32** No 0 **Go to 32**
322-323 **When were you promoted?**	/__/__/ /__/__/ Month Year	/__/__/ /__/__/ Month Year	/__/__/ /__/__/ Month Year	/__/__/ /__/__/ Month Year	/__/__/ /__/__ Month Yea
324 **What was your new position?** *(specify)*	______ /__/__/__/	______ /__/__/__/	______ /__/__/__/	______ /__/__/__/	______ /__/__/__/
325 FOR ALL EMPLOYED RESPONDENTS: CHANGE IN EDUCATION LEVEL (through evening classes, parallel courses…)					
During that period, did you study to obtain higher educational qualification?	Yes 1 **Go to 326** No 0 **Go to 330**	Yes 1 **Go to 326** No 0 **Go to 330**	Yes 1 **Go to 326** No 0 **Go to 330**	Yes 1 **Go to 326** No 0 **Go to 330**	Yes 1 **Go to 3** No 0 **Go to 3**

326 **What level of education did you attain?**	None 0 KCPE/CPE/KAPE/ KPE 1 KJSE 2 KCSE/KCE/EACE/ CSC 3 KACE/EAACE/HSE Diploma/certificate 5 Bachelor's degree 6 Masters degree 7 Other ________ 9	None 0 KCPE/CPE/KAPE/ KPE 1 KJSE 2 KCSE/KCE/EACE/ CSC 3 KACE/EAACE/HSE Diploma/certificate 5 Bachelor's degree 6 Masters degree 7 Other ________ 9	None 0 KCPE/CPE/KAPE/ KPE 1 KJSE 2 KCSE/KCE/EACE/ CSC 3 KACE/EAACE/HSE Diploma/certificate 5 Bachelor's degree 6 Masters degree 7 Other ________ 9	None 0 KCPE/CPE/KAPE/ KPE 1 KJSE 2 KCSE/KCE/EACE/ CSC 3 KACE/EAACE/HSE Diploma/certificate 5 Bachelor's degree 6 Masters degree 7 Other ________ 9	None KCPE/CPE/KAPE, KPE KJSE KCSE/KCE/EACE CSC KACE/EAACE/HS Diploma/certificate Bachelor's degree Masters degree Other ________
327 What type of educational establishment were you in?	Public 1 Private religious 2 Private non-religious 3	Public 1 Private religious 2 Private non-religious 3	Public 1 Private religious 2 Private non-religious 3	Public 1 Private religious 2 Private non-religious 3	Public Private religious Private non-religious
328-329 **When did you attain that level?**	/__/__/ /__/__/ Month Year	/__/__/ /__/__/ Month Year	/__/__/ /__/__/ Month Year	/__/__/ /__/__/ Month Year	/__/__/ /__/__ Month Yea
330 CHARACTERISTICS OF THE COMPANY					
Which economic sector did your company/organisation belong to?	Public service 1 Parastatal 2 Private company 3 Export proc. zone 4 NGO 5 International organ. 6 Small business 7 Household 8 Other ________ 9	Public service 1 Parastatal 2 Private company 3 Export proc. zone 4 NGO 5 International organ. 6 Small business 7 Household 8 Other ________ 9	Public service 1 Parastatal 2 Private company 3 Export proc. zone 4 NGO 5 International organ. 6 Small business 7 Household 8 Other ________ 9	Public service 1 Parastatal 2 Private company 3 Export proc. zone 4 NGO 5 International organ. 6 Small business 7 Household 8 Other ________ 9	Public service Parastatal Private company Export proc. zone NGO International organ. Small business Household Other ________
331 In which estate/area was your company located during this period? *For Nairobi: estate/area* *For outside Nairobi: nearest town or country*	________ /__/__/__/	________ /__/__/__/	________ /__/__/__/	________ /__/__/__/	________ /__/__/__/

332 TRANSPORTATION MEANS **What was your main transport (longer distance covered) for going to work during this period?**	Work at home 1 On foot 2 Cycle 3 Motorbike 4 Own car 5 Shared car 6 Company's bus 7 Matatu 8 Taxi 9 KBS bus 10 Train 11 Other ________ 12	Work at home 1 On foot 2 Cycle 3 Motorbike 4 Own car 5 Shared car 6 Company's bus 7 Matatu 8 Taxi 9 KBS bus 10 Train 11 Other ________ 12	Work at home 1 On foot 2 Cycle 3 Motorbike 4 Own car 5 Shared car 6 Company's bus 7 Matatu 8 Taxi 9 KBS bus 10 Train 11 Other ________ 12	Work at home 1 On foot 2 Cycle 3 Motorbike 4 Own car 5 Shared car 6 Company's bus 7 Matatu 8 Taxi 9 KBS bus 10 Train 11 Other ________ 12	Work at home On foot Cycle Motorbike Own car Shared car Company's bus Matatu Taxi KBS bus Train Other ________
333 **What was the main reason for changing activity at the end of this period?** NOTICE TO INTERVIEWER: *CODE 99 FOR THE LAST ACTIVITY*	Laid off 1 "Terminated" 2 Company bankrupt 3 End of contract 4 End of apprenticeship Low salary/income 6 Working conditions 7 Personal conflicts 8 Find (better) job 9 Promoted 10 Medical 11 Bankruptcy 12 Family relocation 13 Retirement 14 Other ________ 99	Laid off 1 "Terminated" 2 Company bankrupt 3 End of contract 4 End of apprenticeship Low salary/income 6 Working conditions 7 Personal conflicts 8 Find (better) job 9 Promoted 10 Medical 11 Bankruptcy 12 Family relocation 13 Retirement 14 Other ________ 99	Laid off 1 "Terminated" 2 Company bankrupt 3 End of contract 4 End of apprenticeship Low salary/income 6 Working conditions 7 Personal conflicts 8 Find (better) job 9 Promoted 10 Medical 11 Bankruptcy 12 Family relocation 13 Retirement 14 Other ________ 99	Laid off 1 "Terminated" 2 Company bankrupt 3 End of contract 4 End of apprenticeship Low salary/income 6 Working conditions 7 Personal conflicts 8 Find (better) job 9 Promoted 10 Medical 11 Bankruptcy 12 Family relocation 13 Retirement 14 Other ________ 99	Laid off "Terminated" Company bankrupt End of contract End of apprenticeshi Low salary/income Working conditions Personal conflicts Find (better) job Promoted Medical Bankruptcy Family relocation Retirement Other ________
334 Did someone other than the members of the household help with the housework?	No 0 Yes, not paid 1 Yes, paid 2 Don't know 9	No 0 Yes, not paid 1 Yes, paid 2 Don't know 9	No 0 Yes, not paid 1 Yes, paid 2 Don't know 9	No 0 Yes, not paid 1 Yes, paid 2 Don't know 9	No Yes, not paid Yes, paid Don't know
FOR PERIOD WHEN RESPONDENT WAS UNDER AGE 10 OR AT SCHOOL GO TO NEXT COLUMN, OTHERWISE GO TO Q335					
335 **During this period did you have another source of income?**	Yes, regular 1 Yes, occasionally 2 **If YES go to 336** No 0 **If NO go to 339**	Yes, regular 1 Yes, occasionally 2 **If YES go to 336** No 0 **If NO go to 339**	Yes, regular 1 Yes, occasionally 2 **If YES go to 336** No 0 **If NO go to 339**	Yes, regular 1 Yes, occasionally 2 **If YES go to 336** No 0 **If NO go to 339**	Yes, regular Yes, occasionally **If YES go to 33** No **If NO go to 33**

336 **What was your second source of income?** *(quote the most important if more than 2)*	Own business 1 Relative's business 2 Non-relative's busnss 3 Properties income 4 Other _____ 5	Own business 1 Relative's business 2 Non-relative's busnss 3 Properties income 4 Other _____ 5	Own business 1 Relative's business 2 Non-relative's busnss 3 Properties income 4 Other _____ 5	Own business 1 Relative's business 2 Non-relative's busnss 3 Properties income 4 Other _____ 5	Own business Relative's business Non-relative's busns Properties income Other _____
337-338 **When did you start this secondary activity?**	/__/__/ /__/__/ Month Year	/__/__/ /__/__/ Month Year	/__/__/ /__/__/ Month Year	/__/__/ /__/__/ Month Year	/__/__/ /__/__ Month Yea
339 As compared to the preceding period did you find that your income…?		Increased 1 Decreased 2 Remained the same 3	Increased 1 Decreased 2 Remained the same 3	Increased 1 Decreased 2 Remained the same 3	Increased Decreased Remained the same

MODULE 3: SCHOOL, APPRENTICESHIP & ACTIVITY (periods A11 to A15)

INTERVIEWER: THIS MODULE IS ABOUT ACTIVITIES OF THE RESPONDENT. WHATEVER HIS/HER PLACE OF RESIDENCE YOU MU NECESSARILY FILL IN AT LEAST ONE COLUMN FOR EVERY ACTIVITY OR STATUS IN THE SAME COMPANY. PLEASE REFER TO THE AGEVENT FORM TO FILL IN QUESTIONS 302 TO 305.

FROM THE AGE OF 6 ONWARD	A 11	A 12	A 13	A 14	A 15
301 No of the period *(see AGEVENT form)*	/__/__/	/__/__/	/__/__/	/__/__/	/__/__/
302 How many months are there between the end of the last period and the current one? *or* **How many months did you spend unemployed before finding this job?**	N° of months/__/__/ *(if more than 6 months and if necessary fill in an unemployment period)*	N° of months/__/__/ *(if more than 6 months and if necessary fill in an unemployment period)*	N° of months/__/__/ *(if more than 6 months and if necessary fill in an unemployment period)*	N° of months/__/__/ *(if more than 6 months and if necessary fill in an unemployment period)*	N° of months/__/_ *(if more than 6 months and if necessary fill in an unemployment period)*
303-304 **When did you start this activity?**	/__/__/ /__/__/ Month Year	/__/__/ /__/__/ Month Year	/__/__/ /__/__/ Month Year	/__/__/ /__/__/ Month Year	/__/__/ /__/_ Month Yea
305 **Was it a period of...?**	Study 1-> 306 Illness 2-> 309 Invalidity 3-> 309 Retirement 4-> 309 Homemaker 5-> 309 Unemploym. 6-> 309 Other inactiv. 7-> 309 Apprenticeship or employment 8-> 310	Study 1-> 306 Illness 2-> 309 Invalidity 3-> 309 Retirement 4-> 309 Homemaker 5-> 309 Unemploym. 6-> 309 Other inactiv. 7-> 309 Apprenticeship or employment 8-> 310	Study 1-> 306 Illness 2-> 309 Invalidity 3-> 309 Retirement 4-> 309 Homemaker 5-> 309 Unemploym. 6-> 309 Other inactiv. 7-> 309 Apprenticeship or employment 8-> 310	Study 1-> 306 Illness 2-> 309 Invalidity 3-> 309 Retirement 4-> 309 Homemaker 5-> 309 Unemploym. 6-> 309 Other inactiv. 7-> 309 Apprenticeship or employment 8-> 310	Study 1-> 3(Illness 2-> 3(Invalidity 3-> 3(Retirement 4-> 3(Homemaker 5-> 3(Unemploym. 6-> 3(Other inactiv. 7-> 3(Apprenticeship or employment 8-> 3
306 EDUCATION LEVEL *(only for period of studying)* **What was your level of education reached at the end of this period?**	Primary 1 Secondary 2 High school 3 Post-secondary educ. 4 University 5	Primary 1 Secondary 2 High school 3 Post-secondary educ. 4 University 5	Primary 1 Secondary 2 High school 3 Post-secondary educ. 4 University 5	Primary 1 Secondary 2 High school 3 Post-secondary educ. 4 University 5	Primary Secondary High school Post-secondary educ. University

What was the highest certificate or degree you attained during this period?	KCPE/CPE/KAPE/ KPE 1 KJSE 2 KCSE/KCE/EACE/ CSC 3 KACE/EAACE/HSE Diploma/certificate 5 Bachelor's degree 6 Masters degree 7 Other ____________9	KCPE/CPE/KAPE/ KPE 1 KJSE 2 KCSE/KCE/EACE/ CSC 3 KACE/EAACE/HSE Diploma/certificate 5 Bachelor's degree 6 Masters degree 7 Other ____________9	KCPE/CPE/KAPE/ KPE 1 KJSE 2 KCSE/KCE/EACE/ CSC 3 KACE/EAACE/HSE Diploma/certificate 5 Bachelor's degree 6 Masters degree 7 Other ____________9	KCPE/CPE/KAPE/ KPE 1 KJSE 2 KCSE/KCE/EACE/ CSC 3 KACE/EAACE/HSE Diploma/certificate 5 Bachelor's degree 6 Masters degree 7 Other ____________9	KCPE/CPE/KAPE, KPE KJSE KCSE/KCE/EACE CSC KACE/EAACE/HS Diploma/certificate Bachelor's degree Masters degree Other ____________
308 **What type of educational establishment were you in?**	Public 1 Private religious 2 Private non-religious 3 **Go to 309**	Public 1 Private religious 2 Private non-religious 3 **Go to 309**	Public 1 Private religious 2 Private non-religious 3 **Go to 309**	Public 1 Private religious 2 Private non-religious 3 **Go to 309**	Public Private religious Private non-religious **Go to 30**
309 SUPPORT OF STUDENTS AND INACTIVES (illness, invalidity, retirement, homemaker, unemployment, other period of inactivity)					
How were you mainly supported during this period?	Retirement or other benefits 1 Private/property income or savings 2 Scholarship only 3 Scholarship & stipend 4 Spouse 5 Older gen. relatives 6 Younger gen. relatvs 7 Other relatives 8 Welfare 9 Petty jobs 10 Other ____________99 **Go to 333**	Retirement or other benefits 1 Private/property income or savings 2 Scholarship only 3 Scholarship & stipend 4 Spouse 5 Older gen. relatives 6 Younger gen. relatvs 7 Other relatives 8 Welfare 9 Petty jobs 10 Other ____________99 **Go to 333**	Retirement or other benefits 1 Private/property income or savings 2 Scholarship only 3 Scholarship & stipend 4 Spouse 5 Older gen. relatives 6 Younger gen. relatvs 7 Other relatives 8 Welfare 9 Petty jobs 10 Other ____________99 **Go to 333**	Retirement or other benefits 1 Private/property income or savings 2 Scholarship only 3 Scholarship & stipend 4 Spouse 5 Older gen. relatives 6 Younger gen. relatvs 7 Other relatives 8 Welfare 9 Petty jobs 10 Other ____________99 **Go to 333**	Retirement or other benefits Private/property income or savings Scholarship only Scholarship & stipend Spouse Older gen. relatives Younger gen. relatvs Other relatives Welfare Petty jobs Other ____________ **Go to 33**
310 FOR ALL EMPLOYED OR APPRENTICES					
What was your main occupation? *or* **What was the trade/craft/profession that you were learning?** *(specify)*	____________ /__/__/__/	____________ /__/__/__/	____________ /__/__/__/	____________ /__/__/__/	____________ /__/__/__/

311 **What was your status during this period of activity?**	Salaried **1-> 318** Apprentice **2-> 317** Family business3**-> 317** Own business **4-> 312**	Salaried **1-> 318** Apprentice **2-> 317** Family business3**-> 317** Own business **4-> 312**	Salaried **1-> 318** Apprentice **2-> 317** Family business3**-> 317** Own business **4-> 312**	Salaried **1-> 318** Apprentice **2-> 317** Family business3**-> 317** Own business **4-> 312**	Salaried **1-> 31** Apprentice **2-> 31** Family business3**-> 3** Own business **4-> 31**
312 FOR OWN BUSINESS					
How many employees/apprentices worked for you at the beginning of this period?	0 (self-employed) 1 1-2 persons 2 3-5 persons 3 6-10 persons 4 More than 10 5	0 (self-employed) 1 1-2 persons 2 3-5 persons 3 6-10 persons 4 More than 10 5	0 (self-employed) 1 1-2 persons 2 3-5 persons 3 6-10 persons 4 More than 10 5	0 (self-employed) 1 1-2 persons 2 3-5 persons 3 6-10 persons 4 More than 10 5	0 (self-employed) 1-2 persons 3-5 persons 6-10 persons More than 10
313 **How many employees/apprentices worked for you at the end of this period?**	0 (self-employed) 1 1-2 persons 2 3-5 persons 3 6-10 persons 4 More than 10 5	0 (self-employed) 1 1-2 persons 2 3-5 persons 3 6-10 persons 4 More than 10 5	0 (self-employed) 1 1-2 persons 2 3-5 persons 3 6-10 persons 4 More than 10 5	0 (self-employed) 1 1-2 persons 2 3-5 persons 3 6-10 persons 4 More than 10 5	0 (self-employed) 1-2 persons 3-5 persons 6-10 persons More than 10
314 How did you keep your accounts record?	Personal book 1 Formal accountancy 2 No written accounts 3	Personal book 1 Formal accountancy 2 No written accounts 3	Personal book 1 Formal accountancy 2 No written accounts 3	Personal book 1 Formal accountancy 2 No written accounts 3	Personal book Formal accountancy No written accounts
315 Was your company registered? *(PIN, VAT)*	Yes 1 No 0	Yes 1 No 0	Yes 1 No 0	Yes 1 No 0	Yes No
316 **To set up this business what was the main source of finance you resorted to?**	None 0 Own savings 1 Inheritance 2 Family assistance 3 Spousal support 4 Merry-go-round 5 Association 6 Credit from suppliers7 Bank loan 8 NGO loan 9 Co-operative loan 10 Personal loan 11 Shylock 12 Other ____________ 99 **Go to 325**	None 0 Own savings 1 Inheritance 2 Family assistance 3 Spousal support 4 Merry-go-round 5 Association 6 Credit from suppliers7 Bank loan 8 NGO loan 9 Co-operative loan 10 Personal loan 11 Shylock 12 Other ____________ 99 **Go to 325**	None 0 Own savings 1 Inheritance 2 Family assistance 3 Spousal support 4 Merry-go-round 5 Association 6 Credit from suppliers7 Bank loan 8 NGO loan 9 Co-operative loan 10 Personal loan 11 Shylock 12 Other ____________ 99 **Go to 325**	None 0 Own savings 1 Inheritance 2 Family assistance 3 Spousal support 4 Merry-go-round 5 Association 6 Credit from suppliers7 Bank loan 8 NGO loan 9 Co-operative loan 10 Personal loan 11 Shylock 12 Other ____________ 99 **Go to 325**	None Own savings Inheritance Family assistance Spousal support Merry-go-round Association Credit from suppliers Bank loan NGO loan Co-operative loan Personal loan Shylock Other ____________ **Go to 32**
317 FOR APPRENTICES AND FAMILY BUSINESS					

How were you mainly supported during this period?	Older gen. relatives 1 Younger gen. relatvs 2 Other relatives 3 Manager/boss 4 Welfare 5 Petty jobs 6 Other ____________ 9 **Go to 321**	Older gen. relatives 1 Younger gen. relatvs 2 Other relatives 3 Manager/boss 4 Welfare 5 Petty jobs 6 Other ____________ 9 **Go to 321**	Older gen. relatives 1 Younger gen. relatvs 2 Other relatives 3 Manager/boss 4 Welfare 5 Petty jobs 6 Other ____________ 9 **Go to 321**	Older gen. relatives 1 Younger gen. relatvs 2 Other relatives 3 Manager/boss 4 Welfare 5 Petty jobs 6 Other ____________ 9 **Go to 321**	Older gen. relatives Younger gen. relatvs Other relatives Manager/boss Welfare Petty jobs Other ____________ **Go to 32**
318 FOR SALARIED EMPLOYEES					
How did you obtain this job?	Family relations 1 Personal relations 2 Employment bureau 3 Adverts 4 Association 5 Own initiative 6 Other ____________ 9	Family relations 1 Personal relations 2 Employment bureau 3 Adverts 4 Association 5 Own initiative 6 Other ____________ 9	Family relations 1 Personal relations 2 Employment bureau 3 Adverts 4 Association 5 Own initiative 6 Other ____________ 9	Family relations 1 Personal relations 2 Employment bureau 3 Adverts 4 Association 5 Own initiative 6 Other ____________ 9	Family relations Personal relations Employment bureau Adverts Association Own initiative Other ____________
319 How was your main record of payment?	No record 0 Logbook 1 Payment voucher 2 Payslip 3	No record 0 Logbook 1 Payment voucher 2 Payslip 3	No record 0 Logbook 1 Payment voucher 2 Payslip 3	No record 0 Logbook 1 Payment voucher 2 Payslip 3	No record Logbook Payment voucher Payslip
320 **What was the main mode of payment?**	Fixed salary/wage 1 Pay per job 2 Commission or % 3 In kind 4	Fixed salary/wage 1 Pay per job 2 Commission or % 3 In kind 4	Fixed salary/wage 1 Pay per job 2 Commission or % 3 In kind 4	Fixed salary/wage 1 Pay per job 2 Commission or % 3 In kind 4	Fixed salary/wage Pay per job Commission or % In kind
321 PROMOTION (for salaried/employee, apprentices and family business)					
Since the beginning of this period have you been promoted?	Yes 1 **Go to 322** No 0 **Go to 325**	Yes 1 **Go to 322** No 0 **Go to 325**	Yes 1 **Go to 322** No 0 **Go to 325**	Yes 1 **Go to 322** No 0 **Go to 325**	Yes 1 **Go to 32** No 0 **Go to 32**
322-323 **When were you promoted?**	/__/__/ /__/__/ Month Year	/__/__/ /__/__/ Month Year	/__/__/ /__/__/ Month Year	/__/__/ /__/__/ Month Year	/__/__/ /__/__ Month Yea
324 **What was your new position?** *(specify)*	____________ /__/__/__/	____________ /__/__/__/	____________ /__/__/__/	____________ /__/__/__/	____________ /__/__/__/
325 FOR ALL EMPLOYED RESPONDENTS: CHANGE IN EDUCATION LEVEL (through evening classes, parallel courses…)					
During that period, did you study to obtain higher educational qualification?	Yes 1 **Go to 326** No 0 **Go to 330**	Yes 1 **Go to 326** No 0 **Go to 330**	Yes 1 **Go to 326** No 0 **Go to 330**	Yes 1 **Go to 326** No 0 **Go to 330**	Yes 1 **Go to 3** No 0 **Go to 3**

326 **What level of education did you attain?**	None 0 KCPE/CPE/KAPE/ KPE 1 KJSE 2 KCSE/KCE/EACE/ CSC 3 KACE/EAACE/HSE Diploma/certificate 5 Bachelor's degree 6 Masters degree 7 Other ____________9	None 0 KCPE/CPE/KAPE/ KPE 1 KJSE 2 KCSE/KCE/EACE/ CSC 3 KACE/EAACE/HSE Diploma/certificate 5 Bachelor's degree 6 Masters degree 7 Other ____________9	None 0 KCPE/CPE/KAPE/ KPE 1 KJSE 2 KCSE/KCE/EACE/ CSC 3 KACE/EAACE/HSE Diploma/certificate 5 Bachelor's degree 6 Masters degree 7 Other ____________9	None 0 KCPE/CPE/KAPE/ KPE 1 KJSE 2 KCSE/KCE/EACE/ CSC 3 KACE/EAACE/HSE Diploma/certificate 5 Bachelor's degree 6 Masters degree 7 Other ____________9	None KCPE/CPE/KAPE, KPE KJSE KCSE/KCE/EACE CSC KACE/EAACE/HS Diploma/certificate Bachelor's degree Masters degree Other ____________
327 What type of educational establishment were you in?	Public 1 Private religious 2 Private non-religious 3	Public 1 Private religious 2 Private non-religious 3	Public 1 Private religious 2 Private non-religious 3	Public 1 Private religious 2 Private non-religious 3	Public Private religious Private non-religious
328-329 **When did you attain that level?**	/__/__/ /__/__/ Month Year	/__/__/ /__/__/ Month Year	/__/__/ /__/__/ Month Year	/__/__/ /__/__/ Month Year	/__/__/ /__/__ Month Yea
330 CHARACTERISTICS OF THE COMPANY AND TRANSPORTATION MEANS IN NAIROBI					
Which economic sector did your company/organisation belong to?	Public service 1 Parastatal 2 Private company 3 Export proc. zone 4 NGO 5 International organ. 6 Small business 7 Household 8 Other ____________ 9	Public service 1 Parastatal 2 Private company 3 Export proc. zone 4 NGO 5 International organ. 6 Small business 7 Household 8 Other ____________ 9	Public service 1 Parastatal 2 Private company 3 Export proc. zone 4 NGO 5 International organ. 6 Small business 7 Household 8 Other ____________ 9	Public service 1 Parastatal 2 Private company 3 Export proc. zone 4 NGO 5 International organ. 6 Small business 7 Household 8 Other ____________ 9	Public service Parastatal Private company Export proc. zone NGO International organ. Small business Household Other ____________
331 In which estate/area was your company located during this period? *For Nairobi: estate/area* *For outside Nairobi: nearest town or country*	____________ /__/__/__/	____________ /__/__/__/	____________ /__/__/__/	____________ /__/__/__/	____________ /__/__/__,

332 TRANSPORTATION MEANS **What was your main transport (longer distance covered) for going to work during this period?**	Work at home 1 On foot 2 Cycle 3 Motorbike 4 Own car 5 Shared car 6 Company's bus 7 Matatu 8 Taxi 9 KBS bus 10 Train 11 Other ______ 12	Work at home 1 On foot 2 Cycle 3 Motorbike 4 Own car 5 Shared car 6 Company's bus 7 Matatu 8 Taxi 9 KBS bus 10 Train 11 Other ______ 12	Work at home 1 On foot 2 Cycle 3 Motorbike 4 Own car 5 Shared car 6 Company's bus 7 Matatu 8 Taxi 9 KBS bus 10 Train 11 Other ______ 12	Work at home 1 On foot 2 Cycle 3 Motorbike 4 Own car 5 Shared car 6 Company's bus 7 Matatu 8 Taxi 9 KBS bus 10 Train 11 Other ______ 12	Work at home On foot Cycle Motorbike Own car Shared car Company's bus Matatu Taxi KBS bus Train Other ______
333 **What was the main reason for changing activity at the end of this period?** NOTICE TO INTERVIEWER: *CODE 99 FOR THE LAST ACTIVITY*	Laid off 1 "Terminated" 2 Company bankrupt 3 End of contract 4 End of apprenticeship Low salary/income 6 Working conditions 7 Personal conflicts 8 Find (better) job 9 Promoted 10 Medical 11 Bankruptcy 12 Family relocation 13 Retirement 14 Other ______ 99	Laid off 1 "Terminated" 2 Company bankrupt 3 End of contract 4 End of apprenticeship Low salary/income 6 Working conditions 7 Personal conflicts 8 Find (better) job 9 Promoted 10 Medical 11 Bankruptcy 12 Family relocation 13 Retirement 14 Other ______ 99	Laid off 1 "Terminated" 2 Company bankrupt 3 End of contract 4 End of apprenticeship Low salary/income 6 Working conditions 7 Personal conflicts 8 Find (better) job 9 Promoted 10 Medical 11 Bankruptcy 12 Family relocation 13 Retirement 14 Other ______ 99	Laid off 1 "Terminated" 2 Company bankrupt 3 End of contract 4 End of apprenticeship Low salary/income 6 Working conditions 7 Personal conflicts 8 Find (better) job 9 Promoted 10 Medical 11 Bankruptcy 12 Family relocation 13 Retirement 14 Other ______ 99	Laid off "Terminated" Company bankrupt End of contract End of apprenticeship Low salary/income Working conditions Personal conflicts Find (better) job Promoted Medical Bankruptcy Family relocation Retirement Other ______
334 Did someone other than the members of the household help with the housework?	No 0 Yes, not paid 1 Yes, paid 2 Don't know 9	No 0 Yes, not paid 1 Yes, paid 2 Don't know 9	No 0 Yes, not paid 1 Yes, paid 2 Don't know 9	No 0 Yes, not paid 1 Yes, paid 2 Don't know 9	No Yes, not paid Yes, paid Don't know
FOR PERIOD WHEN RESPONDENT WAS UNDER AGE 10 OR AT SCHOOL GO TO NEXT COLUMN, OTHERWISE GO TO Q335					
335 **During this period did you have another source of income?**	Yes, regular 1 Yes, occasionally 2 **If YES go to 336** No 0 **If NO go to 339**	Yes, regular 1 Yes, occasionally 2 **If YES go to 336** No 0 **If NO go to 339**	Yes, regular 1 Yes, occasionally 2 **If YES go to 336** No 0 **If NO go to 339**	Yes, regular 1 Yes, occasionally 2 **If YES go to 336** No 0 **If NO go to 339**	Yes, regular Yes, occasionally **If YES go to 33** No **If NO go to 33**

336 **What was your second source of income?** *(quote the most important if more than 2)*	Own business 1 Relative's business 2 Non-relative's busnss3 Properties income 4 Other _____ 5	Own business 1 Relative's business 2 Non-relative's busnss3 Properties income 4 Other _____ 5	Own business 1 Relative's business 2 Non-relative's busnss3 Properties income 4 Other _____ 5	Own business 1 Relative's business 2 Non-relative's busnss3 Properties income 4 Other _____ 5	Own business Relative's business Non-relative's busns Properties income Other _____
337-338 **When did you start this secondary activity?**	/__/__/ /__/__/ Month Year	/__/__/ /__/__/ Month Year	/__/__/ /__/__/ Month Year	/__/__/ /__/__/ Month Year	/__/__/ /__/__ Month Yea
339 As compared to the preceding period did you find that your income…?	Increased 1 Decreased 2 Remained the same 3	Increased 1 Decreased 2 Remained the same 3	Increased 1 Decreased 2 Remained the same 3	Increased 1 Decreased 2 Remained the same 3	Increased Decreased Remained the same

MODULE 4: MATRIMONIAL HISTORY

/_4/ EA /__/__/__/ CLUSTER /__/__/ STRUCTURE /__/__/ HOUSEHOLD /__/__/ RESPONDENT /__/__/

INTERVIEWERS: THIS MODULE IS MEANT FOR RESPONDENT WHO HAVE OR HAD BEEN MARRIED (DIVORCED, SEPARATED C WIDOW), FORMALLY OR NOT. PLEASE REFER TO THE AGEVENT FORM TO FILL IN QUESTIONS 401 TO 403. EACH PERIOD OF STAYING TOGETHER MUST BE REPORTED IN A SEPARATE COLUMN. IF THE RESPONDENT NEVER STAYED WITH HIS/HER PARTNER, FILL ONLY ONE COLUMN.

	C 01	C 02	C 03	C 04	C 05
First name of partner					
401 Rank of the partner	Union N° /__/__/	Union N° /__/__/	Union N° /__/__/	Union N° /__/__/	Union N° /__/__
402-403 When did you start staying together? *(write XX XX if they never stayed together)*	/__/__/ /__/__/ Month Year	/__/__/ /__/__/ Month Year	/__/__/ /__/__/ Month Year	/__/__/ /__/__/ Month Year	/__/__/ /__/__ Month Yea
404 Was it the first time you stayed together?	Yes 1->405 Never stayed together 2->405 No 0->415	Yes 1->405 Never stayed together 2->405 No 0->415	Yes 1->405 Never stayed together 2->405 No 0->415	Yes 1->405 Never stayed together 2->405 No 0->415	Yes 1->40 Never stayed together 2->40 No 0->41
405 Was this union formalised?	Yes 1->406 No 0->412	Yes 1->406 No 0->412	Yes 1->406 No 0->412	Yes 1->406 No 0->412	Yes 1->40 No 0->41
Traditional marriage **406-407 Date of customary marriage**	/__/__/ /__/__/ month year	/__/__/ /__/__/ month year	/__/__/ /__/__/ month year	/__/__/ /__/__/ month year	/__/__/ /__/__ month yea
Civil marriage **408-409 Date of civil marriage**	/__/__/ /__/__/ month year	/__/__/ /__/__/ month year	/__/__/ /__/__/ month year	/__/__/ /__/__/ month year	/__/__/ /__/__ month yea
Religious marriage **410-411 Date of religious marriage** *(write XX XX if one type of union was not formalised)*	/__/__/ /__/__/ month year	/__/__/ /__/__/ month year	/__/__/ /__/__/ month year	/__/__/ /__/__/ month year	/__/__/ /__/__ month yea
412 What was the age of your partner at the beginning of this period?	/__/__/	/__/__/	/__/__/	/__/__/	/__/__/

422-423 When did you part?	/__/__/ Month	/__/__/ Year	/__/__/ Month	/__/__/ Year	/__/__/ Month	/__/__/ Year	/__/__/ Month	/__/__/ Year	/__/__/ Month	/__/__ Yea

MODULE 4: MATRIMONIAL HISTORY (periods C 06 to C 10)

INTERVIEWERS: THIS MODULE IS MEANT FOR RESPONDENT WHO HAVE OR HAD BEEN MARRIED (DIVORCED, SEPARATED C WIDOW), FORMALLY OR NOT. PLEASE REFER TO THE AGEVENT FORM TO FILL IN QUESTIONS 401 TO 403. EACH PERIOD OF STAYING TOGETHER MUST BE REPORTED IN A SEPARATE COLUMN. IF THE RESPONDENT NEVER STAYED WITH HIS/HER PARTNER, FILL ONLY ONE COLUMN.

	C 06	C 07	C 08	C 09	C 10
First name of partner					
401 Rank of the partner	Union N° /__/__/	Union N° /__/__/	Union N° /__/__/	Union N° /__/__/	Union N° /__/__
402-403 When did you start staying together? *(write XX XX if they never stayed together)*	/__/__/ /__/__/ Month Year	/__/__/ /__/__/ Month Year	/__/__/ /__/__/ Month Year	/__/__/ /__/__/ Month Year	/__/__/ /__/__ Month Yea
404 Was it the first time you stayed together?	Yes 1->405 Never stayed together 2->405 No 0->415	Yes 1->405 Never stayed together 2->405 No 0->415	Yes 1->405 Never stayed together 2->405 No 0->415	Yes 1->405 Never stayed together 2->405 No 0->415	Yes 1->40 Never stayed together 2->40 No 0->41
405 Was this union formalised?	Yes 1->406 No 0->412	Yes 1->406 No 0->412	Yes 1->406 No 0->412	Yes 1->406 No 0->412	Yes 1->40 No 0->41
Traditional marriage **406-408 Date of customary marriage**	/__/__/ /__/__/ month year	/__/__/ /__/__/ month year	/__/__/ /__/__/ month year	/__/__/ /__/__/ month year	/__/__/ /__/__ month yea
Civil marriage **408-410 Date of civil marriage**	/__/__/ /__/__/ month year	/__/__/ /__/__/ month year	/__/__/ /__/__/ month year	/__/__/ /__/__/ month year	/__/__/ /__/__ month yea
Religious marriage **410-411 Date of religious marriage** *(write XX XX if one type of union was not formalised)*	/__/__/ /__/__/ month year	/__/__/ /__/__/ month year	/__/__/ /__/__/ month year	/__/__/ /__/__/ month year	/__/__/ /__/__ month yea
412 What was the age of your partner at the beginning of this period?	/__/__/	/__/__/	/__/__/	/__/__/	/__/__/

413 What was the ethnic group of your partner's father?	_____ – /__/__/__/	_____ – /__/__/__/	_____ – /__/__/__/	_____ – /__/__/__/	_____ – /__/__/__/
414 What was the ethnic group of your partner's mother?	_____ – /__/__/__/	_____ – /__/__/__/	_____ – /__/__/__/	_____ – /__/__/__/	_____ – /__/__/__/
415 What was the matrimonial status of your partner just before the beginning of this period?	Never married 1 Monogamous 2 Polygamous 3 Separated/Divorced 4 Widowed 5 NS/DK 9	Never married 1 Monogamous 2 Polygamous 3 Separated/Divorced 4 Widowed 5 NS/DK 9	Never married 1 Monogamous 2 Polygamous 3 Separated/Divorced 4 Widowed 5 NS/DK 9	Never married 1 Monogamous 2 Polygamous 3 Separated/Divorced 4 Widowed 5 NS/DK 9	Never married Monogamous Polygamous Separated/Divorcec Widowed NS/DK
416 What was the matrimonial status of your partner just before the end of this period?	Never married 1 Monogamous 2 Polygamous 3 Separated/Divorced 4 Widowed 5 NS/DK 9	Never married 1 Monogamous 2 Polygamous 3 Separated/Divorced 4 Widowed 5 NS/DK 9	Never married 1 Monogamous 2 Polygamous 3 Separated/Divorced 4 Widowed 5 NS/DK 9	Never married 1 Monogamous 2 Polygamous 3 Separated/Divorced 4 Widowed 5 NS/DK 9	Never married Monogamous Polygamous Separated/Divorcec Widowed NS/DK
417 From the beginning of this period, did you stay together continuously up to now?	**YES 1** ***Go to next column*** Never stayed together **2->421** No **0->418**	**YES 1** ***Go to next column*** Never stayed together **2->421** No **0->418**	**YES 1** ***Go to next column*** Never stayed together **2->421** No **0->418**	**YES 1** ***Go to next column*** Never stayed together **2->421** No **0->418**	**YES** ***Go to next colum*** Never stayed together **2->42** No **0->41**
418-419 *If NO to 417.* **When did you stop staying together?**	/__/__/ /__/__/ month year	/__/__/ /__/__/ month year	/__/__/ /__/__/ month year	/__/__/ /__/__/ month year	/__/__/ /__/__ month yea
420 Did you live together again?	**YES 1** ***Go to next column*** No 0	**YES 1** ***Go to next column*** No 0	**YES 1** ***Go to next column*** No 0	**YES 1** ***Go to next column*** No 0	**YES** ***Go to next colum*** No
421 *If NO to 420 or never stayed together.* **Did you part from this partner?**	Yes, divorced 1 Yes, separated 2 Yes, spouse died 3 No 0	Yes, divorced 1 Yes, separated 2 Yes, spouse died 3 No 0	Yes, divorced 1 Yes, separated 2 Yes, spouse died 3 No 0	Yes, divorced 1 Yes, separated 2 Yes, spouse died 3 No 0	Yes, divorced Yes, separated Yes, spouse died No

422-423 When did you part?	/__/__/ Month	/__/__/ Year	/__/__/ Month	/__/__/ Year	/__/__/ Month	/__/__/ Year	/__/__/ Month	/__/__/ Year	/__/__/ Month	/__/__ Yea

MODULE 5: CHILDREN BORN ALIVE

/_5/ EA /__/__/__/ CLUSTER /__/__/ STRUCTURE /__/__/ HOUSEHOLD /__/__/ RESPONDENT /__/__/

INTERVIEWERS: IN THIS MODULE YOU MUST FILL IN ONE COLUMN FOR EACH RESPONDENT'S CHILD BORN ALIVE. FOR TWI FILL IN ONE COLUMN PER SIBLING. PLEASE REFER TO THE AGEVENT FORM TO FILL IN QUESTIONS 501 TO 503; 508-509 AND 511-5

	B 01	B 02	B 03	B 04	B 05	B 06	B 07	B 08	B 09
First name of child									
501 Rank of child	/__/__/	/__/__/	/__/__/	/__/__/	/__/__/	/__/__/	/__/__/	/__/__/	/__/__/
502-503 Month and year of birth	Month /__/__/ Year /__/__/	Month /__/__/ Year /__/__/	Month /__/__/ Year /__/__/	Month /__/__/ Year /__/__/	Month /__/__/ Year /__/__/	Month /__/__/ Year /__/__/	Month /__/__/ Year /__/__/	Month /__/__/ Year /__/__/	Month /__/__/ Year /__/__/
504 Was s/he a twin?	Yes 1 No 0	Yes 1 No 0	Yes 1 No 0	Yes 1 No 0	Yes 1 No 0	Yes 1 No 0	Yes 1 No 0	Yes 1 No 0	Yes No
505 Sex of child	Male 1 Female 2	Male 1 Female 2	Male 1 Female 2	Male 1 Female 2	Male 1 Female 2	Male 1 Female 2	Male 1 Female 2	Male 1 Female 2	Male Female
506 Rank of union *(see matrimonial history)*	Union N° /__/__/	Union N° /__/__/	Union N° /__/__/	Union N° /__/__/	Union N° /__/__/	Union N° /__/__/	Union N° /__/__/	Union N° /__/__/	Union N° /__/__/
507 Is the child still alive?	Yes 1 **Go to 510** No 0 **Go to 508**	Yes 1 **Go to 510** No 0 **Go to 508**	Yes 1 **Go to 510** No 0 **Go to 508**	Yes 1 **Go to 510** No 0 **Go to 508**	Yes 1 **Go to 510** No 0 **Go to 508**	Yes 1 **Go to 510** No 0 **Go to 508**	Yes 1 **Go to 510** No 0 **Go to 508**	Yes 1 **Go to 510** No 0 **Go to 508**	Yes **Go to 5** No **Go to 5**
508-509 Month and year of death	Month /__/__/ Year/__/__/ **Go to 513**	Month /__/__/ Year/__/__/ **Go to 513**	Month /__/__/ Year/__/__/ **Go to 513**	Month /__/__/ Year/__/__/ **Go to 513**	Month /__/__/ Year/__/__/ **Go to 513**	Month /__/__/ Year/__/__/ **Go to 513**	Month /__/__/ Year/__/__/ **Go to 513**	Month /__/__/ Year/__/__/ **Go to 513**	Month /__/__/ Year/__/__/ **Go to 5**
510 Is the child still staying with you?	Yes 1 **Go to 513** No 0 **Go to 511**	Yes 1 **Go to 513** No 0 **Go to 511**	Yes 1 **Go to 513** No 0 **Go to 511**	Yes 1 **Go to 513** No 0 **Go to 511**	Yes 1 **Go to 513** No 0 **Go to 511**	Yes 1 **Go to 513** No 0 **Go to 511**	Yes 1 **Go to 513** No 0 **Go to 511**	Yes 1 **Go to 513** No 0 **Go to 511**	Yes **Go to 5** No **Go to 5**

511–512 When did your child stop staying with you? *(see AGEVENT form)*	Month /__/__/ Year/__/__/ **Go to 513**	Month /__/__/ Year/__/__/ **Go to 513**	Month /__/__/ Year/__/__/ **Go to 513**	Month /__/__/ Year/__/__/ **Go to 513**	Month /__/__/ Year/__/__/ **Go to 513**	Month /__/__/ Year/__/__/ **Go to 513**	Month /__/__/ Year/__/__/ **Go to 513**	Month /__/__/ Year/__/__/ **Go to 513**	Month /__/__/ Year/__/__/ **Go to 5**

513 **Did the child go to school?**	Yes 1 **Go to 514** No 0 DK 9 **Go to next Child**	Yes 1 **Go to 514** No 0 DK 9 **Go to next child**	Yes 1 **Go to 514** No 0 DK 9 **Go to next child**	Yes 1 **Go to 514** No 0 DK 9 **Go to next child**	Yes 1 **Go to 514** No 0 DK 9 **Go to next child**	Yes 1 **Go to 514** No 0 DK 9 **Go to next child**	Yes 1 **Go to 514** No 0 DK 9 **Go to next child**	Yes 1 **Go to 514** No 0 DK 9 **Go to next child**	Yes **Go to 5** No DK **Go to ne chi**
514 **What is/was the highest level of education attained by your child?**	**Primary**: uncompleted 1 completed 2 **Secondary** uncompleted 3 completed 4 **High school** 5 **Post-second. training** 6 **University** 7 **DK** 9	**Primary**: uncompleted 1 completed 2 **Secondary** uncompleted 3 completed 4 **High school** 5 **Post-second. training** 6 **University** 7 **DK** 9	**Primary**: uncompleted 1 completed 2 **Secondary** uncompleted 3 completed 4 **High school** 5 **Post-second. training** 6 **University** 7 **DK** 9	**Primary**: uncompleted 1 completed 2 **Secondary** uncompleted 3 completed 4 **High school** 5 **Post-second. training** 6 **University** 7 **DK** 9	**Primary**: uncompleted 1 completed 2 **Secondary** uncompleted 3 completed 4 **High school** 5 **Post-second. training** 6 **University** 7 **DK** 9	**Primary**: uncompleted 1 completed 2 **Secondary** uncompleted 3 completed 4 **High school** 5 **Post-second. training** 6 **University** 7 **DK** 9	**Primary**: uncompleted 1 completed 2 **Secondary** uncompleted 3 completed 4 **High school** 5 **Post-second. training** 6 **University** 7 **DK** 9	**Primary**: uncompleted 1 completed 2 **Secondary** uncompleted 3 completed 4 **High school** 5 **Post-second. training** 6 **University** 7 **DK** 9	**Primary**: uncomplete completed **Secondary** uncomplete completed **High schoc** **Post-secon training** **University** **DK**
515 **Did your child stop going to school?**	NO 0 DK 9 **Go to next child** YES 1 **Go to 516**	NO 0 DK 9 **Go to next child** YES 1 **Go to 516**	NO 0 DK 9 **Go to next child** YES 1 **Go to 516**	NO 0 DK 9 **Go to next child** YES 1 **Go to 516**	NO 0 DK 9 **Go to next child** YES 1 **Go to 516**	NO 0 DK 9 **Go to next child** YES 1 **Go to 516**	NO 0 DK 9 **Go to next child** YES 1 **Go to 516**	NO 0 DK 9 **Go to next child** YES 1 **Go to 516**	NO DK **Go to ne chi** YES **Go to 5**
516-517 When did your child stop going to school?	Month /__/__/ Year /__/__/	Month /__/__/ Year /__/__/	Month /__/__/ Year /__/__/	Month /__/__/ Year /__/__/	Month /__/__/ Year /__/__/	Month /__/__/ Year /__/__/	Month /__/__/ Year /__/__/	Month /__/__/ Year /__/__/	Month /__/_ Year /__/_

Time at the end of interview /___h/___mn/
Q056 Q057

TO BE COMPLETED AT THE END OF INTERVIEW BY THE INTERVIEWER:	
Q 601 Number of columns Module 2	/__/__/
Q 602 Number of columns Module 3	/__/__/
Q 603 Number of columns Module 4	/__/__/
Q 604 Number of columns Module 5	/__/__/

Q 605 How was the welcome from the respondent?	Excellent Average Bad	1 2 3
Q 606 Did the respondent use any kind of written documents to help in answering your questions? (e.g. birth certificate, ID, etc.)	Yes No	1 0
Q 607 Did anybody else (apart from the respondent and you) attend the interview?	Yes No	1 go to Q 608 0
Q 608 Did the answers come from the respondent alone?	Yes No	1 0