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Cross Sectional Study of Women Employment and Fertility In Ethiopia

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ABSTRACT

Women employment is one of the economic variables which may determine the fertility behavior of women. Unlike western nations, very limited studies have been conducting regarding the relationship between women employment and fertility behavior of women in developing countries, specifically in sub-Saharan African countries. In this paper the association between employment status and fertility behavior of married women is assessed in the context of Ethiopia. The analysis is made based on the 2000 and 2005 Ethiopian Demographic and Health Survey (EDHS 2000 and EDHS 2005) data. The findings show that there was insignificance relationship between women employment status and fertility behavior at a country level. However, this relationship is turned and got significantly negative relationship in urban areas of Ethiopia. And it is also found that there was no significant variation in the association between women employment and fertility level among the two cross sectional years (2000 and 2005) under consideration.

Keywords: Women employment, Fertility, DHS, Sub-Sahara, Africa, Ethiopia

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1 Introduction

In general terms, the fertility rate of developing countries, particularly those of least developed countries is higher than that of developed nations. So far ample studies have been conducting on the determinant of fertility based on some socioeconomic and demographic background of women in different periods of times. However, less emphasis has given concerning to the impact of women employment on fertility rates in many of developing countries. Scarcity and poor quality of data regarding women employment has mentioned for the primary reason that limited the number of studies in this topic. The sub-Saharan African countries are one of the regions where the availability and quality data is notoriously poor. Thus, investigation of the relation between women employment and fertility behavior of this region has been highly ignored for a long period of times. Hence, this problem have created a gap not to study and compare the experience of developing nations to that of the findings of developed nations regarding the association between these variables. However, in recent periods, following some surveys which are conducted on female employment, various studies have started to emerge in sub-Saharan countries (Beguy 2009, Solomon and Kimmel 2009). These studies can be served as to show the nature of the association between women employment and fertility behavior of least developed countries at least a country level. In spite of the emergence of current studies, the association between these variables is still not investigated in many of least developed countries, particularly in sub- Saharan African countries.

This study is also can be taken as a part of these studies. In this paper the association between women employment and fertility behavior will be investigated in the context of Ethiopia. Similar to most of Sub-Saharan African countries, high and persistent fertility rate has been revealed in Ethiopia for a long period of time. However, in recent periods the total fertility rate (TFR) ¹ has shown a slight decreasing trend at a national and regional level. According to 2005 EDHS report, the total fertility rate was estimated to be 5.5 births per women in the year 2000 and it showed a little decline in 2005 and reached to 5.4 at a national level. In addition to

¹TFR is defined as the average number of children that a woman have throughout her reproductive age (usually 15-49) provided that they were experience the current age specific fertility rate and she were alive throughout her reproductive age.

this, considerable heterogeneities have been seen across different regions and among urban and rural areas as well. For example, total fertility rate in the capital city of Ethiopia is estimated to be below replacement level (1.8), where as the rate is soared to 6.2 in Oromia region (EDHS2005). Similarly, pronounced variations have been also revealed among urban and rural areas of Ethiopia. For instance, in the year 2005, the total fertility rate was 2.4 and 6.4 in urban and rural areas respectively.

Like most of other sub-Saharan African countries there is a lack adequate data sources regarding women employment that will explain the trend over time in Ethiopia. However, various researchers are using cross sectional datasets to analyze the relationship between employment status of women and their fertility behavior (Beguy 2009, Bratti 2002, Fang et al, 2010).

The aggregate measure of women economic activities indicates that women`s labor force participation rate is much higher in Ethiopia as compared to most of African countries. The rate was 72.5%, 78.1%, 79.8% in the cross sectional years of 2000, 2005 and 2008 respectively (UN statistics division 2011)². This figure is much higher than the average participation rate of sub-Saharan African countries, which is approximately 63.2 %. Despite the fact that high rate of female labor participation, majority of studies which are conducted in Ethiopia did not go through the impact of women employment in determining the fertility behavior of women.

Various findings show that employment of women, particularly in the paid job, supposed to have a negative effect on fertility behavior of women. Many studies that have conducted in western countries confirmed the negative impact of women employment on the number and presence of children (S. Kalwij 1998, Adsera, 2010, Weinige and G.Cain 1973). The experience of other developing countries also showed that aggregate economic activities which enhance

²The estimate of women labor force participation appears to be as high as most of western nations, which have the highest women labor force participation rate around the world. This may happen due to the various definition and methods used to measure labor force participation rate among different countries. Thus, it is usually hard to compare the figures across countries and even across point of time (ILO 2010). Therefore; these figures should be taken and interpreted with caution.

women's participation in the labor market have also an impact on the fertility rate of women³. For instance, in Latin America, modernization and social transformation which is explained by transformation of persons from unpaid agricultural work to other sectors, consistent increase of schooling and active labor force participation of women had a substantial contribution in decreasing fertility rate in developing countries (Guzman, 1994). However, in the contrary some studies have showed a positive relationship among women employment and fertility. A good example is the experience of Nordic countries which showed a significant positive correlation between these two variables in the year 2003 (Gupta et.al, 2008). This contradictory result suggests that it is important to examine the relation between these two variables in different countries contexts.

Hence based on this, this paper will take a small part from the wide debate regarding the association between women employment and fertility behavior of women. The primary purpose of this paper is to investigate how fertility behavior is affected by the patterns and levels of employment of women in Ethiopia. The reverse effect (the impact of fertility on women employment) will not be addressed in this paper. In the other word the issue of causality⁴ which is commonly raised by scholars while studying the association between these variables is not the issue of this paper.

1.1 Motivation

Now a day's following urbanization, implementation of various structural changes and other related policies that encourage participation of women in the labor market, the share of women employment in the labor market has increased in Ethiopia as compared to the very past eras. In the other side the fertility trend has also shown gradual decreasing trend from year to year. Thus, in the first place the mutual changes of the trend of women employment status and the fertility level have motivated me to examine the association between these variables in the context of Ethiopia. In the second place, intricate results that have been found in various western countries

³For more detail regarding the impact of economic performance of a country on the fertility behavior women (See M. Farooq and Tuncer, 1974)

⁴See Cramer 1980, Bernhardt 1999.

are also drawn my attention to study the experiences of developing countries regarding the nature and patterns of the association between female employment status and fertility behavior in the context of Ethiopia.

1.2 Aim and Scope

Many Scholars who study the association between this two variables are often raised the issue of causality. They pointed out that causality of this variables flow in both directions. That is, fertility may affect employment of women and women employment also in turn affects the fertility decision. For instance, in his study of problems of causality of fertility and employment, Cramer(1980) has Pointed out that the effects of fertility on employment dominates in the long run and the effect of employment on fertility is dominated in the short run. However, the causal direction is not clearly identified yet. Due to the cross sectional nature of the data, this paper will not go through the issue of causal direction. Thus, as try to describe above the primary aim of this is paper is to figure out how the level and patterns of women employment affects the fertility behavior of women in the context of Ethiopia.

This study encompasses all married widowed or divorced women from all regions of Ethiopia. Thus the scope of the study is at the country level. Since the tendency of giving birth without marriage is very rare in Ethiopia, this study did not include the fertility behavior of women who have never married up to the survey periods.

Thus in this paper, the association between women employment and fertility behavior will be analyzed at a country level and it also compared among rural and urban areas. Moreover, the difference in the association between these two variables is also compared among the cross sectional years of 2000 and 2005. The findings from this study can be served as an indication for the nature and pattern of the relationship of these variables in most of sub-Saharan countries which have equivalent fertility rate, women employment rate and more or less similar economic performance to Ethiopia.

1.3 Research Questions

In this paper the effect of women employment status on fertility among different regions and particularly among rural and urban areas of Ethiopia will be investigated. To do that the actual number of births and ideal number of children that women want to have as taken as a

fertility level measurement. And concerning to women employment, the current and one year prior to the survey period is considered to trace employment status of women. Parallel to this, I also intend to show how consistent is this relationship among two survey periods (2000 and 2005). Hence, based on these intentions the following research questions have formulated:

1. Was the employment status of women affecting the actual and ideal number of children in Ethiopia in the year 2000 and 2005?
2. Was there any difference in the association between women employment and the actual and ideal number of children across two cross-sectional years and on place of residences that women resided?

1.4 Outline of the Thesis

This paper is organized starting from the background section. In the first part of the background section, the trend and pattern of fertility and women employment will be discussed in the context of Ethiopia. Hence in this part of the backgrounds section, the perceived difference among urban and rural and regional difference will put forward for both cross sectional years of 2000 and 2005. Cultural, socio-economical as well as the traditional way of living style of women in relation to fertility and employment will also be assessed in this subsection. Following to this, the theoretical frame work and previous studies will be presented. In this part of the background section, various essential theories which show the association between fertility behavior of women and their economic performance will be discussed in light previous researches.

Next to the background section, statistical analysis part will be put forward. In this section statistical models which are suitable for the relationship between these two variables will be discussed. Poisson and logistic regression models will be brought for discussion respectively. In addition to this, various hypotheses will be formulated based on the theories and the research questions which are stated in this paper.

In the last section of the paper the overall results of statistical analysis out puts will be presented. And the results of empirical results will be discussed in detail in this section. Finally the overall results and findings will be summarized in the conclusion section of the paper. The conclusion part will reconsider the hypotheses and the research questions and discussed the findings based on the hypotheses and research questions of the paper.

2 Background

In Ethiopia, the fertility rate of women has been studied in various time periods by considering various determinants that limit the number of children that the women will have. In developing countries, contraceptives, educational attainment, economic performance of a country, employment status and some cultural aspects is mentioned for determinant of the number of the children. To perceive the contextual nature of the relationship between women employment and fertility behavior, the real setting of Ethiopia is presented below regarding the trend and pattern of women employment and fertility rates over time.

Ethiopia is one of the multiethnic and multicultural countries in Africa. The country is divided into 9 regions according to their ethnic and language similarities and 2 city administrations. Wide variety of cultural socioeconomic and demographic characteristics has shown both in inter and intra regions. For instance, the fertility rate of one of the city administration and the capital of Ethiopia, was 1.8, where as in other regions it soared to 6.2 in Oromia region followed by the regions of Somalia (TFR =6) and SNNP ⁵ (5.6) which are above the national fertility level (DHS 2005).The proportion of population living in each regions is also varied in a wide range. About 36.7% of the proportion of the country's population was found in Oromia Region, followed by this Amhara region constituted 23.3% and next to that SNNP and other regions are followed accordingly .The lowest proportion is found in Harari regional State which constitute 0.2% of the total population in Ethiopia (CSA 2007).

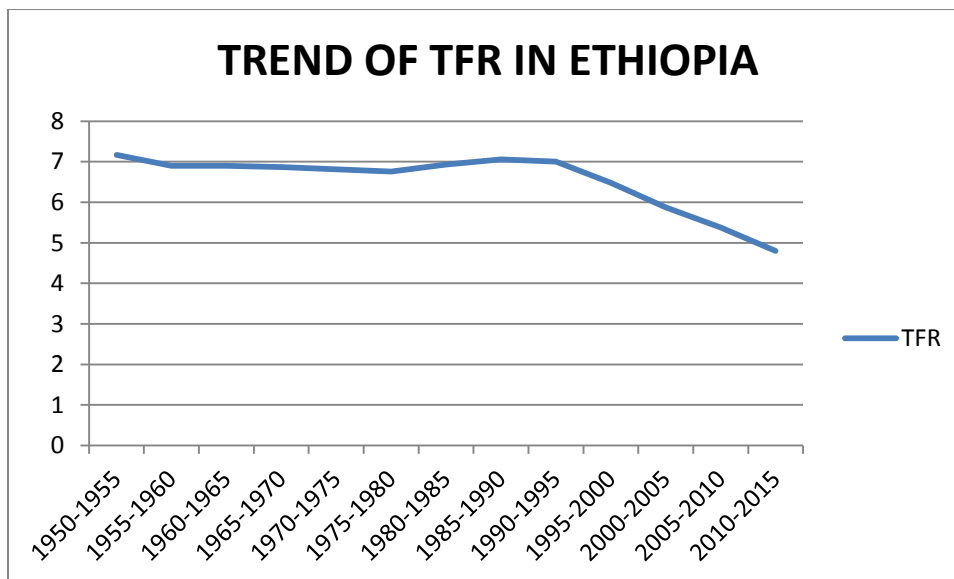
2.1 Trend of Fertility Rate in Ethiopia

Ethiopia is one of the sub-Saharan African countries where high and persistent fertility rate has been seen for a long period of time. Although a slight decreasing trend has shown from year to year, it is still high as compared to developed nations. Various reasons have mentioned for the reasons that kept the fertility rates still high in Ethiopia. Poverty, low level of education, economic status and less autonomy of women and traditional barriers have usually mentioned

⁵SNNP stands for the region “South Nations and Nationals People”.

as a reason for this persistent and high fertility rate in Ethiopia. Figure1, below shows the trend of fertility overtime. As we perceived from the figure, we can categorize the trend total fertility rate of Ethiopia into three main categories based on the periods when similar patterns have been revealed. The first category includes periods (1950-1980), the second category includes the period (1980-1990) and the last category includes the periods (1990-2015).

Fig1. The Trend of Total Fertility Rate in Ethiopia in the period 1950-2015



Source: United Nations population division

Total fertility (children per woman)

Medium variant (1950-2015)

In the first category, the trend of total fertility rate has shown a very slight decline for the consecutive three decades. The rate declined from more than 7 children per women to 6.76 children with in thirty years. In the second phase the trend has shown an increasing trend for about a decade and soared to the 7 children per women. Relatively significant decline has shown in the last category between the periods 1990-2015. The rate dropped from 7 children per woman to 4.8 within these periods. The trend also showed a slight decline between the cross sectional years 2000 and 2005.

2.1.1 Fertility differentials in Urban and rural areas of Ethiopia

As it has mentioned above the fertility rate of women has varied significantly by place of residences (urban vs. rural). Eighty five percent of Ethiopian population is residing in rural areas .Hence, the estimate of the national level fertility rate is highly influenced by the level of rural areas fertility rate.

In 2005 the total fertility rate was 2.4 children per woman in urban areas and this rate was reached 6 children per woman in rural areas (DHS 2005). A substantial variation has also been seen on the percentage of pregnant women by place of residences. For instance, during the survey period of 2005, the percentage of pregnant women was 2.7% and 9.7% in urban and rural areas respectively. Although the difference of fertility rate is a bit smaller as compared to the year 2000, significant fertility differential has been seen in the year 2000, among rural and urban areas of Ethiopia. According to this, the average number of children was 6.4 in rural areas, where as it was only 3.3 per woman urban areas during this period.

2.1.2 Fertility differentials by educational attainment and autonomy of women in Ethiopia

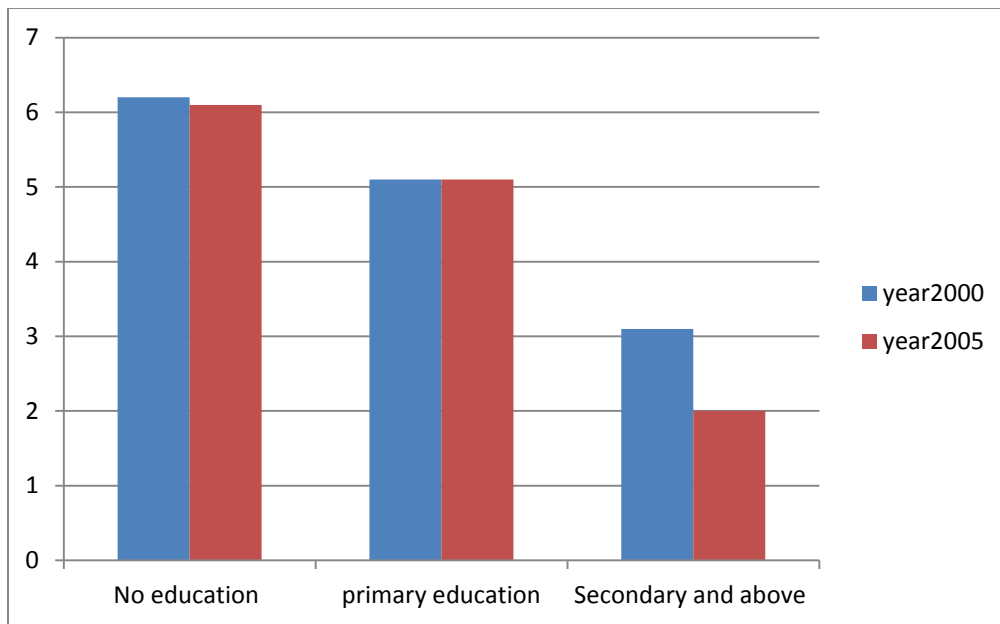
Educational attainment of women has a substantial effect in determining the fertility level through increasing the attachment of in the labor market and enhancing their autonomy in decision making and by increasing age at marriage. Hence, it is important to look at the variation of educational attainment across place of residence and calendar years in order to perceive appropriate fertility differentials throughout the country.

Various survey results show that, in Ethiopia Educational status of women is at a very low stage as compared to the male counterparts. In the year 2005, among all school age women living in Ethiopia only 33% have attended school. Among this 28 percent was attended primary education and only 5 percent were attended secondary and higher schools (EDHS 2005). Similar trend was also revealed in the year 2000. However, now a day`s the participation rate of women has grown across each educational categories as compared to the situations prior to 6 years ago.

Pronounced differential of educational attainment is also revealed across place of residences. The women who lived in rural areas have very limited access of education as compared to urban dwellers. Sixty seven percent of women who reside in urban areas have attended school, but this figure dropped to 27 percent in the women who reside in rural areas.

Like place of residences, pronounced variation of fertility has also been revealed in the educational attainments. Women who have no education had significantly higher fertility rate than those women who completed secondary and tertiary education in both cross sectional years of 2000 and 2005. The average number of children women who were receiving secondary and above education has less than by 3 children in the year 2000 and by 4 children in the year 2005 as compared to women who received no education. Unlike to the women who received no education and primary education, substantial variation of fertility has shown in the women who attended secondary and above education between the calendar years of 2000 and 2005 (see fig 2).

Fig2. Fertility differentials of women by educational attainment in the year 2000 and 2005



Source: Central Statistical Agency of Ethiopia and ORC Macro

Although considerable variation was revealed across various educational attainments, due to a very small proportions of women who received secondary or above education, high fertility level was shown at a country level. In contrary to this, in urban areas of Ethiopia where women's educational attainment is fairly high as compared to rural areas has shown relatively low fertility rate.

Autonomy of women is other factor which supposed to affect the fertility level of women by enhancing their own decision regarding their fertility preference. In some countries cultures like Ethiopian rural areas, most of the women are ruled by their husbands. Hence, any decisions including the decision of giving birth and use of contraceptive methods is usually determined by

husbands only. For instance the finding from the 2005 demographic and health survey indicate that, women`s empowerment has recognized in reducing fertility behavior at least in to two ways. The first it`s negative relationship to the desired number of children and second one its positive relation with contraceptive uses (EDHS 2005). For instance, the average desired number of children of women who have high decision power was 0.3 less than that of women who have less decision power.

2.2 Women`s Employment in Ethiopia

Similar to most sub-Saharan African countries, high proportion of the women who are living in Ethiopia is predominantly engaged in agricultural unpaid works. The engagement of women in professional clerical and managerial fields is very limited. Due to low educational attainment and some traditional factors the enrolment of women in the labour market is very limited. Thus most of the women are spending their time in their home as a housewife. Given the predominant engagement of women in the agricultural sector, notable variation has revealed on the average employment rate of women in the year 2000 and 2005. According to the DHS report of Ethiopia, the average employment rate of women was estimated to be 29 percent in the year 2005. Whereas, during the survey period of 2000, it was around 57 percent of the women were working either full time or seasonal jobs. This notable difference among the two calendar years attributed to the difference in the way of data collection regarding to the current employment status of women (DHS2005).

Regarding employment status of married women, among all women in the age interval 15-49, the employment rate⁶ of currently married women is estimated to be 63 and 32 percent and in the year 2000 and 2005 respectively. However, in spite of this high proportion of women employment, large percentage of the women was engaged in agricultural jobs which are predominately characterized by unpaid jobs. For instance, according to 2005 DHS finding, 81 percent of the women who are engaged in the agricultural works is not received any kind of payment. Among all married women who have a job, 68 and 62 percent of them were engaged in agricultural works in the years 2000 and 2005 respectively.

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⁶ For this study Employment rate is defined as the percentage of the employed individuals from the total labor force. The employed encompasses all form of employment such as self employment, apprentices, temporary not working but in the formal job etc. (for detail see ILO 2010 report.

Among all working women, 59 percent earned their payment either in cash only, both in kind and cash or in kind only in the year 2000, where as in the year 2005, only 48percent of the working women earned some form of employment. Thus, around 41percent in the year 2000, and 52 Percent of working women in the years 2005 respectively, didn't receive any form of payment for their work (DHS 2000). It shows that in addition to the less proportion of employed women, pronounced percentage of them are segregated in unpaid works, which in turn limits their autonomy and earning capacity.

Like other socio economic and demographic variables which have mentioned above, consistent variation of women employment has revealed among urban and rural areas of Ethiopia. In rural areas of Ethiopia more than 66 percent of employed women was engaged in agricultural works, the rest was engaged in various occupation other than agricultural works which is predominantly characterized by paid jobs. In urban areas, non agricultural occupations such as professional, managerial, clerical etc jobs are widely practiced. In the year 2005, more than 98 percent of employed women who have been residing in urban areas are employed in non agricultural jobs. Although, the differential of women employment in non agricultural job across place of residence was a bit less as compared to 2005, there was also a pronounced variation in the year 2000. According to this, the percentage of employment in non agricultural jobs in the year 2000 were 3.7 percent and 69 percent for urban and rural dwellers respectively (EDHS 2000).

2.3 Previous Research

The relationship between women employment and fertility has been studied both at micro and macro level in the context of various countries in different period of time. Findings show the intricate results across different regions and countries. Studies in some countries revealed that there is a positive relationship among these two variables and the other found inverse relationship, and the rest have shown no association at all. Since it is quite scarce and hard to find studies in the relationship between women employment and fertility in least developed nations such as sub Saharan African, I have been using some empirical findings of developed nations along with developing nation's findings for illustration purpose.

Studies which have conducted in developed countries have generally revealed a negative relationship among these two variables. For instance, F. Jones (1981) in USA, Bratti (2002) in Italy and Kalwij (2000) in Netherlands; all have found that women employment will have a negative impact on the fertility level of women. Various reasons have suggested regarding the negative relationship among these variables. The dominancy of paid work in the labour market is usually mentioned for the primary cause for this predominant negative relationship in the developed nation⁷. Bernhardt (1993) in the review of empirical evidences in the association between these variables in industrialized nations concluded that; industrialized countries, where paid work is dominated, generally revealed a negative association between these two variables.

Along with the dominancy of paid work, taste of preference has mentioned for the occurrence of this inverse relationship. For instance, Bernhardt make use of Hoffmann`s (1988) findings on the effect of employment status of Swiss women on their fertility to show how preference affects the relationship between employment status and their fertility level. The finding show that due to the reason that married women remains in the labor market after marriage, the fertility of Swiss women have affected negatively. Bernhardt (1993) argued that this negative relationship probably raised from the selection phenomena. The Swiss women are more likely prefer to stay in the labor force after marriage and shows a little ambition towards giving birth. However, In spite of these facts, positive relationship has been revealed in some OECD countries in the years 1980s and 1990s.

In contrary to the basic theories, group of countries which are characterized by high women labor force participation have been revealed an increment in their fertility rate (Matysiak and Vignoli, 2007). Following these associations, many studies have emerged during this period and various reasons have put forwarded. In the first place introduction of new Institutional arrangements and policies that decreases the conflict between reproductive and productive role of women of various countries have mentioned for the cause that accounts for the positive relationship among this variables. Flexibility of labor market, generous parental live during child birth and expansion of part time jobs are some of the factors which are associated to this policy and institutional changes that encourage women to run both roles simultaneously without contradictions.

These institutional variations have led also to the cross national variation regarding the relationship between labor force participation and fertility rate among various countries. Matysiak and Vignoli(2007), in their meta analysis of fertility and women employment of various western countries, assessed the cross national variation of countries regarding the relationship between women labor force participation and fertility level. According their findings, due to favorable institutional settings that supporting and encouraging working mothers, the conflict between the activities of women employment and family is comparatively low in the social-democratic (Nordic countries) and socialist (Czech Republic, Hungary and Poland) welfare regimes. In the contrary, the liberal (United States and United Kingdom), conservative(,France , the Netherlands, West Germany) and familialistic(Italy and Spain) welfare regimes have revealed the more stronger conflict between work and fertility as compared to that of social-democratic and socialist welfare states. Limited institutional support and rigid labor market structures are account for the stronger conflict of work and family particularly in conservative and familialistic welfare regimes.

In addition to this, changes of socio-cultural characteristics of a society are also supposed to be attributed to the changing of the inverse relationship. In the culture of some societies, it was common entitling women as a house wife and husband as a breadwinner. The changing of the attitudes towards working mother weakening the conflict of childbearing activity and employment of women in the labor market. Thus the context of each countries in relation to institutional and socio-cultural characteristics are more likely determine the sign of the relationship between women employment and fertility that leads to the cross national variation.

Intricate association between women employment and fertility was also shown across various developing nations as well. Beguy (2009) has studied the impact of women employment on fertility behavior in two African cities, Dakar (Senegal) and Lome(Togo) . The findings show that in the case of Lome the involvement of women in the paid work are more likely delayed the time of giving birth. Whereas, in Dakar, women are running both activities, rearing of children and participation in the labor market simultaneously. Thus, it appears that the employment of women in the paid work is more likely affect the fertility behavior of women in Lome, but not in

Dakar. The author demonstrated here that this difference is appeared due to the variations of social gender-specific differences among these nations.

Moreover, in addition to cross national variation, the relationship between women employment and fertility behavior is also varied in the regions of a given nation as well. For example in the comparison study of three counties in rural china, different relationship of women employment and fertility have found among all these counties. The counties have been selected by their socioeconomic development background. The finding shows that in the area of Jiang(a more developed county) , a negative relationship is found. Where as a positive relationship has found in a less developed county of Luochuan and no relationship found in a medium-developed area of Xiaoyi (Shuzhuo et al, 1997).

Apart from regional variation, significant variations have been revealed in the pattern and magnitude of the association between these variables over time. The improvement of attitudes towards working mothers, globalization that creates a competition in the labor market, urbanization and expansion of industrializations are some of the variables that have changed dynamically over time. The changing of these factors will influence the employment status as well as the fertility behavior of a given society through creating competition in the labor market and enhancing the participation of women in labor market accordingly. Thus, the conflict between women employment and family is greatly varies with the time period accordingly. In order to perceive the variation of incompatibilities between women employment and family, scholars have divided the cohorts in to different periods. For instance (Matysiak and Vignoli, 2007) have been classifying the samples under study in to two cohorts, prior and after the year 1960. Thier finding has shown a significant reduction of the effect of women employment on fertility overtime. The authors argued that several factors are attributed to the reduction of the effect over time. The change of attitudes towards working women, emerging of new policies that encouraged mothers to accomplish both childbearing and works in the labor market are some of the improvements that have accounted for the reduction of incompatibilities of the reproductive and productive roles of women at home and in the labor market respectively. Cramer (1980) also point out that that due to the dynamic nature of the fertility and employment variables

,current employment status will decrease both actual and expected number of children in the long run.

The opportunity cost of having children is the other issue which limits the number of children in various countries. Turchi (1975) studies the decision of women in giving birth in USA by using the perceived cost of having children. According to his finding, an increment of the number of children in the family imposes some additional hours of house work for the wives in the family. Thus, he demonstrated that wives in the three children families will have to spend around doubled additional hours of house work as compared to the wives with only one child (Turchi, 1975). Therefore, this clearly shows that the decision of having children is greatly influenced by its opportunity costs. The UN studies in a group of developing countries has also shown that most women who have occupied in the modern, mixed and professional occupations are more likely to have fewer children than those who are engaged in the traditional occupations. The presence of wage differential among these various occupations has been mentioned as one of the reasons that creates these differences among these groups. Given that the likelihood of women who have just given birth in the labor market, the opportunity cost of having children is higher among high wage earners, professionals than that of self-employed or low wage earners. Findings also confirmed that women's wages have a great depressing effect on women fertility at least in developing countries (see Rodriguez and Cleland, 1981).

Culture, tradition and socioeconomic status of a given society have also influenced the relationship between these variables. In most of developing nations, particularly in sub-Saharan African countries, cultural attitudes of parents perceiving their children as a source of labour and as old age security to them is common. Due to the lack of social security and pension system during older ages, children are usually taken as a source of security and support to their parents during the older ages. Moreover, children are served as a source of labour in least developing countries even at a very early age. Such kind of child labour is common in most of rural areas of Africa where agriculture is a predominant activity. Thus, in these societies, children are viewed from an angle of economic benefit in addition to a source of joy to their parents. On top of that, preference of sex of children is another issue which is manifested in cultures of some countries and can also affect the fertility level. Thus, these cultural factors will influence the relationship between women

employment and fertility through their impact in the relative preference and taste of children (Turchi, 1975). Scholars usually put in to consideration the effect of cultures and tradition while studying the relationship between women employment and fertility under different regional contexts. These cultural effects also have created substantial differences in the pattern and magnitude of the association between these variables. For instance, Shuzhuo et al, (2008), have introduced the preference of son children in their model to capture cultural differences among three counties in rural china. Their findings revealed that the cultural variable of preference of son is a significant determinant of women's fertility behaviour in all counties under study. This finding clearly indicates that the preference of son children as a cultural variable plays an important role in shaping the relationship between women employment and fertility behaviour

Other variables like kin support and related norms and traditions are the most important cultural determinant of fertility behavior of women in developing nations like Ethiopia (Ethiopian Society of Population Studies, 2008). In such kind of society the kin and inter familial support is very strong in helping parents in the process of rearing children. In these societies, rearing of children is not the only responsibility given to biological parents; rather it is shared by the relatives and neighbors. Thus, the effect of women employment has a diminished effect on reduction of fertility in this kind of society. Solomon and Kimmel (2009) in their study of the impact of fertility on women employment in Ethiopia have found insignificant relationship between these variables. And the authors indicated that the probable reason that eradicates this negative relationship would be the extended family and kin support which have seen in Ethiopia even in the current periods.

2.4 Theoretical background

Starting from Malthus various theories are proposed regarding the relationship between women employment (increase of income) and fertility behavior in different times. In this paper two dominant theories, namely the women's incompatible and opportunity-cost theories will be forwarded.

Malthus related high income with high fertility rate. He argued that high income would facilitate earlier marriage and more sex which ultimately gives raises more children. Therefore, according to Malthus theory increasing of income will ultimately leading to the high fertility

rates. However, this theory is criticized during these days due to the changes of the life style and modernization of this contemporary world. Despite the fact that modernization and changing of life style, scholars are argued that in some remote areas of developing countries, income (which can be explained by accumulation and possession of agricultural land) still will lead to high fertility rate.

Next to Malthus, Neoclassical models of consumer and demand is adapted. This model view parents as the consumer that chooses number of children that maximizes their utility subject to the price of children and budget constraint they face. Becker (1960) adapted this relationship by considering quality of children and the importance of parental time in rearing children, and he rejected the assertion of neoclassical theory that views children as inferior goods.

The adapted Neo classical model put forward two models in the analysis of the association between fertility and women labor attachment .The first one is the so called quantity and quality tradeoff model. This model stated that the reduction in the household size will lead to increase in the investment of a given income in a particular child (per child spending) in the assumption of increasing the quality of children. Becker (1960) argue that the decision(preferences) of parents having children is not only depend on the number of children but also the quality of children (money spending per child) .Thus , contrast to Malthus and Neoclassical model of consumer and demand : Becker argued that due to the fact that the preference parents having children is depend on both quality and quantity of children, he treated children as superior good. Hence, although there is an increase of income of parents, it may not be necessarily related with increase of the number of children due to the preference of the quality of children.

The second issue related to neoclassical model is the opportunity cost of having children. This theory is basically states that since childbearing is a time intensive task, women at work are most likely prefer to have fewer children just to decrease the opportunity cost of having children (Becker, 1965). This argument is formulated based on the incompatibility of women employment in the labor market and child bearing activities in the household. Women usually stuck at market work will not have enough time to bear their child. Thus parents are either limit their number of children or may postpone the tendency of giving birth to later ages.

However, this incompatibilities may change depend on some macro level factors that encompasses policies and institution of a given country. The availability and affordability of day care services, the structure of parental leave, and other related institutional structures are

supposed to affect the direction of the association between women employment status and the number fertility behavior at least at a macro level.

Policies and institutions of a given country or work place may account for the variation of fertility rates of women`s among different countries. The variation is caused by due to flexibility or rigidity of policy and institutions that influence the possibility to combine family and careers. For example, in the case of Sweden and other Nordic countries, the institutional establishment and arrangement address the gender equality issues and creates work-family balance (Datta.G et al, 2008). This will expect to enhance fertility rates and continued child bearing among the one who wants to accomplish their career at the labor market and their family tasks simultaneously. Hence as a consequence positive relationship has revealed among women labor force participation and fertility rate in many of the countries of this region.

In addition to this, the prevalence of public child care services may have also enormous influence on the decision of parents to give birth. This will expect to enhance fertility rates and continued child bearing among the one who wants to accomplish their career at the labor market and their family tasks simultaneously. In addition to this, the prevalence of public child care services may have also enormous influence on the decision of couples to give birth. Since public day care services are taking care of children, it will help couples to have children without affecting their working hours at least during working hours (see Ermisch, 1989).

On the other side socioeconomic variables such as earning capacity and educational attainment of women are also influence the relationship between women employment and fertility. This variables are usually supposed to increase women`s empowerment and autonomy in decision making concerning to fertility. Studies shows that women with higher educational attainment will possibility to be hired in labor market and more probably postponed the time of transition to parenthood or decreased their number of children. And on the other hand since caring of children is a time intensive task, which possibly affects mother`s time who are participating in the labor market, women who earn higher income are more likely decrease their fertility rate as compared to other women.

Cultural and religious variations are also account for the direction and magnitude of the fertility level of women channeled through their impact on relative tastes and preferences for children (see Espenshade, 1977). For instance, traditional work division is very common in developing regions that allocate women for household`s tasks and man as a bread winner.

Traditionally house hold chores and caring of children and elderly is often given to women as a compulsory task. In many third world countries this kind of labor division has taken as a norm in a society. Therefore, many women in these countries are always depends on the income of the man. They have a very limited autonomy in making of decision concerning to any issues including fertility. Recent studies states that due to a patriarchic culture persistence in many countries, women usually controlled by men in decision making, use of resources and even denied the right to decide about their professions to be employed(world bank 2009). The usage of contraceptive methods and real autonomy of women in deciding the fertility rate will therefore affected by the culture of a given society as well. Thus, it is crucial to consider these variables while studying the association between women employment and fertility behavior of a given society.

2.5 Hypotheses

Based on theories of economics of fertility, the following hypotheses have formulated to assess the relationship between women employment and fertility in the context of Ethiopia. As it is tried to indicate in the back ground section, pronounced variation of demographic, socioeconomic and cultural variation has been revealed among rural and urban areas of Ethiopia. It indicates that the relation between women employment and fertility is influenced by differentials of setting place of residence. Thus, the hypotheses are also revolved around these differences. In addition to this, other hypotheses will be presented accordingly basing the theories and research questions in the context of Ethiopia accordingly.

Hypothesis 1: Due to the incompatibility nature of child bearing and career in the labor market .It is usually hard for women to combine both household tasks (childbearing and rearing) and the labor market career. Hence, it is expected that working women have less number of actual and ideal number of children than women who are not working.

Hypothesis 2: Due to the strong career competition in urban areas, it would be difficult for women to regain their previous job after a career break. Hence, the incompatibility of reproductive and productive role of women is high in urban areas. On the top of that, because of the dominancy of paid job in urban areas, the opportunity cost of having children is high in these areas. In the contrary, in rural areas there is still persistent believe that children are considered as a source of security in the family during old age and they also highly needed in farm activities to

serve their family. For instance, Caldwell and Caldwell (1987) associated the economic benefit of children to high fertility rate in Africa. They argued that in these areas children are not only considered as a source of joy for their parents, but also they are expected to participate in the farming activity to help their parents. Thus traditional belief which is widely experienced in the rural areas of Ethiopia is supposed to depress the negative relationship of women employment and fertility level in rural areas as compared to urban areas. Therefore, I expect that women in the labor market and live in urban areas are more likely have less number of children as compared to not working women and negative relationship is more likely higher in urban residents as compared to women who are living in rural areas.

Hypothesis 3: In Ethiopia the predominant farms are rain fed, thus farming activities have usually done seasonally during only rainy seasons once or twice a year. Hence, this seasonal nature of agricultural works will weaken the contradiction between childbearing and the labor markets activities of women. Moreover, flexibility of work is very common in agricultural works than that of professional or clerical or managerial occupations which have relatively rigid work situations. Therefore, I expect that actual and ideal number children that a woman want to have is higher in to women who are engaged in agricultural works as compared to women who are engaged in non-agricultural occupations.

Hypothesis 4: Due to the high opportunity cost of having children to a Woman who is engaged in a paid job, women who are in the paid job have more likely have less number of children than women who is hired in unpaid job. Hence, the decision of having children is greatly depend on whether accepting or not of the forgone income due to having children. However, if the women is the only person who is responsible for the family`s source of income, the opportunity cost of having children would be more strong. Hence I expect that women who have hired in a paid job are more likely to have less number children than unpaid ones.

3 Data

For this study a cross sectional micro data from the demographic and health survey of Ethiopia is employed. It was conducted by the central statistical agency of Ethiopia in collaboration with ministry of health. This survey is a part of demographic and health surveys which was conducted in worldwide among in many of the developing countries. In Ethiopia the first survey was conducted in the year 2000 and following to that the second one is conducted in

the year 2005, the third series of the survey (EDHS 2011) is on the final stage to be published. Thus in this paper I used only two surveys which was conducted in the year 2000 and 2005.

Both surveys cover various topics which are related to fertility, mother's health and child (infant) mortality, women empowerment etc. The data has been collected at household level and couples level in both years.

In the 2005 Ethiopian demographic and health survey, two stage stratified cluster sampling method was employed to select representative samples from all regions in the country. In the first stage, by using the sampling frame of the 1994 population and housing census, 540 clusters which contains 145 urban and 395 rural areas, were selected. In the second stage a representative sample of around 14,500 households were selected from the given cluster. Where as a in the survey of EDHS 2000, by using systematic sampling method 539 enumeration areas which are composed of 138 urban and 401 rural areas were selected. Then by using probabilities proportional to size methods 27 households were selected from each enumeration areas. Based on this a representative sample of individuals have selected in both survey years. Thus the 2005 EDHS survey covers 20,103 eligible individuals (14,070 women age 15-49 and 6033 women age 15-59), where as in the year 2000, 17,974 eligible individuals (15367 women age 15-49 and 2607 men age 15- 59)⁷.

In these surveys the Women's Questionnaire was used to collect information from all women of age 15-49 years. These questionnaire covered household and respondents backgrounds and the fertility level and preferences of all women who were eligible for the survey. For this paper all women who are declared that they are married or cohabit with their partner are included. According to these, for this study 2967 women from EDHS2005, and 1269 eligible women from EDHS 2000, are selected respectively. That means women who are never married are not included in this study. The reasons that we exclude these members of women who have children without marriage is due to the rare occurrence of births outside marriage in Ethiopia.

⁷ For details about sampling strategies (see EDHS 2000, EDHS2005 and DHS III sampling manual, 1996).

Hence, our unit of analysis will be at individual level (married women's). Besides their demographic and household background they are also asked about their spouse's socio demographic background. In addition to their fertility behavior, each woman was also asked about employment status of her own and her spouse's during the survey year and one year prior to the survey. The response rate was extremely high in both surveys. It is reported that response rate of married women respondents were 97.8 and 96 percent in the years 2000 and 2005 respectively (EDHS 2000 and 2005).

3.1 Limitation of the data

In spite of the effort to include each and every administrative region which is situated in Ethiopia, some places in the region of Somali and Afar are not included in the population sampling framework. The dominate nomadic nature of the societies in some areas of these regions can be mentioned for the primary reasons that were not covered during the census period. Thus, the exemption of these areas in the region of Somali and afar may expose these regions to representative bias of regional estimates (EDHS report 2005).

In addition, this data sets lack some important variables which are used for more detailed analysis of the relationship between the fertility and female employment. Amount of earnings of individuals and part time or full time working groups in the employment of women are not included in the data sets. Regarding to earnings, this variable would be useful in determining the individual's income differential and their reaction towards fertility preferences. The same is true for part time and full time employment schema. Scholars argue that women who is hiring in part time job will a better opportunity to care their children together with their career than full time workers do. Thus the lack of these important variables affects our study in some manner.

4 Methods

This study analyses the impact of women employment on the fertility behavior in the context of Ethiopia. To do this some important variables which are used to represent the fertility behavior of working women is considered. The actual number of children, the desired number of

children and the current pregnancy of married women that potentially represent the current fertility behavior are put forward for empirical analysis. Due to the fact that the data of employment status of women is available only for the survey period and one year prior to it ,only the current fertility behavior and desired number of children are employed in our analysis to figure out the correct association between women employment and fertility .

According to this, the number of births during 5 years prior to the respective survey years is considered in order to assess the general association between women employment and the number of young children. The current pregnancy status working women also included in the model to figure out the very recent effect of women employment on fertility. And at last the ideal (desired) number of children that a working woman wants to have in her life is considered to point how the preference of the women is influenced by other exogenous factors. In addition to this individual back ground, employment status, cultural variables and place of residence have included as an explanatory variables.

4.1 Statistical Models

For this study two different models have employed based on the nature of dependent variables under study. Due to the count and binary nature of the dependent variables the Poisson and logistic regression models are used accordingly.

The actual number of births (in the last 5 years prior to the survey period) and ideal number of children that women want to have taken as dependent variables in the first part of the analysis. Thus, due to the counting nature of the dependent variable the Poisson regression model is employed for these response variables.

Currently the Poisson regression model is widely used by many scholars to analyze discrete count variables. Scholars also employed this method to study and demonstrate the relationship between women employment status and fertility behavior. For example (Schultz, 1988, S. Kalwij 1998, Wang and Famoye, 1997) used hurdle count data and simple Poisson regression model to investigate the relationship between observed and ideal number of children and the female employment status.

The Poisson regression model is used to model the count variables putting some assumptions. This model should fulfill the assumption that the conditional mean of the variable

equal to the conditional variance. Given the response variables (y) and explanatory variables (x) that fulfill the assumption of Poisson regression, the model is given as follows

$$\text{Log}(\mu_i) = x_i'\beta \dots \dots \dots \text{eq.1}$$

$$\Rightarrow \mu_i = \exp(x_i'\beta) \dots \dots \dots \text{eq.2}$$

This model is referred as the Poisson regression model with log link

Where:

μ_i : the mean value of the response variable. I.e. $E(Y_i) = \mu_i$

β : The estimated regression coefficients

i : represents i^{th} observation

Interpretations of the regression coefficient (β)

Since our model logarithmic, unlike to OLS model a unit changes in x has a multiplicative effect on the mean of Y (μ).according to this the different interpretation is given for different values of the regression coefficient (β).

Therefore:

If $\beta=0 \Rightarrow e^\beta = e^0 = 1$ this indicates that there is no relationship between the dependent and explanatory variables

If $\beta > 0 \Rightarrow e^\beta > 1$ then this indicate that when the explanatory variable (x) increased by one unit then the mean value will be changed by e^β units larger than the original values .

If $\beta < 0 \Rightarrow 0 < e^\beta < 1$ this indicates that when the explanatory variable(x) increased by one unit ,then the mean value of group one will be smaller than the other by e^β units as compared to the original value.

I have employed STATA software for empirical analysis. Statistical command “**Vce**” robust method is used to get Robust standard errors for estimated parameters and to control the assumptions of equal mean and variance posed on Poisson regression models. Moreover, incidence ratio rates (IRR) is employed in estimating the coefficient of the regression models. This command will help to compare the fertility behavior of women among different level of categorical explanatory variables. According to this, the interpretation of the Poisson regression

output will be made by comparing the incidence rate of a given level of explanatory variables with that of a reference group.

The other dependent variable which is supposed to explain the fertility behaviour of the working women is the current pregnancy status of the women. The women were asked whether they were pregnant or not during the survey period. According to these women who have reported that she was pregnant during the survey period is assigned a value 1 and 0 otherwise. Hence, due to the binary nature of this variable logistic regression model is adapted for empirical analysis.

Logistic regression is used to predict the dichotomous outcomes. Depending on the number of category of the outcome variable, the model can be classified as binary or multinomial logistic regression. According to this, response variables which are dichotomy are analyzed by binary logistic regression model, whereas response variables which have more than two categories are usually analyzed by multinomial logistic regression model. Since our dependent variable (pregnancy of women) has a binary nature the binary logistic regression model will be employed for this analysis. In the case of binary dependent most assumption which is posed on linear regression model are violated. Hence, unlike to linear regression models, normal distribution assumption, linearity and equal variance assumptions (homoscedasticity) of error term is violated and it follows logistic distribution instead. More than this, linearity and of error terms also violated.

General Model:

$$\text{Logit}(p) = \log(p/1-p) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 \dots \beta_k X_k \dots \dots \dots \text{eq.3}$$

Where:

β_0 : The intercept term

β_i : regression coefficient (i=1, 2...k)

X_i : explanatory variables (i=1,2...k)

$P/1-p = \text{Odds} = (\text{Probability of presence of the character}) / (\text{Probability of the absence of the characteristic})$

The regression coefficient of logistic regression describe us how big is the effect of independent variables on the outcome variable. That is a regression coefficient with a bigger value signals that the explanatory variables have a strong effect on the outcome variables, whereas smaller regression coefficient indicates an opposite effect. In addition to this, the sign of the regression coefficients are served us determine the direction of the relationship among the explanatory and the response variables. According to this, a regression coefficient with positive value indicates that the explanatory variables increased the probability of the outcome, whereas negative values means that the decrease probability of the outcome. The logit (p) can take any value and the corresponding probability (p) is constrained to lie between 0 and 1.

The coefficient of logistic regression model can be interpreted in various ways. The first way is by considering original model as it is, we can interpret the regression coefficients as the same way as we interpret the OLS regression models. Hence, the coefficients can be interpreted as a unit change in explanatory variables will change the outcome of the log-odds of success of dependent variable by β^s unit. Similarly, the intercept term (β_0) can be interpreted as the value of log-odds of success outcome when all the risk factors (X^s) assigned a value of zero or controlled. However, since it is not natural to think terms in log-odds, most studies make use of odds ratios interpretation method to describe their logistic regression output results. Odds ratio can be calculated easily using statistical software and unlike to log-odds it lies between the values 0 and ∞ . In this paper STATA 11 software is employed to calculate the odds ratio of the regression coefficients.

The odds ratio can be interpreted as the change of odds when a unit change in the independent variable (or changes from reference group in categorical explanatory variables). According to this, the odds ratio greater than 1 indicates that the probability of the occurrence of success is higher than that of the probability of the occurrence of failure, while odds ratio less 1 indicates the opposite effect. Odds ratio with a value of 1 is a neutral value i.e. both outcomes (success and failure) are likely to occur equally. For this study, odds ratio interpretation method

has been employed to interpret results obtained from regression of pregnancy of women and explanatory variables under study.

4.2 Variable definition

4.2.1 Dependent variable

I have selected three response variables that represent the current fertility and desired number of women based on the data at hand. The first variable that is explored is the average number of births within 5 years period prior to the survey periods. This variable is employed to track the influence of current employment status of women on their current fertility behavior. The very current fertility behavior of women is also captured by exploring the pregnancy of women during the survey period. Moreover, the desired number of children that a woman wants to have also analyzed to explore the ideal number of children that a women wanted to have throughout her life. The summary of this three response variables are presented below across the two survey periods and by their employment status (See table1).

(Insert Table:1 here)

Table1 consistently shows that the working women have less fertility level than not working women in both calendar years. The fertility level among the two calendar years shows a bit inconsistent trend. Some indicator variables such as the desired and the current pregnancy revealed that there is smaller fertility level in the year 2005 as compared to the year 2000. However, the number of births with in the 5 years prior to the respective survey periods show that, there was more births in the year 2005 than 2000(see table: 1a).The fertility behavior of women in Ethiopia across calendar years and employment will be discussed more in the descriptive statistics section below.

4.2.2 Independent variables

For the purpose of this study explanatory variables are categorized in to three groups, namely individual background variables, employment status and cultural variables. Thus, the explanatory variables which are used in empirical analysis are described below in accordance with their category.

Individual backgrounds

Under the category of Individual back ground essential explanatory variables such as age of respondent, highest educational attainment, age at first marriage, marital duration and place of residence are included. The age of women in the data includes only child bearing age of women which ranges from the age 15 to 49. Each respondent asked how old they were during the survey periods. And the age of all women is reported in single years which are grouped in 5 age intervals which include about 10 categories in the datasets. For the sake of convenience, the age group is merged in to three. According to this the ages of women are re- categorized as very young age (15-24) young age (25-34) and older ages (35-49). Similarly educational back ground is categorized in to four categories as a woman who receive no education, primary education, secondary and tertiary (higher level education).

Women's marital background also asessed based on variables of age at first marriage and their marital duration. Moreover, as it has tried to indicate in the background section, there is a pronounced variation in demographic, socioeconomic, cultural back grounds among individuals who live in urban and rural areas of Ethiopia. Hence, to perceive this impact on the association between women employment and fertility, place of residence variation (Urban vs. rural) and regional back ground are also included in the estimated empirical models.

Employment status

Employment status of individuals is the main explanatory variables for this study. Occupation, seasonality of work, earning types and employment status of the partner are included under this category. The women asked about their current and previous (up to one year prior from the survey) employment status. According to this, individuals who were reported that they were working during or prior to the survey periods has divided in to two broad categories, namely individuals who engaged in agricultural and non agricultural activities. And each of these categories is further divided in to various occupations. For instance, non agricultural works include occupations such as, professional managerial, clerical, manual and service.

Moreover, the characteristic of work regarding of employment (seasonal vs. the whole year), whether it is a paid job or not, and works at home or away and the partner's employment are included in our model to trace the effect of the characteristic of work on the fertility behavior

of women. For instance, if we consider the variable “terms of employment”, it is classified in to seasonal or all year. Thus, this classification is used to capture the flexibility of work. A woman who hires in seasonal jobs is more likely have get enough time to take care of her family due to the flexibility and seasonality of job. In the contrary, rearing and taking care of children is difficult task while stayed at work for the whole season. In fact, this relation could be more explained, if we would have working hour’s information (part time vs. full time) in the datasets. The engagement of women in paid job is also supposed to determine the autonomy of women in relation to the decision making of women related to their fertility preference. Paid job may also reduce the fertility level by maximizing the opportunity cost of having children.

The nearness or farness of work place from home has a more pronounced effect for self employed women especially who works at family farms. Woman who works around home can look after her child while at work. Hence, this closeness of work place to residential place will decrease the incompatibility of reproductive and productive roles of women in some manner. Employment of partners is the other factor which determines the fertility behavior of women by enhancing family’s income. Hence, husband`s employment is supposed to affect the fertility level of women positively.

Cultural variables

In many of least developed countries like Ethiopia, cultural variables have great importance in determining the fertility behavior of women. These variables usually influence the relationship between work and fertility by affecting the decision and preference of the women.

For this study some cultural and traditional variables which are supposed to influence the relationship between women employment status and fertility behavior are selected based on their importance in the context of Ethiopia. Preference of sex of child, religion, and the tendency of women using contraceptive methods are some of cultural variables which has employed in this study.

Due to the intension of parents that need their children to help them on their farm activities and for old age security, the preference of male children is dominate in the context of Ethiopia, especially in rural areas. Thus, there is a general tendency of parents to give another birth if the sex of the child in the first birth is not matched with their preference.

Religion is also expected to influence the preferences and some cases the use of contraceptives through its denominations. The religion of the respondents has classified in to three groups. The first group includes all Christian religions (orthodox Christian, catholic and protestant), in the second category all respondents who are Muslims are included and in the last traditional religions have employed. Autonomy of women usually put forward in determining these relationship through enhancing the decision making power of women in regarding the giving birth. Due to the persistent tradition of entitling women for household tasks and men as a bread winner and other related cultural factors, most of the time decision of fertility is authorized by man. Hence, the use of contraceptive of women, especially women who have limited autonomy is highly influenced by male partner's preference.

The distributions of all explanatory variables are summarized according to their respective category in table in table 2.

(Insert table: 2 here)

4.3 Statistical Modeling

Endogeneity is a common problem that usually occurs in analyzing the relationship between these two variables. These problems can be caused either due to the unobserved factors or simultaneity that is caused by the reverse causality of women employment on the fertility rate. To control this problem scholars suggest the use of some instrumental variable in the given model. However, the presence of appropriate and strong instrumental variable is depend on the availability of exogenous variables in the data set that explain labor force participation of women but not the fertility behavior (Kimmel and Solomon, 2009). Various studies proposed various instrumental variables that can be used to eradicate the problem of endogeneity. For example, (Fang ,et.al 2009) take the availability of bus stop in the rural china is taken as an instrument that explain labor force participation but not the fertility behavior.

In this paper, efforts will be made to minimize the problems caused by endogeneity of variables by running various models rather than estimating a single model. Hence, a model which estimates the number of current births, the desired number of children that a woman wants to have thorough her life time and the current pregnancy are analyzed in relation to the employment status of women.

As mentioned above, two kind models have been employed for the analysis of the relation between women employment and fertility behavior in the context of Ethiopia. The regression model which estimate the actual number of births within 5 years, and the desired number of children of employed women are estimated by Poisson regression model. Thus to do this, 6 different models which contains explanatory variables of background of women, cultural/traditional variables and the employment status of women has employed. All these models are built based on the characteristic (nature) of the job that the women have hired.

In the first model (model 1) the overall impact of women employment on the number of current births and ideal number of children are considered. In the second model (model 2), to assess the difference of the impact of women employment on fertility behavior place of residence, a new variable is generated by interacting the variables place of residence and employment. Therefore, this enables us to see the variation of the association between women employment and fertility behavior of women in urban and rural areas, rather than examining the whole effect at a country level as it was done on model 1.

Then next to the interaction effect, the impact and variation of various occupation which includes agricultural works and non agricultural works(Prof.,tech.,mang.,clerical and manual works) are considered in model 3. In the fourth model, the effect of women employment in relation to the terms of employment is assessed. In this model seasonality of job is assed among the categories of all year, seasonal and occasional employment. This model is developed based on the differences of the incompatibilities to take care of the family and labor market task. In the fifth model the incompatibly women employment and fertility level is considered based on the closeness of the work place from home. And in model 6, the income effect will be assessed by considering the employment status of women either in paid job or not.

Logistic regression model also run to assess the very recent impact of women employment in the fertility behavior of women based on the current pregnancy of women. This variable has two out comes, whether the women is currently pregnant or not. Thus, based on the same estimation method that has been done to the actual births and desired number of children, the impact of the current and previous year employment status of women on the current pregnancy will be assessed by introducing various characteristics of a given jobs in the model in a step by

step manner as shown below. These statistical models are presented starting from the general multivariate analysis and then proceed to specific models that reveal the relationship between the variables under study as follows:

General model:

Fertility behavior =f (women background, cultural variable, employment status)

Model 1:

Number of births (in the Past 5 years)/desired number of children /current pregnancy =f (Age, Educational level, Place of residence, Region, Age at marriage, Marital duration, Sex preference, religion, contraception, working in the last12 months, husband's occupation)

Model 2:

*Number of births (in the Past 5 years)/desired number of children /current pregnancy =f(Age, Educational level, Place of residence, Region, Age at marriage, Marital duration, Sex preference, religion, contraception, husband's occupation, residence*working)*

Model 3:

Number of births (in the Past 5 years)/desired number of children /current pregnancy =f(Age, Educational level, Place of residence, Region, Age at marriage, Marital duration, Sex preference, religion, contraception, husband's occupation ,women's occupation)

Model 4:

Number of births (in the Past 5 years)/desired number of children /current pregnancy =f(Age, Educational level, Place of residence, Region, Age at marriage, Marital duration, Sex preference, religion, contraception, terms of employment)

Model 5:

Number of births (in the Past 5 years)/desired number of children /current pregnancy
=f(Age, Educational level, Place of residence, Region, Age at marriage, Marital duration, Sex preference, religion, contraception, husband's occupation ,working place)

Model 6:

=f(Age, Educational level, Place of residence, Region, Age at marriage, Marital duration, Sex preference, religion, contraception, husband's occupation, employment earning)

5 Empirical Analysis

5.1 Descriptive statistics

To show an overview of the relationship between women employment and fertility in Ethiopia, some summary statistics which are calculated from the selected sample of the data is presented in this subsection. Due to the nature of survey data and unequal proportion of samples among place of residence and regions “svy”⁸ commands is used to estimate the mean and proportions of the variables to eradicate biased estimation. Survey data analysis method (svy) usually employed to analyze the survey data with an equal weight for the given sample data.

The summary statistics of fertility behavior of women based on their employment status is presented in table 3. The fertility behavior of women shows that the desired number of children that a woman want to have is higher than the actual number of children in both calendar years(see table 3.a).This may indicate that the persistent belief of perceiving children as a source wealth and old age security is still existing in Ethiopia. The general trend of the table also shows that there is a consistent variation of the fertility level of women among employed and non employed women. For example, in the year 2000, the overall fertility level of currently working and not working women was 3.57 and 3.72 respectively. The trend of fertility level of women has shown a slight decline among both working and non working women in the year 2005. However, the variation of the fertility behavior of women among working and not working

⁸*For details of svy estimation method see the help files of STATA software*

women is still visible. The difference in the desired number of children among currently working and not-working women was 0.3 and 0.5 in the year 2000 and 2005 respectively. Similarly the actual fertility level of women in the past 5 years prior to the respective survey periods also revealed that there was a difference of 0.16 and 0.15 children among the working and non-working women in the survey periods of 2000 and 2005 respectively. This difference was also seen on the women who were pregnant during the survey periods. Similar to the desired and actual number of children, among all women under study, the proportion of pregnant women among working women was 0.07 and that of non working women was 0.08 in the year 2000. However, surprisingly the proportion of working women who were pregnant during the survey period 2005 was higher than that of women who were not working during the survey period. This difference may be emerged from the variation of definition of women employment among the two survey periods.

Insert (Table 3)

In Table 4 we explored the actual and desired number of children that women have by place of residence. All the fertility measures show that there is a consistent and pronounced difference in the rural and urban areas residents in Ethiopia. According to this on average the number of children of women who live in urban areas is less than around by 1.2 children as compared women who live in rural areas. Similar difference is revealed on the number of desired and of young children in the age of 5 and less and the current pregnancy of women among the rural and urban residents (see table 4a and 4b).

Parallel to this, fertility level variation is shown among two calendar years under consideration. As shown in the table 4, the fertility level was consistently lower in the year 2005 as compared to the year 2000. For instance, the mean number of children that a women had in the year 2005 was lower by 0.21 children than the mean number of children that a women had in the year 2000. The same kind of trend has shown on the average desired and the likely hood of being pregnant both at national level and place of residences (urban vs. rural). For example, in the year 2000, among all women under study, 15% of the women was pregnant during the survey period. Among the total women only 1% of currently pregnant women are residing in urban areas of Ethiopia and the rest 14% are residing in rural areas (see table 4b). The percentage of pregnant

women is reduced to 13% of the total women in the sample data. The share of percentage of distribution of pregnant women who live in rural areas is soared around to 100% in the year 2005(see table 4b).

Table 5 summarizes the employment status of women by bringing the variation of place of residence and calendar years in to consideration. As shown in table agricultural occupation is highly dominant in rural areas of Ethiopia. Due to the high proportion of population is residing in rural areas of Ethiopia the national estimate of the proportion of the occupation in the agricultural and non agricultural sectors is highly influenced by the dominant activities which has done in rural areas. For example, agricultural occupation which is dominated in rural areas of Ethiopia is also the dominant occupation at a national level. According to this about 68 and 66% of the employed women were engaged in agricultural works at a national level in the year 2000 and 2005 respectively. However, in urban areas of Ethiopia the proportion of non agricultural jobs are higher than that of agricultural works. For instance, in the year 2005 among all working women who live in rural areas of Ethiopia, 67 percent of them were engaged in agricultural works. It was only 1 percent of urban dwellers engaged in agricultural works (see table 5).

5.2 Results of regression out puts

In this sub section, the regression output from Poisson and logistic regression models will be presented accordingly. In each of the regression models some variables are controlled and the other is serving as an explanatory variable. The impact of women employment on the fertility behavior is analyzed by considering the pattern and nature of women employment on changing the fertility behavior of women in both calendar years. According to this, the impact of women employment on the number of births 5 years prior to the respective survey years, the desired number of children that a women want to have throughout her life and the pregnancy status of women during the survey periods will be presented below.

The first Poisson regression output shows the relationship between the actual numbers of births that a woman had in the past 5 years before the survey period is presented in tables 6.a.1 and 6.a.2 for the survey periods 2000 and 2005 respectively. In tables 6.b.1 and 6.b.2 the Poisson regression of the impact of women employment on the desired number of children is presented for both calendar years. And the last two tables (6.c.1 and 6.c.2) displays the logistic regression

output of effect of women employment on the likely hood of being pregnant. I summarized the regression out puts by considering the effect of each variable under each category given below.

5.2.1 Individual background

As it shown in the tables 6.a.1 and 6.a.2 individual background variables have some significant effect in determining the number of young children of married women in both calendar years. The fertility level of women in the previous 5 years prior to the survey period significantly low among young age groups as compared to the older age groups. For example as shown in the table 6.a.1 model (I) the number of births among married women in the age group 35-49 was about 0.26 times lower than the number of births of children among young women (in the age 15-24). However, the desired number of children that women want to have throughout their life time is not affected by their age difference.

Except for the likelihood of being pregnant, educational level of women was determining both the actual and desired number of children. As shown in both the tables 6a and 6b less number of actual and desired fertility behavior is perceived among a woman who attained some level of education as compared to woman who received no education. According to this, in all models the actual number of births and desired number of children were significantly lower among women who received either secondary school or higher (tertiary level) education in both years. For instance, the number of births of women who received higher education was on average 0.5 and 0.48 times to that of women who never received any education, in the year 2000 and 2005 respectively. Similar kind of variations is also revealed on the effect of women education in determining the desired number of children in both years (See table 6a and 6b).

Regarding the difference of place of residence on the fertility behavior of women, all the regression output reveals that there is variation among rural and urban areas of Ethiopia. In both survey periods the number of births in the past previous years prior to the survey period, the desired number of children and the proportion of pregnant women during the survey is significantly high in rural as compared to the urban residents. Concerning to difference of fertility behavior among regions, a bit complicated output is shown. Some regions show that

there is significantly lower fertility level as compared to Tigray region⁹ and this significance variation is changed to insignificant when the variable of fertility measure is changed. For instance, as shown in the table 6.a.2 and 6.b.2, in the year 2005 the actual and desired number of births of children was significantly lower in most of the regions as compared to Tigray region. However, this relation is changed to insignificant when we are considering the actual number of births of women in the year 2000 (see table 6.a.1). But, the desired number of children is remains significantly lower in most of the regions as compared to the region of Tigray in the year 2000 (see table 6.b.1).

As expected marital duration is significantly influence both the actual and desired number of children in both calendar years. However, as it displayed on table 6.c.1, the likelihood of being pregnant was not related to marital duration of couples in the year 2000. The regression output also shows that fertility behavior of women is significantly affected by age at first marriage. According to this, marriage at older ages reduced the actual number of births of children; however, the desired number of children is significantly higher among women who married at older ages than those who married during their earlier ages.

5.2.2 Cultural variables

In this paper three variables which are categorized under culture and tradition are put forward for empirical analysis. Preference of sex of children is highly influencing the total desired number of children that a woman wants to have in her life time. Women who are neutral to the preference of sex of child had significantly less number of total desired numbers of children than those women who have prefer to have either sex. Unlike to pregnancy of women the desired number children is significantly affected by religion. Tables 6.b.1 and 6.b.2 clearly indicates that the desired number of children is lower among Christians as compared to other religious groups (Muslim and Traditional religious). In the contrary table 6.a.2 displayed that, in year 2005 the actual number of births in the previous five years prior to the survey period was higher among Christians than traditional religious groups.

⁹*Due to the equivalent value of the fertility level of Tigray region with the national level, this region is selected as a reference group for region (for details see DHS 2005)*

The habit of using contraception is the other variable which was employed to determine the fertility level of women. In both survey years the influence of contraception had insignificant impact on determining the actual number of children. However, it has found that the desired number of children is fewer among the women who had the tradition of using contraception method than those who are not using. The likelihood of being pregnant is not affected by the tradition of women using contraceptive methods.

5.2.3 Employment status

As it is trying to describe in the above sections of the paper, the primary aim of this study is focusing on the effect of women employment on their fertility level. The first model is designed to show the overall impact of women employment on the fertility behavior of women by controlling other explanatory variables. According to this, as shown in table 6.1.a, in the year 2005, women who are currently working women has reduced their no of births by about 0.06 as compared to non-working women. The odds of being pregnant are 1.669 higher than women who were working one year prior to the year 2000 than not working women. However, the other fertility levels are not affected by the current or previous working status of women at a country level. In the second models the place of residence is introduced in to our model to perceive the variation of the association between women employment and fertility behavior among rural and urban areas of Ethiopia. To show this variation interaction variable of place of residence and employment status of women is generated. As it can be seen in table 6 as a whole, there is a significance variation in the relationship between women employment status and fertility behavior of women is shown among rural and urban areas. The average number of births in the previous 5 years prior to the years 2000 and 2005 was 0.669 and 0.81 times lower among the working women who live in urban areas as compared to not working women, respectively. It is also found that, in the year 2000, the average desired number of children of working women who live in urban areas of Ethiopia was 0.905 fewer than not-working women. Regarding the odds of being pregnant, consistent findings which are similar to the relationship between urban women employment and actual and desired number of children is found. Thus as it shown in table 6.c.1 and 6.c.2 the odds of being pregnant is significantly lower among working women who resides in urban areas.

Model three encompasses the relationship between women employment and their fertility behavior based on occupational variations. In the year 2000, non agricultural works have a significant negative impact on the desired and the actual number of births in the past 5 years. The significance influence of occupational variation on the fertility level of women is disappeared in the year 2005. In general, the other characteristics of work, such as terms of employment and seasonality of work and earning had insignificant influence on the level of fertility of women. Exceptionally, in the year 2005 women who are engaged in seasonal and occasional jobs have more number of children than full time workers.

6 Conclusion and Discussion

So far various empirical models are employed to examine the relationship between women employment status and their fertility behavior. Regarding the fertility behavior of women, three dependent variables which shows the current fertility behavior of women is selected. The primary reason that selects the current fertility rate as a fertility measure was arising from the fact that the scarcity of women employment data prior to the survey periods. The information on women employment status was available only for the current and one year prior to the survey periods. Thus, in order to figure out the accurate effect of women employment on the fertility behavior of women, I managed to use the actual current fertility and desired number of children as a response variable. Hence, according to this the fertility variables, number of birth of women in the past 5 years prior to the survey period, desired number of children that a woman wanted to have in her life time and the pregnancy status of women during the survey periods were put forward for analysis.

In the other side some important explanatory variables, which determine the fertility behavior of women was put forwarded for the analysis. Among this the individual background characteristics and cultural variables which can be potentially affecting the relationship between women employment are controlled. Then the employment status of women is assed by considering various characteristics of a given employment. In the first place, the overall impact of women employment on the fertility behavior of women was examined by considering two survey periods, 2000 and 2005. The result reveals that, in contrary to the theories of incompatibility and opportunity cost of having children, the employment status of women was not affecting the fertility behavior of women in both years in Ethiopia.

In the second place the impact of women employment on the fertility behavior of women is assessed by introducing place of residence in to our model. Parallel to our expectation pronounced variation was found among the urban and rural areas on the impact of women employment on the fertility behavior of women. Currently working married women who residing in urban areas had less fertility level as compared to not working. However, this variation is vanished in dwellers of rural areas of Ethiopia. In Ethiopia, Due to the tradition of the extended support of other family members and neighbors in child rearing activities, parents are not usually the only responsible persons who take care their children. This tradition is predominantly practiced in rural areas of Ethiopia. Thus, most of the task of rearing activities of women is shared by the societies. Hence, the incompatibility between women employment and fertility behavior of women is negligible in rural areas of Ethiopia. The second possible reason for the variation between the relationship between women employment and fertility in rural and urban areas may be raised from the nature of the flexibility of working hours in agricultural jobs, where most of the rural dwellers are predominantly engaged.

The third issue which was posed on this paper was arising from occupational difference that women are engaged. Due to rigidity in working hours and hard to attain the previous work after career break, some jobs are supposed to have a negative impact on the fertility behavior of women. Thus, based on this, the impact of occupational variations is explored by classifying jobs by their flexibility as agricultural and non agricultural works (which contains managerial, clerical...etc). According to this off farm jobs had a significant effect on the fertility behavior of women in the year 2000 as compared to agricultural works. However, this significance variation among kind of occupations was dissipated in the year 2005. As it is trying to describe in the above section, the definition of women employment was varying among the two survey periods. Thus, the possible reason that caused the variation of the results in relation to occupation of women will be emerged from this dissimilarity of definition. On the other hand the prevalence of urbanization that could be narrowing the difference of incompatibility of women employment and fertility behavior among agricultural and non agricultural occupations would be the possible reason for the variation of the result.

The income effect of women employment on the fertility behavior of women was also assessed by considering the engagement of women in paid and unpaid jobs. Unlike to our

expectation, the income difference of women employment in determining the actual births was negligible over the years 2000 and 2005. However, it had some significant effect in determining the ideal number of children that a women wanted to have in her life in both calendar years.

7 References

- Adsera, A. (2005). An economic analysis of the gap between desired and actual fertility. The case of Spain: *Rev Econ Household*, 4: 75–95.
- Beguy, D. (2009). The impact of female employment on fertility in Dakar (Senegal) and Lome (Togo). *Demographic Research*, 20: 97-128.
- Becker, G. (1960). An economic analysis of fertility. *Demographic and Economic Changes in Developed Countries*, 11:209-231.
- Becker, G. (1965). A Theory of the Allocation of Time. *The Economic Journal*, 75: 493-517.
- Bernhardt, E. (1993). Fertility and employment. *European Sociological Review*, 9/1.
- Datta Gupta, N., Smith, N. & Verner, M. (2008). Child Care and Parental Leave in the Nordic Countries: A Model to Aspire to? *Review of Economics of the Household*, 6: 65-89.
- Bratti, M. et.al, . (2003). Labour Force Participation and Marital Fertility of Italian Women: The Role of Education. *Journal of population of economics*, 16:525- 554.
- Cain, G and Weininger, A. (1973). Economic Determinants of Fertility: Results from Cross-Sectional Aggregate Data Source. *Demography*, 10: 205-223
- Caldwell, J.C. and Caldwell, P. (1987). The Cultural Context of High Fertility in sub-Saharan Africa. *Population and Development Review*, 16 : 409-437.
- Central Statistical Agency of Ethiopia and ORC Macro Calverton, Maryland, USA. (2001). Ethiopia Demographic and Health Survey report 2000.

Central Statistical Agency of Ethiopia and ORC Macro Calverton, Maryland, USA. (2006). Ethiopia Demographic and Health Survey report 2005.

Cramer, J. (1980). Fertility and Female Employment: problems of causal direction. *American sociological review*, 45: 167-190.

Ermisch, J. 1989. Purchased child care, optimal family size and mother's employment. *Journal of Population Economics*, 2: 79–102.

Espenshade, J. (1977). The Taste for Children. *Family Planning Perspectives*, 9: 40-47.

Fang et al, (2010). Female Employment and Fertility in Rural China. *Unpublished paper*

Farooq,G and Tuncer. (1974). Fertility and Economic and Social Development in Turkey. A Cross-Sectional and Time Series Study. *Population Studies*, 28: 263-276.

International labor organization, (2010). Global Employment trends.

Jaffe,E and Stier,H. (2009). Normative or economic behavior? Fertility and women's employment in Israel. *Social Science Research*, 38: 644–655.

Jones, F. (1981). The Impact of Women's Employment on Marital Fertility in the U.S., 1970-1975. *Population Studies*, 35:161-173

Kalwij,A. (2000). The effects of female employment status on the presence and number of children. *Journal of economics review*, 13: 221-239.

Lloyd, B. (1991). The Contribution of the World Fertility Surveys to an Understanding of the Relationship between Women's Work and Fertility. *Studies in Family Planning*, 22: 144-161.

Matysiak, A and Vignoli, D. (2008). Fertility and Women's Employment. A Meta-analysis :*Eur J Population*, 24:363–38.

Solomon, B and Kimmel, J. (2009). Testing the Inverseness of Fertility and Labor Supply: The Case of Ethiopia. *IZA DP No. 3949*.

8 List of Tables

Table 1: summary of dependent variables

Table 1a: The average number of births within 5 years period and desired number children of working, not working and all married women in the year 2000 and 2005.

Fertility behavior	working		Not working		All married women	
	2000	2005	2000	2005	2000	2005
No of births during 5 years	1.2	1.3	1.4	1.4	1.3	1.4
Desired no of children	5.1	4.5	5.4	4.8	5.2	4.8

Table 1b: The percentage of Married women who were pregnant during the survey period of 2000 and 2005.

Currently Pregnant	Frequency		Percent	
	2000	2005	2000	2005
No or Unsure	1082	2588	85.26	87.23
yes	187	379	14.74	12.77
Total	1269	2967	100	100

Source: EDHS (2000 and 2005).

Table 2: List of independent variables

Table: 2 the list of the level and the number of observations of independent variables with their respective category in the years 2000 and 2005.

LIST OF VARIABLES	levels/categories	No Of Observations		percent		
		year 2000	year2005	year 2000	year 2005	
INDIVIDUAL BACKGROUND						
Age Group	15-19	655	1540	51.62	51.9	
	20-29	381	944	30.02	31.82	
	30-49	233	483	18.36	16.28	
	total	1269	2967	100	100	
Highest educational level	No education	991	2191	78.09	73.85	
	Primary	169	507	13.32	17.09	
	Secondary	96	222	7.57	7.48	
	Higher	13	47	1.02	1.58	
	total	1269	2967	100	100	
Type of place of residence	Urban	234	489	18.44	16.48	
	Rural	1,035	2478	81.56	83.52	
	total	1269	2967	100	100	
Region	Tigray	98	267	7.72	9	
	Afar	71	182	5.59	6.13	
	Amhara	188	489	14.81	16.48	
	Oromiya	234	526	18.44	17.73	
	Somali	92	158	7.25	5.33	
	Ben-gumz	107	239	8.43	8.06	
	SNNP	189	481	14.89	16.21	
	Gambela	81	164	6.38	5.53	
	Harari	50	164	3.94	5.53	
	Addis Abeba	81	172	6.38	5.8	
	Diredawa	78	125	6.15	4.21	
	total	1,269	2967	100	100	
	Marital duration in years	0-4	221	16.99	17.42	16.99
		5-9	264	20.76	20.8	20.76
		10-14	237	21.23	18.68	21.23
15-19		196	15.94	15.45	15.94	
20-24		151	12.27	11.9	12.27	
25-29		125	8.12	9.85	8.12	
30+		75	4.68	5.91	4.68	
total		1,269	2967	100	100	

<i>Age at first marriage</i>	7-14	344	1,031	27.11	34.75
	15-25	903	1,870	71.16	63.03
	26-30	21	63	1.65	2.12
	31-40	1	3	0.08	0.1
	<i>total</i>	<i>1,269</i>	<i>2967</i>	<i>100</i>	<i>100</i>
<i>EMPLOYMENT STATUS</i>					
<i>occupation</i>	Not working	459	2000	36.17	67.41
	Prof.,tech.,mang.,clerical	157	348	12.37	11.73
	Agricultural	521	530	41.06	17.86
	Manual& service	132	89	10.4	3
	<i>total</i>	<i>1269</i>	<i>2967</i>	<i>100</i>	<i>100</i>
<i>Worked in the last 12 months</i>	no	458	1837	36.09	65.35
	in the past year	94	215	7.41	7.65
	currently working	717	759	56.5	27
	<i>total</i>	<i>1269</i>	<i>2811</i>	<i>100</i>	<i>100</i>
<i>Term of employment</i>	all year	457	309	56.7	31.86
	seasonal	186	535	23.08	55.15
	occasional	163	126	20.22	12.99
	<i>total</i>	<i>806</i>	<i>970.0</i>	<i>100</i>	<i>100</i>
<i>working place</i>	at home	150	287	18.56	29.77
	away	658	677	81.44	70.23
	<i>total</i>	<i>808</i>	<i>964</i>	<i>100</i>	<i>100</i>
<i>CULTURAL VARIABLES</i>					
<i>sex preference</i>	No preference	103	291	8.12	9.81
	More male	43	157	3.39	5.29
	More female	1,123	2,519	88.49	84.9
	<i>total</i>	<i>1269</i>	<i>2967</i>	<i>100</i>	<i>100</i>
<i>religion</i>	Christian	745	1,823	58.71	61.44
	Muslim	485	1,080	38.22	36.4
	Traditional/others	39	64	3.07	2.16
	<i>total</i>	<i>1269</i>	<i>2967</i>	<i>100</i>	<i>100</i>
<i>contraception use</i>	Never used	973	2101	76.67	70.81
	Used only folkloric	1	3	0.08	0.1
	Used only traditional method	35	39	2.76	1.31
	Used modern method	260	824	20.49	27.77
	<i>total</i>	<i>1269</i>	<i>2967</i>	<i>100</i>	<i>100</i>

Table 3: The cross tabulation of the fertility level of women and their employment status

Table 3a: The mean values of the actual and desired number of children over the employment status of women for the year 2000 and 2005.

Fertility variables	2000			2005		
	current employment status					
	working	not working	Total	working	not working	Total
Total number of children	4.35	4.41	4.38	4.45	4.19	4.83
Number of children 5 and below	1.23	1.39	1.31	1.15	1.30	1.23
Desired number of children	5.13	5.35	5.24	4.55	4.83	4.69
Total	3.57	3.72	3.64	3.38	3.44	3.58

Table 3b: The proportion of pregnant women over their employment status during the survey period of 2000 and 2005.

currently pregnant	current employment status					
	2000			2005		
	working	not working	Total	working	not working	Total
no	0.35	0.50	0.85	0.65	0.22	0.87
yes	0.07	0.08	0.15	0.11	0.03	0.13
Total	0.42	0.58	1.00	0.76	0.24	1.00

Source: EDHS 2000 and EDHS 2005

Table4: Summary statistics of fertility measures by place of residence and calendar years

Table 4a: the mean value of actual and desired number of children by place of residence in the years 2000 and 2005

variables	2000		2005	
	Mean	S.E	Mean	S.E
Total no of children				
urban	3.33	0.28	3.11	0.16
rural	4.51	0.13	4.35	0.08
Number of children age <=5				
urban	1.11	0.11	0.78	0.06
rural	1.32	0.03	1.31	0.03
Desired no of children				
urban	4.51	0.21	4.13	0.15
rural	5.31	0.08	4.82	0.07

Table 4b : The proportion of pregnant women by place of residence during the survey periods 2000 and 2005

currently pregnant	2000			2005		
	urban	rural	total	urban	rural	total
no	0.11	0.74	0.85	0.08	0.79	0.87
yes	0.01	0.14	0.15	0.00	0.13	0.13
Total	0.12	0.88	1.00	0.08	0.92	1.00

Source: EDHS 2000 and 2005.

Table 5: Employment status of women by place of residence and calendar years.

Table 5: The proportion of the current employed women and their occupation over place of residence and calendar years of 2000 and 2005.

variables	2005			2000		
	urban	rural	Total	urban	rural	Total
<i>currently working</i>						
no	0.05	0.71	0.76	0.05	0.37	0.42
yes	0.03	0.21	0.24	0.06	0.52	0.58
Total	0.08	0.92	1.00	0.12	0.88	1.00
<i>occupation</i>						
Agricultural	0.01	0.67	0.68	0.00	0.66	0.66
Non-Agricultural	0.10	0.22	0.32	0.11	0.23	0.34
Total	0.10	0.90	1.00	0.11	0.89	1.00

Table 6: The regression output of Poisson and logistic regression models

Table 6.a.1: The Poisson Regression of the impact of women employment on the number of births in the Past 5 years in the year 2000.

	BIRTHS IN THE LAST 5 YEARS						
	<i>categories</i>	I	II	III	IV	V	VI
<i>Individual Background</i>							
<i>Age Group</i>							
	15-24	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	25-34	0.866*	0.764*	0.894*	0.850	0.895	0.903
	35-49	0.263***	0.269***	0.262***	0.257***	0.270***	0.228***
<i>Educational level</i>							
	No education	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	Primary	1.111*	0.966*	0.97	0.959	0.964	0.956
	Secondary	1.293	0.793**	0.822	0.960	0.929	0.951
	Higher	0.577***	0.479***	0.518*	0.512*	0.509*	0.516*
<i>place of residence</i>							
	Urban	Ref.		Ref.	Ref.	Ref.	Ref.
	Rural	1.21**		1.143	1.312**	1.243*	1.291**
<i>Region</i>							
	Tigray	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	Afar	0.778*	0.783*	0.804	0.840	0.873	0.857
	Amhara	0.981	0.984	0.985	0.967	0.972	0.975
	Oromiya	1.041	1.054	1.076	1.034	1.062	1.048
	Somali	0.878	0.883	0.915	1.120	1.118	1.111
	Ben-gumz	0.821*	0.825*	0.825*	0.870	0.859	0.859
	SNNP	1.054	1.072	1.111	1.042	1.066	1.041
	Gambela	0.763*	0.771**	0.824*	0.665***	0.719**	0.700*
	Harari	0.861	0.837	0.88	0.890	0.918	0.924
	Addis Abeba	0.734*	0.690**	0.757*	0.673*	0.673*	0.688*
	Dire Dawa	0.936	0.895	0.955	0.943	0.928	0.936
<i>Marital duration</i>		1.071***	1.069**	1.066**	1.070**	1.065*	1.066*
<i>Age at first marriage</i>							
	7-14	.901*	.903*	.905*	.918	.905	.902
	15-25	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	26-30	1.17	1.15	1.17	1.09	1.062	1.067
	31-40	.522***	.531***	.545***	.625***	.583***	.578***
<i>Cultural Variables</i>							
<i>sex preference</i>							
	No preference	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	More male	0.984	0.983	0.986	1.113	1.076	1.076
	More female	0.972	0.972	0.975	1.014	1.020	1.013
<i>religion</i>							
	Christian	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	Muslim	1.078	1.085	1.080	1.003	0.986	0.990
	traditional	0.848	0.839	0.854	0.847	0.856	0.853
<i>contraception use</i>		1.007	1.001	1.012	0.999	1.000	0.997
<i>Employment status</i>							
<i>Worked in the last 12 months</i>							
	no	Ref.					
	in the past year	0.971					
	currently working	0.948					
<i>residence*working</i>							
	not working		Ref.				
	urban*work		0.810**				
	rural*work		0.98				
<i>occupation</i>							
	Notworking /hh work			Ref.			
	Prof.,tech.,mang.,clerical			0.828**			

	Agricultural			1.000			
	Manual& service			0.901			
Term of employment							
	all year				Ref.		
	seasonal				0.925		
	occasional				1.113		
working place							
	at home					Ref.	
	away					1.081	
Employment Earning							
	not paid						Ref.
	paid						0.999
Husband`s occupation		1.003***	1.003	1.002*	1.007***	1.007***	1.006***
No of cases		1267	1266	1267	806	808	811
Log pseudo likelihood		-1610.05	-1606.67	-1608.4	-1002.62	-1007.74	-1010.82
Pseudo R2		0.0429	0.0431	0.0438	0.0471	0.0441	0.0446
Wald chi2		144.21	144.82	147.5	99.18	93	94.29
Degrees of freedom		27	27	28	27	26	26
Overall p values		0.000	0.000	0.000	0.000	0.000	0.000

Note: * $p < 0.1$ ** $p < 0.05$ and *** $p < 0.01$ (10%, 5% and 1% level of significance respectively)

N/A: refers to not available

Table 6.a.2: The Poisson Regression of the impact of women employment on the number of births in the Past 5 years in the year 2005.

	BIRTHS IN THE LAST 5YEARS						
	categories	I	II	III	IV	V	VI
Individual Background							
Age Group							
	15-24	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	25-34	0.925*	0.927*	0.924*	1.007	1.007	0.999
	35-49	0.403***	0.411***	0.409***	0.404***	0.404***	0.398***
Educational level							
	No education	Ref.	Ref.	Ref.	Ref.	Ref.	
	Primary	0.926**	0.914**	0.934*	0.819**	0.810***	0.813***
	Secondary	0.844**	0.736***	0.839**	0.849	0.837	0.83
	Higher	0.488***	0.477***	0.488***	0.577**	0.559**	0.544**
place of residence							
	Urban	Ref.		Ref.	Ref.	Ref.	Ref.
	Rural	1.495***		1.463***	1.509***	1.605***	1.598
Region							
	Tigray	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	Afar	0.845**	0.840**	0.857*	0.958	0.852	0.845
	Amhara	0.810***	0.816***	0.810***	0.878	0.878	0.892
	Oromiya	1.086*	1.096*	1.088*	1.151*	1.136	1.145*
	Somali	1.056	1.039	1.065	1.193	1.175	1.159
	Ben-gumz	0.869**	0.873**	0.876**	0.952	0.964	0.961
	SNNP	1.078	1.085*	1.071	1.296**	1.264**	1.254**
	Gambela	0.757***	0.755***	0.763**	0.794*	0.774**	0.774**
	Harari	0.999	0.963	0.989	1.206	1.116	1.110
	Addis Abeba	0.915	0.786**	0.892	0.995	0.951	0.943
	Dire Dawa	0.988	0.921	0.977	0.737	0.718	0.698*
Marital duration		1.031*	1.033**	1.036**	1.006	1.006	1.009
Age at first marriage							
	7-14	1.017	1.020	1.019	1.005	1.005	.992
	15-25	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	26-30	1.299*	1.290*	1.277*	1.443*	1.459**	1.459**
	31-40	2.219	2.180	2.201	0.000***	0.000***	0.000***

Cultural Variables							
sex preference							
	No preference	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	More male	0.810**	0.824***	0.814***	0.755*	0.766**	0.756**
	More female	0.977	0.975	0.971	0.929	0.924	0.917
religion							
	Christian	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	Muslim	0.977	0.989	0.977	0.966	0.969	0.962
	traditional	0.779***	0.794**	0.794**	0.690**	0.681**	0.690***
contraception use							
		0.996	0.986	0.997	0.989	0.983	0.983
Employment status							
Worked in the last 12 months							
	no	Ref.					
	in the past year	0.958					
	currently working	0.941*					
residence*working							
	not working		Ref.				
	urban*work		0.669***				
	rural*work		0.987				
occupation							
	Notworking /hh work			Ref.			
	Prof.,tech.,mang.,clerical			0.955			
	Agricultural			0.954			
	Manual& service			0.863			
Term of employment							
	all year				Ref.		
	seasonal				1.178**		
	occasional				1.197**		
working place							
	at home					Ref.	
	away					0.923	
Employment Earning							
	not paid						Ref.
	paid						0.762
Husband`s occupation							
		1.001	1.001	1.001	0.999	0.999	
No of cases							
		2811	2967	2967	970	964	974
Log pseudo likelihood							
		-3509.48	-3713.01	-3714.21	-1149.00	-1144.47	-1155.43
Pseudo R2							
		0.0496	0.0475	0.0472	0.0707	0.0687	0.0695
Wald chi2							
		411.35	416.51	417.29	412.85	407.56	408.85
Degrees of freedom							
		28	28	29	28	27	28
overall p values							
		0.000	0.000	0.000	0.000	0.000	0.000

Note: * $p < 0.1$ ** $p < 0.05$ and *** $p < 0.01$ (10%, 5% and 1% level of significance respectively)

N/A: refers to not available

Table 6.b.1: The Poisson Regression of the impact of women employment on the desired number of children that a woman wanted to have in her life time the survey year of 2000.

	DESIRED NUMBER OF CHILDREN						
	Categories	I	II	III	IV	V	VI
Individual Background							
Age Group							
	15-24	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	25-34	1.02	1.025	1.021	1.036	1.034	1.036
	35-49	0.981	0.987	0.983	0.979	0.976	0.980
Educational level							
	No education	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	Primary	0.925***	0.924***	0.924***	0.901***	0.901***	0.901*
	Secondary	0.875***	0.869***	0.872***	0.858***	0.853**	0.867**
	Higher	0.758**	0.776**	0.759**	0.768**	0.706***	0.792***
place of residence							
	Urban	Ref.		Ref.	Ref.	Ref.	Ref.
	Rural	1.060**		1.041	1.104**	1.100**	1.103**
Region							
	Tigray	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	Afar	0.855***	0.857***	0.868***	0.840***	0.855**	0.830***
	Amhara	0.855***	0.855***	0.858***	0.858***	0.860***	0.863***
	Oromiya	0.835***	0.838***	0.847***	0.850***	0.858***	0.846***
	Somali	0.910***	0.915***	0.926**	0.963	0.987	0.997
	Ben-gumz	0.886***	0.887***	0.888***	0.911**	0.915**	0.919**
	SNNP	0.941**	0.946**	0.961	0.961	0.963	0.951
	Gambela	0.839***	0.843***	0.859***	0.857***	0.872***	0.862***
	Harari	0.957	0.952	0.965	0.929	0.935	0.938
	Addis Abeba	0.883**	0.873***	0.891**	0.869**	0.877**	0.883**
	Dire Dawa	0.881***	0.874***	0.885***	0.883**	0.899**	0.899*
Marital duration							
		1.021**	1.019**	1.020**	1.025**	1.024**	1.025**
Age at first marriage							
	7-14	1.009	1.011	1.009	1.028	1.029	1.029
	15-25	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	26-30	.916	.915	0.921	.955	.967	.956
	31-40	1.780***	1.812***	1.818***	1.726***	1.709***	1.664**
Cultural Variables							
sex preference							
	No preference	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	More male	1.053	1.053	1.056	1.001	1.009	1.002
	More female	1.537***	1.537***	1.540***	1.513***	1.501***	1.492***
religion							
	Christian	Ref.	Ref.	Ref.	Ref.	Ref.	
	Muslim	1.082***	1.084***	1.081	1.090***	1.087***	1.091***
	traditional	1.037	1.036	1.044***	1.021	1.023	1.029
contraception use							
		0.951***	0.951***	0.953***	0.961	0.961***	0.959***
Employment status							
Worked in the last 12 months							
	no	Ref.					
	in the past year	1.006					
	currently working	0.976					
residence*working							
	not working		Ref.				
	urban*work		0.905***				
	rural*work		0.991				
occupation							
	Notworking /hh work			Ref.			
	Prof.,tech.,mang.,clerical			0.965			
	Agricultural			0.998			
	Manual& service			0.938**			
Term of employment							

	all year				Ref.		
	seasonal				0.992		
	occasional				0.980		
working place							
	at home					Ref.	
	away					1.032	
Employment Earning							
	not paid						Ref.
	paid						0.965*
Husband's occupation		1.003***	1.003***	1.003***	1.004***	1.004***	1.004***
No of cases		1267	1266	1267	806	808	811
Log pseudo likelihood		-2466.87	-2462.67	-2466.22	-1563.64	-1568.23	-1574.60
Pseudo R2		0.0441	0.0443	0.044	0.0497	0.0495	0.049
Wald chi2		227.52	228.57	228.82	163.48	163.22	162.22
Degrees of freedom		27	27	28	27	26	26
overall p values		0.000	0.000	0.000	0.000	0.000	0.000

Note: * $p < 0.1$ ** $p < 0.05$ and *** $p < 0.01$ (10%, 5% and 1% level of significance respectively)

N/A: refers to not available

Table 6.b.2: The Poisson Regression of the impact of women employment on the desired number of children that a woman wanted to have in her life time the survey year of 2005.

	DESIRED NUMBER OF BIRTHS						
	Categories	I	II	III	IV	V	VI
Individual Background							
Age Group							
	15-24	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	25-34	1.029	1.031*	1.031*	1.042	1.043	1.044
	35-49	0.983	0.988	0.989	0.944	0.945	0.944
Educational level							
	No education	Ref.	Ref.	Ref.	Ref.	Ref.	
	Primary	0.959**	0.952**	0.958***	0.999	1.000	0.997
	Secondary	0.838***	0.812***	0.840***	0.858***	0.857***	0.852***
	Higher	0.897	0.881*	0.900	0.935	0.929	0.925
place of residence							
	Urban	Ref.		Ref.	Ref.	Ref.	Ref.
	Rural	1.075***		1.078***	1.509***	1.056	1.056
Region							
	Tigray	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	Afar	0.999	0.987	0.995	1.082	1.057	1.058
	Amhara	0.919***	0.923***	0.922***	0.939*	0.938*	0.941*
	Oromiya	0.950**	0.948***	0.948***	0.934*	0.934*	0.937*
	Somali	1.016	0.996	1.006	1.062	1.056	1.056
	Ben-gumz	0.902***	0.892***	0.895***	0.937	0.937	0.938
	SNNP	0.996	0.993	0.990	1.027	1.026	1.024
	Gambela	0.932**	0.930**	0.932**	0.917*	0.907*	0.915
	Harari	0.992	0.969	0.980	0.959	0.947	0.947*
	Addis Abeba	0.966	0.918**	0.951	0.973	0.965	0.967
	Dire Dawa	1.024	0.999	1.017	1.003	0.993	0.987
Marital duration		1.034***	1.033***	1.032***	1.039***	1.039***	1.039***
Age at first marriage							
	7-14	.989	.989	.989	.981	.982	.979
	15-25	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	26-30	1.000	0.976	0.978	.994	.996	.995
	31-40	.842	.838	0.846	.232***	.232***	0.234***
Cultural Variables							
sex preference							

	No preference	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	More male	3.072***	3.184***	3.176***	2.926***	2.881***	2.905***
	More female	4.412***	4.561***	4.560***	4.356***	4.266***	4.352***
religion							
	Christian	Ref.	Ref.	Ref.	Ref.	Ref.	
	Muslim	1.086***	1.095***	1.089***	1.045*	1.047	1.049*
	traditional	1.064	1.083**	1.076***	1.015	1.012	1.014
contraception use		0.973***	0.970***	0.973***	0.974***	0.973***	0.9737***
Employment status							
Worked in the last 12 months							
	no	Ref.					
	in the past year	1.009					
	currently working	0.993					
residence*working							
	not working		Ref.				
	urban*work		1.00				
	rural*work		0.99				
occupation							
	Notworking /hh work			Ref.			
	Prof.,tech.,mang.,clerical			1.016			
	Agricultural			0.989			
	Manual& service			0.999			
Term of employment							
	all year				Ref.		
	seasonal				1.028		
	occasional				1.030		
working place							
	at home					Ref.	
	away					0.996	
Employment Earning							
	not paid						Ref.
	paid						1.001*
Husband's occupation		1.000	1.000	1.000	1.000	1.000	1.000
No of cases		2811	2967	2967	970	964	974
Log pseudo likelihood		-5374.68	-5663.24	-5663.56	-1845.24	-1836.01	-1853.01
Pseudo R2		0.1197	0.1207	0.1206	0.1249	0.1224	0.1249
Wald chi2		1156.97	1238.43	1228.80	526.52	512.36	528.84
Degrees of freedom		28	28	29	27	26	27
overall p values		0.000	0.000	0.000	0.000	0.000	0.000

Note: * $p < 0.1$ ** $p < 0.05$ and *** $p < 0.01$ (10%, 5% and 1% level of significance respectively)

N/A: refers to not available

Table 6.c.1: The logistic Regression of the impact of women employment on being pregnant in the survey year of 2000.

	CURRENT PREGNANCY						
		I	II	III	IV	V	VI
Individual Background							
Age Group							
	15-24	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	25-34	0.608*	0.636	0.585*	0.640	0.619	0.616
	35-49	0.180***	0.194***	0.169***	0.126***	0.131***	0.124***
Educational level							
	No education	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	Primary	1.157	1.142	1.151	1.063	1.050	1.063
	Secondary	0.555	0.564	0.698	0.586	0.591	0.601
	Higher	1.963	3.447	1.492	1.897	1.771	1.806
place of residence							
	Urban	Ref.		Ref.	Ref.	Ref.	Ref.
	Rural	2.457**		2.869**	3.729**	3.530**	3.715**
Region							
	Tigray	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	Afar	1.016	1.036	1.019	0.822	0.914	0.840
	Amhara	0.995	1.050	1.079	1.102	1.175	1.214
	Oromiya	1.427	1.475	1.427	1.227	1.335	1.318
	Somali	2.241*	2.223*	2.196	1.916	1.813	1.966
	Ben-gumz	1.323	1.428	1.462	1.537	1.602	1.679
	SNNP	1.111	1.214	1.099	1.312	1.458	1.487
	Gambela	0.993	1.072	1.026	1.026	1.179	1.208
	Harari	2.036	1.795	2.021	1.617	1.757	1.84
	Addis Abeba	1.846	1.300	1.816	4.245*	4.302*	4.956**
	Dire Dawa	1.308	1.14	1.354	1.794	1.549	1.989
Marital duration							
		0.996	0.976	0.996	1.068	1.059	1.072
Age at first marriage							
	7-14	.745	.752	.720	.652	.643	.633
	15-25	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	26-30	.637	.628	.736	1.220	1.217	1.208
	31-40	N/A	N/A	N/A	N/A	N/A	N/A
Cultural Variables							
sex preference							
	No preference	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	More male	0.723	0.768	0.755	0.57	0.509	0.504
	More female	0.668	0.678	0.678	0.569*	0.569*	0.567*
religion							
	Christian	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	Muslim	0.755	0.759	0.732	0.794	0.769	0.774
	traditional	1.791	1.664	1.685	1.652	1.619	1.659
contraception use							
		0.919	0.893	0.899	0.947	1.058	0.942
Employment status							
Worked in the last 12 months							
	no	Ref.					
	in the past year	1.669*					
	currently working	0.969					
residence*working							
	not working		Ref.				
	urban*work		0.209**				
	rural*work		1.015				
occupation							
	Notworking /hh work			Ref.			
	Prof.,tech.,mang.,clerical			1.505			
	Agricultural			0.925			
	Manual& service			0.948			
Term of employment							

	all year				Ref.		
	seasonal				1.102		
	occasional				1.344		
working place							
	at home					Ref.	
	away					0.982	
Employment Earning							
	not paid						Ref.
	paid						0.858
Husband`s occupation		0.984	1.024	0.985	1.004	1.004	1.002
No of cases		1267	1265	1267	805	807	810
Log pseudo likelihood		-489.9	-633.27	-490.35	-313.68	-313.12	-314.82
Pseudo R2		0.073	0.1387	0.0722	0.0746	0.0724	0.0682
Wald chi2		58.19	188.77	55.33	37.63	38.01	37.44
Degrees of freedom		26	27	28	27	26	26
overall p values		0.001	0.000	0.002	0.075	0.060	0.074

Note: * $p < 0.1$ ** $p < 0.05$ and *** $p < 0.01$ (10%, 5% and 1% level of significance respectively)

N/A: refers to not available

Table 6.c.2: The logistic Regression of the impact of women employment on being pregnant in the survey year of 2005.

	CURRENT PREGNACEY						
	Categories	I	II	III	IV	V	VI
Individual Background							
Age Group							
	15-24	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	25-34	1.098	1.106	1.098	1.022	0.972	1.020
	35-49	0.339**	0.381**	0.380**	0.447	0.418	0.442
Educational level							
	No education	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	Primary	0.913	0.976	1.014	1.272	1.252	1.262
	Secondary	1.014	0.722	1.028	0.953	1.006	1.036*
	Higher	2.539	2.162	2.373	3.300	4.024	3.628
place of residence							
	Urban	Ref.		Ref.	Ref.	Ref.	Ref.
	Rural	2.807***		0.929***	2.890*	2.945*	2.922*
Region			Ref.	Ref.	Ref.	Ref.	Ref.
	Tigray	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	Afar	0.453**	0.429**	0.435**	N/A	N/A	N/A
	Amhara	0.636*	0.614	0.606**	0.44	0.449*	0.416**
	Oromiya	0.851	0.833	0.81	0.992	1.047	0.990
	Somali	0.551	0.613	0.631	N/A	N/A	N/A
	Ben-gumz	0.799	0.76	0.769	0.775	0.783	0.746
	SNNP	0.749	0.794	0.750	0.951	1.006	1.025
	Gambela	0.61	0.588*	0.579*	0.546	0.569	0.579
	Harari	0.942	0.892	0.923	0.775	0.726	0.852
	Addis Abeba	0.651	0.477*	0.623	0.142	0.139	0.148
	Dire Dawa	0.234***	0.195**	0.218***	0.202	0.196	0.230
Marital duration		1.039***	0.872*	0.877*	0.834	0.845	0.832
Age at first marriage							
	7-14	.784	.796	.791	.654	.638	.643
	15-25	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	26-30	0.528	0.491	0.480	.421	0.431	0.405
	31-40	N/A	N/A	N/A	N/A	N/A	N/A
Cultural Variables							
sex preference							

	No preference	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
	More male	0.965	1.054	1.021	0.931	0.941	0.906
	More female	0.870	0.888	0.875	1.168	1.164	1.173
religion							
	Christian	Ref.	Ref.	Ref.	Ref.	Ref.	
	Muslim	1.134	1.171	1.145	1.504	1.527	1.538*
	traditional	0.766	0.731	0.724	1.237	1.221	1.180
contraception use							
		0.845***	0.841	0.860***	0.915	0.907	0.913
Employment status							
Worked in the last 12 months							
	no	Ref.					
	in the past year	0.906					
	currently working	0.846					
residence*working							
	not working		Ref.				
	urban*work		0.301**				
	rural*work		0.934				
occupation							
	Notworking /hh work			Ref.			
	Prof.,tech.,mang.,clerical			0.875			
	Agricultural			0.809			
	Manual& service			0.946			
Term of employment							
	all year				Ref.		
	seasonal				1.061		
	occasional				1.147		
working place							
	at home					Ref.	
	away					0.938	
Employment Earning							
	not paid						Ref.
	paid						0.751
Husband's occupation							
		0.997	1.001	0.997	0.918	0.919	0.920
No of cases							
		2808	2967	2964	939	933	940
Log pseudo likelihood							
		-989.84	-1441.10	-1061.16	-290.48	-291.16	-291.199
Pseudo R2							
		0.0661	0.142	0.0636	0.1113	0.1129	0.115
Wald chi2							
		115.27	405.91	120.89	62.33	63.33	64
Degrees of freedom							
		27	28	28	25	24	24
overall p values							
		0.000	0.000	0.000	0.000	0.000	0.000

Note: * $p < 0.1$ ** $p < 0.05$ and *** $p < 0.01$ (10%, 5% and 1% level of significance respectively)

N/A: refers to not available.

Sources: Ethiopian demographic and health survey of 2000 and 2005.