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CORRELATES OF AGE AT FIRST MARRIAGE AMONG WOMEN IN ADDIS ABABA

BY

ALEMU SHIFERAW TOLLA

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By

Alemu Shiferaw Tolla

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Thesis Advisor
Eshetu Gurmu (Ph.D)

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Approved by the Examining Board

Dr. Eshetu Gurmu Chairman, Department Graduate Committee	Signature
Dr. Eshetu Gurmu Advisor	Signature
Dr. Negatu Regassa Examiner	Signature

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TABLE OF CONTENTS

Contents **Pages**

Acknowledgement i

List of Tables ii

List of Figures iii

Acronyms iv

Abstract v

CHAPTER ONE

1. INTRODUCTION 1

1.1 Research Problem: Over View 1

1.2. Objective of the Study 3

1.2.1. General Objective 3

1.2.2. The Specific Objectives 3

1.3. Justification of the Study 4

1.4. Review of Literature 4

1.4.1. Theoretical Considerations 4

1.4.2. Empirical Findings 6

1.4.2.1 Educational 6

1.4.2.2 Labour Force Participation 8

1.4.2.3 Ethnicity 10

1.4.2.4 Religion Affiliation 11

1.4.2.5 Birth Cohort Women 11

1.4.2.6. Parental Socio-Economic 12

1.5 Conceptual Frame work 13

1.6 Definitions of Terms 13

1.7. Hypothesis 15

1.8. Paper Organizations 15

CHAPTER TWO

2. METHODOLOGY

2.1. Target Population 16
2.2. Data Source 16
2.3. Study Design 17
2.4. Sampling Size Determination 17
2.5. Survey Methods and Sampling Procedure 17
2.6. Data Collection Instruments 18
2.7. Recruitment and Training of Field Staff and Pilot Survey 19
2.8. Data Quality 19
2.9. Methods of Data Analysis 20
2.10. Variable Description 23
2.11. Communicating the Finding 25
2.12. Limitation of the Study 25
2.13. Ethical Considerations 26

CHAPTER THREE

CHARACTERISTICS OF STUDY AREA AND THE RESPONDENTS

3.1. Descriptive of the Study Area 27
3.1.1 Population and Size 27
3.1.2 Fertility Trend 27
3.1.3 Educational and Literacy 28
3.1.4 Labour Force Participation 29
3.2. Demographic and Socio-economic Characteristics of the Respondents 30
3.2.1 Demographic Characteristics 30
3.2.2Socio-economic Characteristics 32

CHAPTER FOUR

4. TRENDS OF AGE AT FIRST MARRIAGE: UNIVARIATE ANALYSIS

4.1 Proportion of Never Married 35

4.2 Singulate Mean Age First Marriage 36

CHAPTER FIVE

5 DIFFERENTIAL AND DETERMINANTS OF AGE AT FIRST MARRIAGE

5.1 Differential of Age at First Marriage: Bivariate Analysis 40

5.2 Determinants of Age at First Marriage: Multivariate 51

5.2.1 Results of Multivariate 52

CHAPTER SIX

6 DISCSSION OF MAJOR FINDINGS

6.1 Discussion of Major Findings 55

CHAPTER SEVEN

7 SUMMARRY, CONCLUSION AND RECOMMENDATION

7.1. Summary 60

7.2. Conclusion 63

7.3. Recommendation 64

REFERENCE 65

APPENDICES

I. Questionnaire

II. In-depth Interview

III. Life History Calendar Guide line

IV. Event History Record Form

V. Log Minus Log(LML)

VI. Contingency Table

LIST OF TABLES

Tables **Page**

Table 2.1 Sampling Technique or Procedure..... 18

Table 3.1 Female Literacy status of the Adult Population of Addis Ababa (1978-199 29

Table 3.2 Female Labour Force Participation Rate, Addis Ababa: 1978-2009.....29

Table 3.3 Percentage Distribution of Respondents to all Socio-economic and Demographic Characteristics included in Study, Addis Ababa, 2009.....31

Table 4.1 Percentage Distribution of Never Married of Women in Addis Ababa between 1978 and 2009.....36

Table 4.2 Illustration for Computational of Women SMAM by Hajnal's method using Survey Data of Addis Ababa in 2009 38

Table 5.1 Socio-economic differentials of survival mean and median age at first marriage of women in Addis Ababa, 2009.....41

Table 5.2 Coefficients and Relative risks of First Marriage of all Women from Proportional Model, Addis Ababa 52

LIST OF FIGURES

Figures **Page**

Fig1.1 Conceptual Frameworks.....13

Fig 3.1 the Trends of Total Fertility Rate of Addis Ababa between 1978 and 2005 28

Fig 4.1 Singulate Mean Age at First Marriage for Addis Ababa; 1978-200939.....39

Fig 5.1 Survival plot of age at first marriage of women in Addis Ababa by educational Level, 2009.....42

Fig 5. 2 Survival plot of age at first marriage of women in Addis Ababa by educational Status, 2009.....43

Fig 5. 3 Survival plot of age at first marriage of women in Addis Ababa by work status, 2009.....45

Fig 5. 4 Survival plot of age at first marriage of women in Addis Ababa by birth cohort 2009.....46

Fig 5. 5 Survival plot of age at first marriage of women in Addis Ababa by religion affiliation in 2009.....47

Fig 5. 6 Survival plot of age at first marriage of women in Addis Ababa by Ethnic origin 48

Fig 5.7 Survival plot of age at first marriage of women in Addis Ababa by father education, 2009.....49

Fig 5. 8 Survival plot of age at first marriage of women in Addis Ababa by mother Educational, 2009 50

List of Acronyms

AFM	Age at First Marriage
CSA	Central Statistical Agency
CEB	Children ever born
EDHS	Ethiopia Demographic Health Survey
DHS	Demographic and Health Survey
FSUAA	Fertility Survey of Urban Addis Ababa
NFFS	National Family and Family Survey.
SMAM	Singulated Mean Age at Marriage.
TFR	Total Fertility Rate.
PHC	Population and Housing Census
UN	United Nation
EHA	Event History Analysis
HR	Hazard Rate
PH	Proportional Hazard
EAs	Enumeration Areas

Abstract

The age at first marriage has long been considered an issue of primary interest in the disciplines of marriage and the family as well women's studies. The issue has been taken on even greater importance recently due to the impact of a trend towards rising at first marriage on fertility levels, with further potential far-reaching demographic, economic, and social ramifications, and also affected by these factors.

This study is primarily aimed at determining important socio-economic and demographic factors influencing age at first marriage among women of reproductive age residing in Addis Ababa.

Life time event history data collected from a total of 598 women of reproductive age group (i.e15-49 years), who were living in Addis Ababa continuously starting from age 12 or birth were analyzed using descriptive, survival plot and Cox regression models. Descriptive and survival plot were used to show the differential in age at first marriage among different subgroup of covariate whilst , Cox regression was used as a multivariate analysis tool to measure the net effect of each covariate to effectively utilize the samples who were not married so far at the time of survey.

Results of bivariate analysis show that there is an increasing trend in mean age at first marriage (from 27 to 29 years), and proportion of never married (from 53 to 6o percent) between 1995 and 2009. The result of Cox regression on the other hand, revealed that educational level, educational enrollment, work status as well as mother's education are the most important factors playing significant roles in determining of age at first marriage among female residents of Addis Ababa.

reproductive age group who were single has also increased substantially, from less than 15 per cent in the late 1960s to well over half 54 per cent in 1994(CSA,1997).

In Sub-Saharan Africa, levels matching that of Addis Ababa are probably found only in southern African nations such as Botswana. However, even in Botswana, since a substantial proportion of births occur out side of formal unions, marriage does not exert as much influence as it does in Addis Ababa (Kinfu, 2001).

Delayed age at first marriage affect completed fertility by reducing the number of years available for child bearing (Singh and Renee, 1996; Feldman, et al 2003; Ikamari, 2005 and Mensch et al, 2005).This strong relation between age at first marriage and fertility is clearly indicated in Ethiopia. Although fertility at national level has only recently shown signs of decline, fertility in the Addis Ababa, is exceptionally low, which is unique event in the history of the developing countries, especially in sub Saharan African standard (Lindstrom and Zewdu 2005). This below replacement fertility of Addis Ababa can be clearly reported in different National population census and survey reports. Among the national reports, the 1994 National Population and Housing Census results revealed for the first time of below replacement fertility in Addis Ababa (TFR 2.14) (CSA, 1998). The reported TFR (1.74) by Fertility Survey conducted in urban Addis Ababa in 1995 also verified the 1994 census report of below replacement fertility (CSA, 1997).

Recent EDHS conducted in 2000 and 2005 also revealed a total fertility of 1.9 and 1.4 respectively for the Addis Ababa (CSA and ORC Macro 2001 and 2006) showing that fertility has continued to decline in the city. For this exceptional cases many researchers, for example Abeje, (1995) and Kinfu, (2000), got many reasons in which rise of age at first marriage is the influential one among others. For example Kinfu (2000) proved the decline of fertility in Addis Ababa as a remarkable 'Malthusian' fertility transition led by both non- marriage and delayed marriage rather than by high contraceptive use. A study conducted by Sibanda his colleagues, in 2002 pointed out that the change in marital pattern in Addis Ababa has great impact on fertility reduction than the growth of contraceptive use. The big question that remains unanswered is, therefore, why a number of women in Addis Ababa delay marriage.

In addition to the above stated reasons, the following points attract the attention of the writer. Marriage marks as transition to adulthood in many societies, it is point at which certain options in education, employment, and participation are foreclosed and it affects housing requirement and community services. Given the key role of the marriage in individual's life history and its role in fertility and other demographic characteristics, few analytic studies have been undertaken on correlates of age at first marriage in Addis Ababa. To the knowledge of this writer, only two studies were conducted on the pattern of marriage in Addis Ababa, these were Abeje, 1995 and Haile, 1999. These researchers however, did not include many variables like parental educational background in their analysis which are important in the review related literature. Secondly, the findings are also not supported by the qualitative data in order to supplement mere statistical results. The current study thus tries to fill in this gab in using retrospective data in which life history calendar is used to cover detailed marriage history data and qualitative data.

1.2. Objective of the study

1.2.1 General Objective

The general objective of this study is to assess the trends, differentials and determinants of age at first marriage among women of reproductive age group in Addis Ababa.

1.2.2. Specific objectives

1. To examine the trends of age at first marriage in the city;
2. To asses the effects of individual socio-economic and demographic factors affecting the age at first marriage in the city; and
3. To asses the role of some parental educational level on the women's timing of marriage in the city.

1.3. Justification of the Study

The mean age at first marriage of women in Addis Ababa has increased from 24.5 in 1990 to 26.5 in 1995 (CSA, 1993 and 1997), which indicate that, there was an increase of exactly two years with in five years interval. According to the result of EDHS 2005, median age at first marriage reaches around 21.9 years while it is 16.1 at the country level (CSA, 2006). Given such considerable discrepancy between the timing of average at first marriage between the capital city

and rural areas, it is interesting to know what the important factors are affecting age at first marriage and contributing for its alarming increments using primary and retrospective data collected by event history calendar. As prior studies were based on the 1990 NFFS and the 1995 Urban Addis Ababa Fertility Survey, they do not reflect the current situation of the population in the study area due to dynamic nature of socio-economic and demographic variables. This study is therefore, believed to give update information for those who are interested to deal with the provision of different social services.

1.4 Review Related Literature

1.4.1 Theoretical Consideration

In the first half of the 1960s, nuptiality in Europe started to begin a clear-cut process of decrease, which turned into real collapse in the Scandinavian countries. This trend was followed by other western European countries and in some developing countries very later. This decreasing trend attracted the attention of many scholars from different discipline and proposed diverse theories in order to account for such decreased inclination to get married, which is reflected in the progressive postponement of the age at first marriage and an increase in people's intentionally renouncing the marital union. Among these theories, the micro-economic frame work (i.e. New Home Economic) (Becker, 1973) and Career Entry Theory (Oppenheimer, 1988) has drawn the most attention.

(i) Micro-Economic (New Home Economics) theory

Becker's (1973) seminar article on the theory of marriage is one of the few works by economist that address the issue of age at first marriage. According to him, marriage is a manifestation of utility-maximizing behavior. The main logic behind this theory is that individuals marry only when calculated benefits of marriage exceed calculated costs. The benefits of marriage include economic scale, risk sharing, and labor specialization, where as, marriage costs include direct financial costs of marriage ceremonies, gifts, and setting up a new households as well as the need to attain a certain minimum standard of wealth or security before starting a family as well as the level of non market-productivity augmenting variables, such as education. He argued that the gain from marriage is often compared to remaining single for any two persons that is positively related to the relative difference in their wage rates, and the level of non market- productivity-augmenting variables, such as education.

Similarly, in his influential work entitled "A Treatise of the Family" growing educational attainment and labor force participation have reduced women's incentives to marry and have children. The major theme of this argument is based on the fact that as women receive education on an equal footing with men and has access to improved opportunities in the labor market the economic gains from marriage tend to become less significant. With decreased specialization in housework skills, women are no longer dependent on their partners' economic performance and can earn a living on their own (Becker, 1981). So the key variables in his theory are the increased education and work opportunities for women. Their increased autonomy and cultural and economic independence have reduced their material convenience in getting married.

(ii) Oppenheimer Marriage Timing Theory (Carrier Entry theory)

According to Oppenheimer, the explanation for the rising of women age at first marriage can be found in changing gender role in society. In the past, women could enter into marriage at a young age because the information on the features that were fundamental to their success in the marriage market (basic personal characteristics, physical attractiveness, religious confession, or social background) was already apparent at a young age. But according to Oppenheimer, the entry of women into paid employment changed the selection criteria and the significance of a woman's income has been growing. This means that even in the case of women it has become necessary to wait until the information on their earning potential is available. In contrast to Becker's theory, it is expected that women with higher education will marry later, but that in the end their chances of marrying will be higher.

Oppenheimer (1988) has show that women's employment may in fact increase rather than reduce the benefits for a family unit. With two earners, the family becomes less vulnerable to risks if one partner is unable to provide his/her contribution. If this is true, high-earning women should be particularly attractive partners.

Oppenheimer (1988) similarly, related the delay in family formation to uncertainty. During a period of educational enrolment, uncertainty is large. Other explanations that do not necessarily contradict the former have pointed to the societal norms about the sequencing of the life course

events, in particular the expectation that young people still enrolled in education should postpone family formation until the completion of studies.

In this paper we will examine how the two theories- micro-economic theory (NHE) and Carrier Entry theory- help us to understand the relationship between education, work force participation, and other individual and parental socio-economic and age at first marriage among women in Addis Ababa..

1.4.2 Empirical Findings

1.4.2.1. Education

Proceeding from the theoretical considerations outlined in the introductory section, the independent variables of main interest in this study are related to education and labor force participation. With respect to education, previous research has underlined the importance of making a distinction between educational enrollments and attainments.

i / Educational Enrollment.

Study conducted in Sweden in 2007 revealed that educational enrollments and age at first marriage (union) is usually incompatible. This incompatibility is explained by conflict of interests between spending one's time, energy and money on school or on the family and more limited resources of students, particularly in comparison with young people who have graduated from school (Thomson and Eva, 2007). Studies conducted in China also revealed that, educational enrolment at least in full-time education has a negative effect on union formation and child bearing, in particular the later indicating a substantial degree of incompatibility between the roles of partner or parent and the student role (Feldman et al, 2003).

Similarly, a study conducted in Kenya in 2003 disclosed that school enrolment is an impediment to early marriage due to strong social norm preventing person in school from marring or even from co-residential partnerships. A study conducted in Indonesia also depicted that people who are still in school, regardless of their age are considered minor who are not yet ready to take on adult responsibilities of having a family (Sundaram, 2006).

ii / Educational attainment

Educational attainment represents the highest level of education achieved rather than the individual's educational participation at the time of a life event. Within the micro- economic frame work, study documented using database compiled by UN Department of Economics and Social Affairs and Demographic Health Surveys (DHS) provide confirmation of Becker's theory of marriage. They demonstrate that the impact of educational attainment is considered to operate mainly through the accumulation of human capital. With their enhanced earning capacity, highly educated women have fewer economic gains from partnership and are more likely to postpone or even forego union formation compared to their less educated counterparts (Narumon, 2001; Mensch et al 2005; Katus et al 2007).

According to a study conducted in Sweden, based on data from the Swedish Survey of Family and Working Life in the 21st Century, stated that the opportunity cost of time spent on family increases with human capital and in the context of a gender-specific division of labor with in the family (Thomson and Eva, 2007). These costs are typically higher among women, which in turn rise age at first marriage in Sweden. Gangadharan, and Pushkar (2001) also stated that the effect of educational attainment on the marriage time through economic condition, i.e. increased education, is likely to open up economic alternatives to getting married. So, they confirmed that in Pakistan, increased educational attainment of women rise the utility of being single than the utility of being married. As such, many women in Pakistan preferred to stay single.

Within the frame work of theories stated above a study documented by Singh and Renee, (1996) and Ikamari, (2005) similarly stated that educational attainment may also delay marriage by increasing women's ability to regulate their fertility. This is mainly because education is positively associated both with contraceptive knowledge and with greater decisions making power in areas related to contraceptive choice. This effect is likely to be the strongest in contexts where marriage is the socially encouraged response to unplanned pregnancy.

In addition, study conducted based on data from 20 Asian countries pointed out that the negative effect of educational attainment on the marriage / union formation. It was proposed that education equip girls with non- traditional roles and providing them with the means to establish

viable alternatives to early marriage (Feldman et al, 2003). Similarly, study conducted in Estonia, Latvia, and Lithuania disclosed that, education is also thought to broaden a girl's perspective on the world, increasing her aspirations, present her with alternatives, for examples, working opportunities, and provide her with a more western out look on life, which can include wanting to have a grater influence on choice of her husband (Katus, et al 2007).

1.4.2.2 Labor Force Participation

The relationship between labor force participation and marriage timing is harder to predict for women. This is because there are several plausible associations between these two variables in the case of women. On one hand in consistent with Becker theory, there may be an incompatibility between work and family role and consequently a decline in marriage rate (Sundaram, 2006; Felman, 2003; Singh and Renee, 1998 and Mensch et al 2005). They pointed out that women's increased access to paid employment are a typical out come of structural change in the labor market accompanying economic development is thought to influence both women's and their parent's desires and ability to postpone marriage.

Similarly, study documented based on data from almost all developing countries indicated that, work experience, particularly in the formal sector, exposes women to new ideas and norms that discourage early marriage. Moreover, employment may provide the economic resources to postpone marriage and an economic incentive for parents to encourage their daughters to remain single during this economically productive period of young adulthood (Singh and Renee, 1996).

Becker's thesis on why marriage rates have declined in the west is also consistent with Katus et al (2007) argument that a major reason behind postponing marriage timing in the Estonia, Latvia, and Lithuania. They revealed that, women are no longer reliant on their husbands for financial security and stability. Similarly, in a study conducted in Mexico also revealed that urban women worked before marriage and after widowhood (Morin, 1997). This shows that the marriage and labor force participation is in compatible.

An other equally important aspect inconsistent with Becker, but consistent with theory of Oppenheimer, 1988 the fact that labor force participation increases the odds of marriage by

improving their marriage markets was confirmed in the study conducted in Indonesia based on Indonesia Family Life Survey (IFLS). This study pointed out that, economic independence might enhance the chances of partnership formation for women. It could do so because it makes women more attractive as partners because they will contribute to household income and will not be dependent on their husbands, or because, just as it probably does for men, economic independence signals some sort of progression to adult status.

A Third possibility is that, women's labour force participation has no effect on marriage timing. This can happen in case where women's labour force participation prior to marriage is a stop-gap arrangement till such a time that her parents are able to find a suitable match for her (Sathar, et al, 1988).

1.4.2.3 Ethnicity

Marriage patterns vary across and within countries among different ethnic groups. Such variations could be due to both cultural and socio-economic factors (Arnaldo, 2004). Some studies moreover, indicated that the effect of ethnicity is more significant than other socio-economic factors. For example, a study in Nepal singled out ethnicity as the most important factor in the determination of the timing of marriage and birth; much more important than education, religion, and place of childhood residence. Women's mean age at first marriage varied from 13.5 among the Brahmins to 17.8 among Tamangs while the difference among the literates and illiterates was very small (15.4 and 15.2 respectively) (Villarreal, 1998).

The effects of ethnicity on the age at first marriage may not be direct as that of education and income or occupation. Being of any ethnic origin by it self does not lead to early or late marriage. The reason behind the fact that, different ethnic groups have different marriage times and rate of stability, is that they have different elements of culture. It is common knowledge that some cultures value early and universal marriage while others allow late marriages and celibacy (Arnaldo, 2004).

Similarly, in Ethiopia, according to the 1994 Population and Housing Census indicated that the simulate mean age at marriage for females in most of the Zones of the Oromiya Regional state is

higher than that for most Zones of the Amhara Regional state. The difference ranges from as high as 18.1 years in Walaga (Oromia) to as low as 14.6 years in East and West Gojjam. In the case of Addis Ababa, according to 1995 fertility survey of urban Addis Ababa, the mean age at first marriage for the four major ethnic (Amhara, Gurage Oromo &Tigraway was 16, 17, 17 and 17 respectively) showing very little variation (CSA 1997).

1.4.2.4. Religion Affiliation

Religion is considered to influence women's marriage timing primarily because it provides an important transmission channel of marriage norms and gender roles (Feldman, 2003). However, the effect of religious commitment on marital timing can be hypothesized in both directions. Conservative and traditional sex-role attitudes associated with religious practice may encourage early marriage. On the other hand, religiosity may act a deterrent to appreciated marriages given the catholic emphasis on prenuptial sexual chastity.

Similarly, according to FSUAA 1995 there was also a variation in the mean age at first marriage of women of different religion groups. Catholic women reported the highest age at first marriage (24 years) (CSA, 1997).

1.4.2.5 Birth cohort of the women

According to study conducted in Kenya data drawn from the 1998 Kenya Demographic Health Survey (KDHS), revealed that women born in the older generations were more likely to marry early compared to those born recently. For example, women born between 1948 and 1958 were 1.77 times as likely as those born between 1967&1978 to marry early (Ikamari, 2005). Similarly, study conducted in Asian countries pointed out that, women's later birth cohort seems to be generally associated with women's older age at marriage implying that more individualistic, social and normative environments in which women grew up may encourage women to postpone marriage (Tsuya, 2001).

Likewise, study conducted in China, disclosed that marriage cohort has a significant effect on wife's age at first marriage. This age at first marriage increase with time, indicating the positive

effects of socio-economic development, cultural change and the family policy (Feldman et al, 2003).

In Ethiopia, EDHS (2005) also pointed out that the proportion of women married by age 15 has declined from 38 percent among women age 45-49 to 13 percent among women aged 15-19 birth cohort (CSA, 2006). Likewise according to Ethiopia National Family and Fertility Survey, the mean age at first marriage by calendar year indicates that, there were increasing trend over time. The women who married in 1976, and after entered in to marital union at a relatively higher age than those who married earlier or before 1976 (CSA, 1993).

1. 4.2.6 Parental Socio-Economic Status

According to Quisumbing and Kelly (2003), in their work on the six developing countries including Ethiopia, parental socio-economic characteristics are important determinants of age at marriage of their children. For example, the father's land, a proxy for prenatal wealth, and schooling of mother's both increases age at first marriage of their children. Niu, (2006) also indicated that, the indirect effect of parental schooling on the age at first marriage of their children through their expectation of their educations. He found that the higher the father's and mother's education level, the higher the adolescent's education expectation and this in turn increase the age at first marriage among youth in three Asian cities.

According to study in Pakistan, the hazard of marriage is significantly lower for women with literate parents. In fact the estimated coefficients show that the hazard of marriage is lower by 23 per cent for women with literate mothers and is lower by 11 per cent for women with literate fathers. Both of those essentially translate to a higher age at marriage for women with literate parents (Gangadharan and Pushkar, 2001). Likewise, Children whose parents are well educated usually have better family economic status which in turn decreases the probability of marriage of their daughters (Feldman et al 2003).

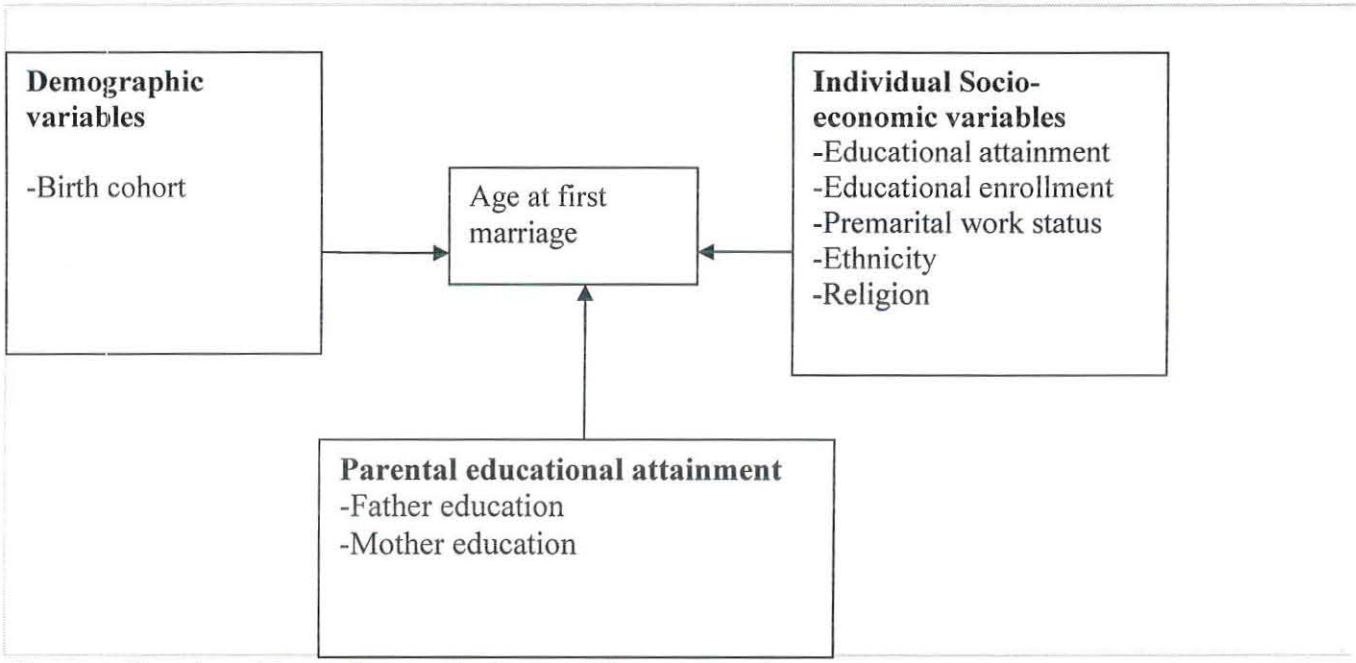
According to Arnaldo (2004) educated parents daughters marry lately than uneducated families due to the following logic. Firstly, educated parents tend to think their children's marriage is the children's own business. Secondly, it is not something parents arrange for them like what used to

be. Thirdly, educated parents never feel embarrassed in the neighborhood when single growing up children stay home until after they should have got married. Fourthly, to day educated parents do not a social net work in the neighborhood or large community as they used to.

1.5. Conceptual Frame Work

For the purpose of this study, in examining the determinants of the age at first marriage, parental and personal socio-economic and demographic factors are independent variable where as, probability of married at given age is dependent variable. The following conceptual frame work indicates the relation between selected independent and dependent variables based on the theories and review literature.

Fig 1.1. Conceptual Framework



Source: Developed by author on the basis of literature review

1.6. Definition of Terms

The definitions of the following terminologies used in this study are given based on their use in different literatures like DHS and others.

Age at first marriage: refers to the age at which the females ever-married for the first time.

Couples: refers to male and female who are in marital relationship or union.

Educational attainment: represents the highest level of education achieved rather than the individual's educational participation at the time of a life event.

CHAPTER TWO

2. METHODOLOGY

2.1. Target Population

In most study of the determinants of age at first marriage two main strategies are in wide use; the information only from ever-married women and data for all women. However, when a large proportion of women are in the never- married state (53%), as presented in the 1995 Urban Addis Ababa Fertility Survey (CSA, 1997) an analysis that is based solely on ever-married women may produce a biased result. This is primarily because such data reflect the experiences of a selected group of fast marrying women rather than of the total population whose experience, due to rapid changes in marriage pattern, may be different from those who are already in union. For this reason the target of the present study is all women in the reproductive (i.e.15 to 49 years) but continuously leaving in Addis Ababa or since birth starting from their age 12 until the time of survey.

2.2 Data Source

Quantitative primary data was used for the materialization of this study. This primary data was collected through detailed household survey based on structured questionnaire. Using retrospective survey (i.e. starting from age 12 to age at first marriage for those who have been married but to the survey date for those never married) premarital information on education, work status, religion, ethnic, educational status of their parents and others related information were collected for all sampled women of the reproductive age. In addition, all ever married women were asked about their age at first marriage while, never married women was asked about their preferred time of marriage in the future.

An in-depth interview with selected key informants was also made to substantiate and cross-check the information obtained from the questionnaire. The need for the in-depth interview arose from the fact that some important points in people's attitude and feelings cannot be exhaustively captured by the questions in the questionnaire.

In addition, further information was collected from records of administrative offices, journals, published or unpublished research papers, books and other sources so as to enrich the document.

2.3. Study Design

Cross sectional retrospective study design was employed to undertaken this investigation as it is quite important for the collection of basic information from the respondents, and to look at the effects of different time varying covariates across the life course of the respondents.

2.4. Sample Size Determinants

The sample size of the study was determined based on standard statistical procedures and assumptions. The sample size is determined based on the formula proposed by Bartlett and colleagues, 2001).

$n=p\,(1-p)\,(z/e)^2$ Where,

n= is the sample size.

z=is the number of standard error units that are found to be corresponding to 95% confidence level, which is given to be 1.96.

p= the proportion of married women in the reproductive age category in Addis Ababa, i.e. 0.47 (CSA, 1997).

e= is a margin of error or limit of accuracy to be tolerated in estimating proportion of married women which was taken to be 0.04 or 4%.

Therefore, the required sample size was

$$n=\frac{(1.96)2*0.47*(1-0.47)}{(0.04)^2}=\mathbf{598}+10\%$$

2.5. Sampling Technique and Procedure

The sampling technique used in this study was multi-stage random sampling technique. Firstly, from 10 sub cities of Addis Ababa three sub-cities were selected randomly to avoid the bias in the selection process. Secondly, a kebele was identified again randomly from each of the selected sub-cities, since more or less the numbers of kebeles in each of the sub-city are nearly equal between 9 and 11.

Finally, eligible women in the reproductive age group were proportionally selected by systematic random sampling techniques based on the information of 2007 Population and Housing Census of Ethiopia. Operationally, to locate the study individuals the list of households in all

2.7. Recruitment and Training of Field Staff and Pilot Survey

Six female data collectors and two supervisors (one per three data collectors) were recruited. Because of cultural, religions and different barriers in the study population for the sensitive data like marriage issues, it was planned to use female data collector than men to improve the quality of data being collected. The recruitment of the data collectors and supervisors were done on the basis of their experience in data collection and supervision.

Training of data collectors was conducted for two days. The content of the training includes explaining the purpose and objective of the study, procedure of data collection, how to approach the participants and having due respect for the consent and ethical values of the researcher undertaking. Pilot survey from ten women in reproductive age group was collected in the city outside the sampled kebeles to assess the content, clarity, and logical flow of the questions and the time needed on average to fill out a single questionnaire.

2.8. Data Quality

Data quality assurance is an important procedure of research works and it has very much to do with the analysis of data and the interpretation of results in investigative findings. To assure the quality of the data, a properly designed data collection instrument was used. The questionnaire was prepared after reviewing relevant literatures that was based on predetermined variables. Everyday, all of the collected data were reviewed and checked for completeness and relevance by the supervisors and the principal investigator. Like wise, the consistency of the data was assured after entering each of the questionnaires into computer by running appropriate program before making them ready for analysis.

2.9. Methods of Data Analysis

The method of data analysis in this study varies from a simple to advanced model mainly based on the type and nature of the variable and data used in the study.

Univariate and bivariate analysis

Descriptive statistics like frequency, percentage, and cross tabulations were used to give an over view of the data. Life table techniques (survival plot) were also used in order to show the pace at

which a group of single person is decreased annually by marriage and to indicate the effects of some background characteristics up on the age at first marriage of women in a study area.

Multivariate analysis

The age at first marriage, the dependent variable in this study, was interpreted as survival time from a single to a married state. The best recommended method for such analysis is life table techniques especially the Cox regression model (Thompson et al, 2003).

There are two major reasons why this research issue cannot be addressed via straightforward multiple regression techniques. First, the dependent variable of interest (survival time) is most likely not normally distributed that leads to a serious violation of an assumption for ordinary least squares multiple regression. Second, there is the problem of censoring, that is, some observations will be incomplete (Allison, 1984).

The proportional hazard model is the most general of the regression models because it is not based on any assumptions concerning the nature or shape of the underlying survival distribution. The model assumes that the underlying hazard *rate* (rather than survival time) is a function of the independent variables (covariates); no assumptions are made about the nature or shape of the hazard function. The model is written as:

$$h\{(t), (z_1, z_2 \ldots z_m)\} = h_0(t) * \exp(b_1 * z_1 + \ldots + b_m * z_m)$$ (Cox, 1972).

Where h (t...) denotes the resultant hazard, given the values of the m covariates for the respective case (z_1, $z_2 \ldots z_m$) and the respective survival time (t). The term h_0 (t) is called the baseline hazard; it is the hazard for the respective individual when all independent variable values are equal to zero.

Assumptions.

While no assumptions are made about the shape of the underlying hazard function, the model equations shown above do imply two assumptions. First, they specify a multiplicative relationship between the underlying hazard function and the log-linear function of the covariates. This assumption is also called the proportionality assumption. In practical terms, it is assumed

that, given two observations with different values for the independent variables, the ratio of the hazard functions for those two observations does not depend on time.

The second assumption of course, is that there is a log-linear relationship between the independent variables and the underlying hazard function.

Cox's Proportional Hazard Model with Time-Dependent Covariates

An assumption of the proportional hazard model is that the hazard function for an individual (i.e., observation in the analysis) depends on the values of the covariates and the value of the baseline hazard. Given two individuals with particular values for the covariates, the ratio of the estimated hazards over time will be constant -- hence the name of the method: the *proportional hazard* model. The validity of this assumption may often be questionable. In this case, the impact of the covariate is clearly dependent on time.

Testing the Proportionality Assumption

There are many applications where it is likely that the proportionality assumption does not hold. In that case, one can explicitly define covariates as functions of time.

$h(t,z) = h_0(t)*\exp\{b_1*z + b_2*[z*\log(t)]\}$ (Thompson,2003)

Thus, in this model the conditional hazard at time t is a function of (1) the baseline hazard h_0, (2) the covariate z, and (3) of z times the logarithm of time. In other words, the, conditional hazard at each point in time is a function of the covariate and time; thus, the effect of the covariate on survival is dependent on time; hence the name time-dependent covariate. This model allows one to specifically test the proportionality assumption.

Assessment of Proportional Hazards

In order to use the Cox model, we must check the assumption of whether the effects of covariates on risk remain constant over time or not. There are different methods of checking the proportionality assumption of the regression. In this study, the proportionality assumption was examined statistically by plotting log minus log (LML) on the survival time and it was satisfied (see appendix 4).

Hazard rate measures the risk of making a transition from the absence of an event to the presence of an event, such as from being single to being married. Hazard rate is essentially a transition rate. The rate is measured by the ratio of number of cases experiencing the event at the end of the time interval to the total number of cases exposed to the risk of experience the event at the beginning of the time interval. A lower hazard rate implies a longer duration of waiting time for the event to occur, i.e. older age at first marriage. In this study, the coefficients of the covariate were transformed by exponentiation and interpreted as relative risk.

The result was presented as the relative risk, which represent the relative likelihood of a woman with the specified characteristic of marrying in comparison to a woman who would be in the appropriate reference group. The risk ratio of the reference group or category is one (1.00). If the risk ratio of a given category is greater than 1.00, this indicates greater risk of marrying, and when the risk ratio is less than 1.00, it indicates a lower risk of marrying compared to the reference group. In this analysis, a variable was reported as having a significant effect, if its effect on the timing of marriage is statistically significant at least at the 5 percent level of significance.

2.10. Variables Description

A/ Dependent Variable

The dependent variable in our model is the likelihood of entry in to a first marriage. The exposure is measured stating at the age 12 of the respondent and continued until the entry in to first union (for married women) or until censoring at the time of survey (for never married). It is denoted by 1 if the event has occurred but 0 if the event is not occurred at the time of survey.

B/ Covariates / explanatory variables

i / Socio-Economic Variables

Women Educational attainment

This variable refers to the highest grade level of individuals rather than institutional participation. Categorization of such variables is done in such a way that it reflects variation in the level of respondent's knowledge in making decisions with regard to not to marry early. Taking the school system in Ethiopia, into consideration educational attainment of respondents could be classified as (1) illiterate or no education, (2) primary (1-8), (3) secondary and higher. From these three categories, using no education as reference category, two dummy variables were constructed.

Educational Enrollment

It refers to the participation of the respondents in school or college rather than the highest grade level. Categorization of such variable is done in such away that it reflects variation in the degree of incompatibility between enrollment on education and marriage as stated in many studies. Taking this concept into consideration educational enrollment of the respondent was categorized as (1) enrolled within less than 6 months before marriage(for ever married respondents) or survey(for those never married by the survey date and (2) not enrolled with 6 months before marriage/survey date. In our model reference category is "no enrollment) category.

Premarital Labor Force Participation status

The variable to measure women's premarital economic activity is a dichotomous variable indicating whether or not a woman engaged in gainful works some time before marriage or survey date. In our model reference category is "no working".

Ethnicity

According to the literature, ethnicity, which is expected to reflect socio-economic impacts on timing of marriage, can be considered in the model being categorized as (1) Ahmara, (2) Oromo and (3) others (with greater proportion of Gurage and followed by Tigire). From these three categories using Amahara was used as reference category.

Religious affiliation

Religion is considered to influence women's marriage timing primarily because it provides an important transmission channel of marriage norms and gender roles. In analysis model, religion is grouped in to two categories (1) Christians (which consisted of 62.2 % orthodox and 12% of protestant) and (2) Muslim. From these two categories, using Christian was used as the reference category.

ii / Demographic Covariate

Women's birth cohort

This variable is included as a proxy for likely normative environment in which women grew up as well as macro structural changes that shaped women's economic opportunity structure. This variable was included in the model having categorized it into three broad categories. These are women who born between (1) 1960-1969, (2) 1970-1979, (3) and after 1980 and then after. The reference category used in the model was birth cohort after 1980.

iii / Parental Socio-Economic Status

Parental Educational attainment (Father's and Mother's)

Categorization of this variable is taking place by taking the school system in Ethiopia in to consideration. Thus educational attainment of parents was classified into (1) illiterate or no education, (2) primary (1-8), (3) secondary (grade 9-12) and higher. The reference category for both father education and mother is primary education.

C/ Control variables

Childhood Place of Residence:

Women's childhood place of residence is expected to capture the effect of urbanization on women's marriage timing by measuring the effects of more individualistic social and normative environments in cities where women grow up. In the analysis women's childhood place of residence is grouped into three categories (1) in Addis Ababa (2) in other urban areas; and (3) rural. From these three categories, a woman grown up in Addis Ababa was used as reference category.

Number of Siblings

According to literature number of siblings which are expected to reflect the family socio-economic conditions (Children from small families are often led to invest more in other areas of life and are drawn away from an early marriage) on timing of marriage can be considered in the model being categorized as (1) None (2) One (3) Two and (4) Three and above. The reference category used in the model was "None".

2.11. Communicating of Finding

The finding of this study will be communicated to concerned institution or individual and other interested groups. This can be accomplished through submission reports, presentation of findings at appropriate meeting and through publication on scientific journals.

2.12. Limitation of Study

Even though, greater effort was made by the data collectors in order to estimate the exact age by relating with greater and known events like the dawn fall of Derg (1991) and 1974 the dawn fall of Hailesielasse etc, the most severe limitation in this study was raise from errors in reporting age data. The fact that age is the most important variable in this study makes the problems even worse. This is mainly due to the inherent nature of retrospective survey method, which is subjected to the recall lapse of reporting past event especially age.

2.13. Ethical Consideration

Ethical clearance was obtained from Addis Ababa University, College of Development Studies, Institute of Population Studies, the purpose of the study was explained to the respondents and informed consent was obtained from each study subjects. The result was confidential and the anonymity of the respondents was kept.

CHAPTER THREE

3. DESCRIPTION OF STUDY AREA AND RESPONDENTS

3.1. Description of Study Area

The demographic profile of any society is a product as well as a determinant of the socio-economic and other related forces operating at various levels of the population (Kinfu, 2001). As a framework to the subsequent discussion on the dimension and causes of reproductive change in Addis Ababa, this topic reviews the socio-economic and demographic characteristics of the study area. The review was mainly focus on variables and factors that are often hypothesized as having significant influence on demographic processes, particularly on marriage behavior and some related reproductive background in order to give hint for the reader about the change over time. These include population size and change, fertility trends, educational attainment, female labor force participation, religion and ethnicity of the study population using existed data from different surveys and census.

3.1.1. Population Size of Addis Ababa

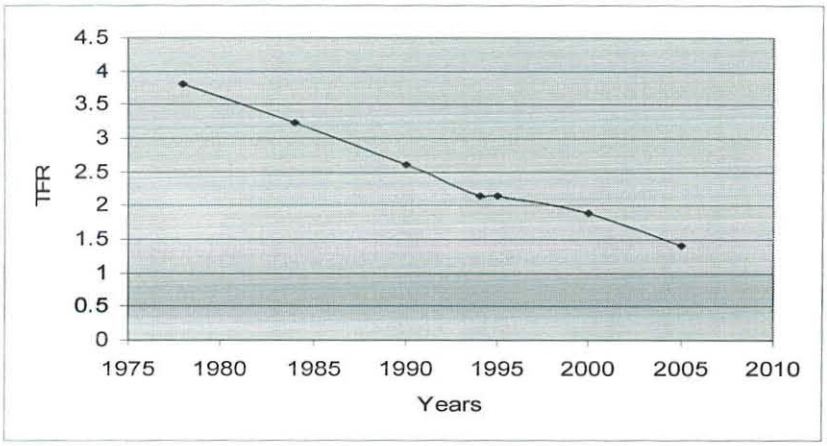
About 34 per cent of the urban population in 1961, 33 per cent in 1984 , 30.4 per cent in 1994 and 23 percent in 2007 were living in one city, of Addis Ababa, which is so far the only urban centre in the country with a population of over half a million people (Kinfu,2001). As to sex ratio according to latest data of 2007 PHC indicate that around 1,304,518 (47.6%) male and 1,433,730 (52.4%) female population living in the city (CSA, 2008). The sex ratio is 91mals to 100 females and this indicate almost there is no significant variation between number of male and female in the city, which is expected to rise age at first marriage as observed in South East Asian countries at the moment (Narumon,2001).

3.1.2 Fertility Rate

There is a sharp decline in TFR of the city almost form 1978, data compiled in the second demographic sample survey in the history of Ethiopia, until the second EDHS 2005. All sources show a consistent trend, whereby total fertility which was about four in the late 1970s declined to

about three in the first half of the 1980s, to 2.6 in 1990, 1.8 in 1994 and 2.14 in 1995 (CSA,1997) and finally to around 1.4 according to 2005 EDHS (CSA, 2006).

Fig 3.1 Trends of Total Fertility Rate in Addis Ababa Between 1978 and 2005.



1978	3.81
1984	3.23
1990	2.61
1994	2.14
1995	2.14
2000	1.9
2005	1.4

Source: 1978-1995[CSA, 1997] and CSA, 2001 and 2006

3.1.3 Education and Literacy Rate in the City

As shown in table 3.2 there has been a consistent and overall increase in the educational attainment of female in Addis Ababa's in the past three or so decades. Female literacy rate in the city increased from less than 40 per cent in 1967 to about 54 per cent in 1978, and to well over 80 per cent by the early 1980s. This trend reflects both the rapid expansion of school enrolment among girls as well as the greater involvement of women in the adult literacy program. This also tells us rise education attainment has some thing to do with rising trends of female age at first marriage in the study population.

Table: 3.1 Female literacy status of the adult population of Addis Ababa, in 1967-1994.

Age group	Proportion of Literate of Women			
	1967	1978	1984	1994
15-19	46.6	66.4	92.6	88.5
20-24	21.8	45.5	89.4	89.1
25-29	15.5	28.3	82.4	84.9
30-34	10.2	20.5	77.9	77.6
35-39	8.7	15.4	70.3	69.9
40-44	6.2	7.7	60.1	61.1
45-49	7.8	8.4	53.1	55.2

Source: CSA, 1972, 1979, 1987, 1995

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3.1.4 Female Labor Force Participation

As shown in the table, since 1978 the labor force participation rate in Addis Ababa for each age group has increased substantially. For instance, in 1978 only one-third of the women aged 30-34 were either employed in an economically gainful activity or actively seeking one. By 1984 this proportion had increased to almost 40 per cent and by 1994 to 60 per cent. Similarly the detailed data about women labor force participation is not disclosed by 2007 PHC.

Table 3.2 Labour Force Participation rates for Women, Addis Ababa: 1978-1994

Age of women	Labor force participation rate		
	1978	1984	1994
20-24	44.5	55.9	67.7
25-29	37.0	47.1	65.5
30-34	33.2	40.1	57.1
35-39	29.8	33.8	47.3
40-44	30.3	32.6	41.3
45-49	28.9	29.9	34.8

Source: CSA, 1979, 1987, 1995

The overall picture that emerges from a review of the demographic and socio-economic in Addis Ababa is multifaceted. Significant changes have been recorded in areas such as schooling, and labor force participation and status of women.

3.2. Socio-economic and Demographic Characteristics of Respondents

The survey has collected a wide range of in formations which are crucial in the study of the determinations of age at first marriage. These include the demographic and socio-economic backgrounds of the women, which are expected to have a profound effect on behavior, values and attitudes associated with their marriage performance.

In view of analyzing determinants of age at first marriage and estimating the differential effect of each of the major background variables collected in the survey, it is necessary to bring forward an overview of some of the characteristics of the women covered in the study area. So, the background characteristics of the 598 women age 15-49 interviewed in 2009 are shown in Table 3.3.The information is important in that it provides the background for interpreting findings presented later in the report.

3.2.1 Demographic Characteristics

The age distribution of women included in the survey (Table 3.3) shows a typical pattern observed in most developing countries presenting a predominantly young population resulting from high fertility and declining mortality. The proportion of women in the successive age groups shows a decreasing pattern as age increases except in the age group 40-44, and 45-49 which presented a slightly higher proportion of women than the preceding age range. This might be due to the dominance of in-migrants in this age group or shifting of women from the neighboring age groups to the 40-45 and above years age (CSA, 2006).

Table 3.3 Percentage Distribution of Respondents to all Socio-economic and Demographic characteristics included in study, Addis Ababa 2009.

Socio-economic and Demographic variables	***Number of women at the time of survey***	***Percentage of women***
Demographic Variables		
Age		
15-19	170	*28.4*
20-24	129	*21.6*
25-29	94	*15.7*
30-34	59	*9.9*
35-39	44	*7.4*
40-44	50	*8.4*
45-49	52	*8.7*
Marital status		
Never married	*354*	*59.2*
Ever married	*244*	*40.8*
Age at first marriage		
<17	*126*	*51.6*
18-19	*72*	*29.5*
21-23	*28*	*11.5*
>23	*18*	*7.4*
Socio-economic variables		
Educational Level		
No education	*123*	*20.5*
Primary(1-8)	*161*	*27*
Secondary +	*314*	*52.5*
Premarital educational Status		
attending school	*309*	*52*
Not attending school	*289*	*48*
Premarital work Status		
Working	*127*	*21*
Not working	*471*	*79*
Ethnicity		
Amhara	*351*	*58*
Oromo	*209*	*35*
Others	*38*	*7*

Table 4.1 Percentage Distribution of Never married of Addis Ababa 1978-2009

Age	Years					
	1978	1984	1990	1994	1995	2009
15-19	81.2	89.1	96.3	94.8	94.4	97.5
20-24	29.0	52.6	65.7	74.5	77.5	85
25-29	6.5	18.6	27.1	44.5	41.8	58.5
30-34	2.3	7.3	5.6	18.4	16.9	30.5
35-39	1.2	2.9	1.1	6.8	5.4	9.3
40-44	0.8	2.0	1.0	3.4	1.9	2
45-49	1.1	1.7	1.0	2.1	1.6	2.0

Source: for (1978-1995) [CSA, 1997] and 2009 computed by author from own survey data

The observed changes in the proportions entering a marital union at the successive age groups particularly at ages 20-34 can be a good indicator of a postponement of marriage among the younger generations showing a rise in age at first marriage during the period under reference.

4.2 Singulate Mean Age at First Marriage

Another important measure of changes in the Age at first marriage over time is the Singulate mean age at marriage. The singulate mean age at marriage (SMAM) is an estimate of the average number of years lived in the single state by a cohort of women before their first marriage. It is also one of convenient measure of the change in nuptiality pattern derived from the proportions single by age (Hanjal, 1953).

This measure is preferable than that constructed from marriage histories in depicting marriage trends, because the estimate it provides corresponds to a more recent time period (Kinfu, 2001). There are two methods which are very often used as they are quite simple to calculate. The two methods generally used are census synthetic cohort method and decade census synthetic cohort method.

The census synthetic cohort method was evolved by John Hajnal, a European demographer in 1953. The method is quite simple in computation which utilizes the data on proportions of single persons by age. The second method was decade census synthetic cohort proposed by.Agarwala an Indian demographer in 1962 which is an improvement over Hajnal's method of estimating

mean age at first. The method utilizes the data on proportion of single from two successive censuses unlike the Hajnal's method that is completely based on the first marriage experience during the inter-censual period. Due to the nature of data and simplicity in this study the census synthetic cohort method proposed by John Hajnal is used. According to Hajnal the formula to calculate SMAM is:

$$SMAM = 15 + \frac{\sum_{X=15}^{45} 5 * {}_5S - 50 * S_{50}}{(1 - S_{50})}$$

Where, SMAM denoted Singulate mean age marriage.

${}_5S_x$= Proportion of single in the 5-year age group.

S_{50}= Proportion of single at exact age 50 and;

S_{50} is computed by taking the average of ${}_5S_{45}$ and ${}_5S_{40}$.

Figure 4.2 shows an average rise in the age first marriage of women in the reproductive ages during the successive periods between 1978 and 2009. SMAM of women in Addis Ababa has increased from 20.9 in 1978 to 29.3 in 2009, i.e., a rise of 9.4 years except 1995 UAAFS. This slight distortion might be due to the exclusion of special enumeration areas and collective quarters such as hotels and hostels that are expected to be occupied by high proportion of single women (CSA, 1997).

Table 4.2. Illustration for computation of women SMAM by Hajnal's method using survey data of Addis Ababa in 2009.

Age group (in years)	Total sampled population	Never married women population	Proportion single female
(1)	(2)	(3)	(4)=(3)/(2)
15-19	166	162	0.9759
20-24	128	109	0.8516
25-29	94	55	0.5851
30-34	59	18	0.3051
35-39	43	4	0.0930
40-44	49	1	0.0204
45-49	49	0	0

Source: Survey data, 2009

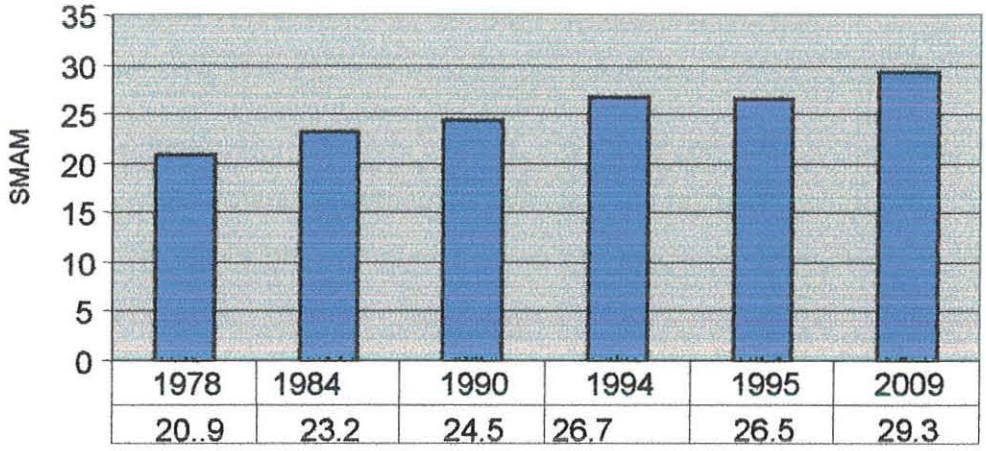
$$S_{50} = \frac{(0.0204+0)}{2} = 0.0102$$

$$SMAM = \frac{15 + 5(0.9759+0.8516+0.5851+0.3051+0.0930+0.0204) - 50(0.0102)}{1-0.0102} = 29.3$$

SMAM =29.3

Figure 4.2 shows an average rise in the age first marriage of women in the reproductive ages during the successive periods between 1978 and 2009. SMAM of women in Addis Ababa has increased from 20.9 in 1978 to 29.3 in 2009, i.e., a rise of 9.4 years except 1995FSUAA. This slight distortion might be due to the exclusion of special enumeration areas and collective quarters such as hotels and hostels that are expected to be occupied by high proportion of single women (CSA, 1997).

Fig 4.1 Singulate Mean Age at Marriage for Women in Addis Ababa: 1978-2009



Source: 1978-1995(CSA, 1991) and computed by author from respective data set in 2009

Table 5.1 Socio-economic Differentials of Survival Mean and Median Age at First Marriage of Women in Addis Ababa:2009

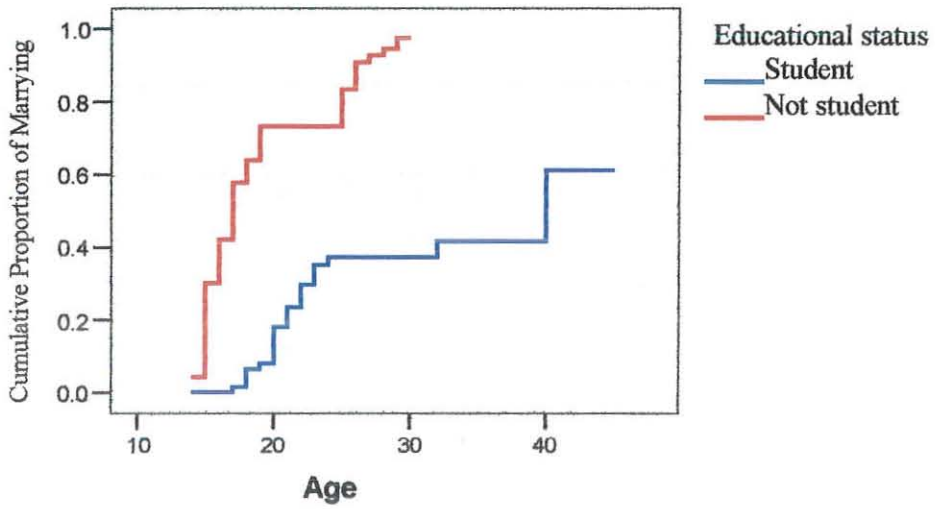
Background Characteristics	*Number of cases*	*Mean Age at first Marriage*	*Median Age at First Marriage*
Educational Attainment			
No education	*123*	*17*	*16*
Primary	*161*	*25*	*25*
Secondary+	*314*	*26*	*40*
Enrollment			
Student	*309*	*34*	*40*
Not Student	*289*	*19*	*17*
Work Status			
Working	*127*	*33*	*26*
Not Working	*471*	*24*	*21*
Birth Cohort			
1960-1969	*111*	*17.6*	*15*
1970-1979	*99*	*24.2*	*20*
After 1980	*388*	*33.5*	*32*
Religion			
Christian	*444*	*32*	*32*
Muslim	*154*	*18*	*17*
Ethnicity			
Amhara	*253*	*19*	*18*
Oromo	*161*	*30.8*	*26*
Other	*184*	*30.5*	*25*
Father education			
No education	*124*	*17.5*	*16*
Primary	*186*	*22.2*	*20*
Secondary+	*288*	*36*	*40*
Mother Education			
No education	*196*	*20*	*17*
Primary	*265*	*25*	*26*
Secondary+	*137*	*38*	*40*
Over all	*598*	*28.5*	*25*

Source: Survey Data 2009

The mean and median age at first marriage was examined for some background variables (see Table 5.1). The variation in mean and median age at first marriage was observed among women

variation in the mean and median age at first marriage. For example, woman who was enrolled in school or college six month before age at first marriage or survey date marries on average in 34 years compared to their counter parts (19 years). Similarly, the median age at first marriage of women with attending school or college was higher (40 years) as compared to their counterparts (17years).

Fig 5.2 Survival Plot of Age at First Marriage of Women in Addis Ababa by Educational Status: 2009



Source: Survey data, 2009

As indicated in Fig 5.2, there is also strong evidence that the cumulative proportion attaining the first marriage was highest among women who were not enrolled in school or college with in six month before the survey or first marriage than their counterparts. For instance, at age 20 more than 70 percent of women, who were not enrolled in school or college with in six month before survey or time of marriage, were married, compared to about only 10 percent by their counterparts.

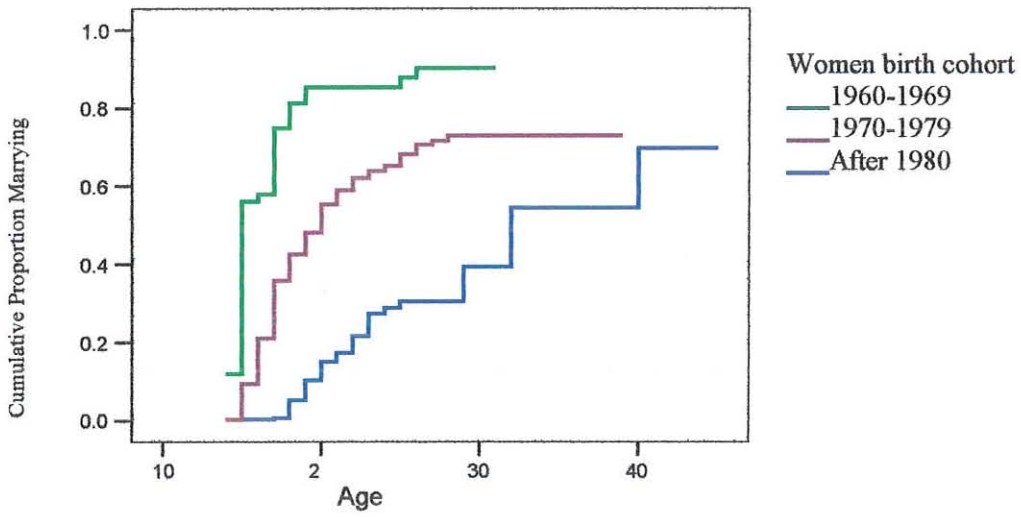
Table 5.1 also shows the differentials in the age at first marriage by work status of the respondents. Female labour force participation is another socio-economic characteristic whose link with age at first marriage has received considerable attention in the literature. The basis for investigating the relationship between age at first marriage and labour force participation is partly

rooted in the general observation that certain types of employment, particularly in the modern sector of economy, required long term institutionalized training (Singh and Renee, 1996).

For this reason, women employed in the modern sector of the economy or preparing themselves for such positions are more likely to get married late than non-working women who may have been married at an earlier age. As it is clear from the figure presented in Table 5.1, in Addis Ababa, not working women exhibit the lowest average age at first marriage, compared to working women. For example, the mean and median age at first marriage for women who were working at the time of survey or marriage is lower (33 and 26 years,) than women who were not working (24 & 21years) mean and median age first marriage respectively.

Fig 5.3 also further explored the association of working status and age at first marriage by using the cumulative proportions of women experience the first marriage at specified ages. There is additional evidence that the cumulative proportion attaining the first marriage was highest among women who have not engaged in any kind of work (who were depend upon some one else or their parents to earn their living) than their counter parts. For example, at age 20 years, around 45 percent of women who were not engaged in any gainful work had already had their first marriage compared to only 20 percent among women who were engaged in gainful work.

Fig 5.4 Survival Plot of Age at First Marriage of Women in Addis Ababa by birth Cohort in 2009

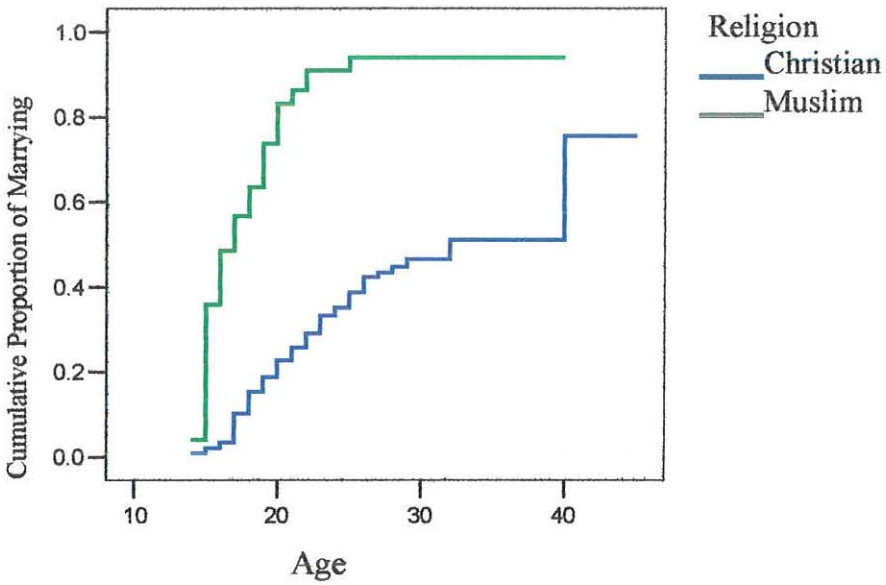


Source: survey data 2009

The data shown in Table 5.1 also revealed that religions differentials in age at first marriage in the city. As can be seen from table, the lowest mean (18 years) and median (17 years) of age at first marriage in city was observed among Muslim as compared to "Christian" (includes 62.2% Orthodox and 12% Protestant) with 32 and 32 years mean and median age at first marriage respectively.

According to Fig 5.5 there is also ample evidence that the cumulative proportion attaining the first marriage was highest among Muslim women than Christian category. For example, at exact age 20 years, around 90 percent of Muslim women were already married compared to only around 25 percent among Christian women.

Fig 5.5 Survival Plot of Age at First Marriage of Women in Addis Ababa by Religious Affiliation: 2009.

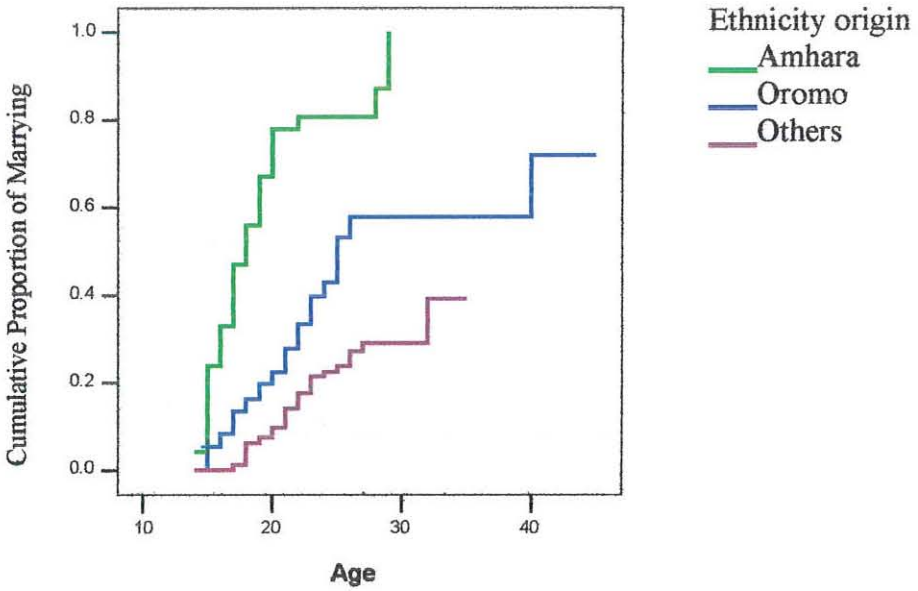


Source: Survey data, 2009

Once again, as in the case of ethnicity, the data presented in Table 5.1 shows a clear evidence of variations of age at first marriage by ethnic origin of the women. For instance, mean and median age at first marriage in city was highest among Oromo (30.8 and 26 years) than 'Other' category (30.5 and 25 years) and followed by Amhara (19 and 18 years) respectively.

Similarly, Fig 5.6 further explored the association using the cumulative proportion of women experiencing the first marriage at specified ages. There is strong evidence that the cumulative proportion attaining the first marriage was highest among Amahara women than 'Others' category and followed by Oromo ethnic origin. For instance, at exact age 20 years, around more than 70 percent of women with Amhara ethnic origin were already married compared to only around 20 percent and followed by only 10 percent among women with 'Other' and Oromo ethnic origin respectively. So women with Amhara ethnic origin were married earlier than "Other" ethnic category and women with Oromo ethnic group.

Fig 5.6 Survival plot of Age at First Marriage of Women in Addis Ababa by Ethnic origin: 2009



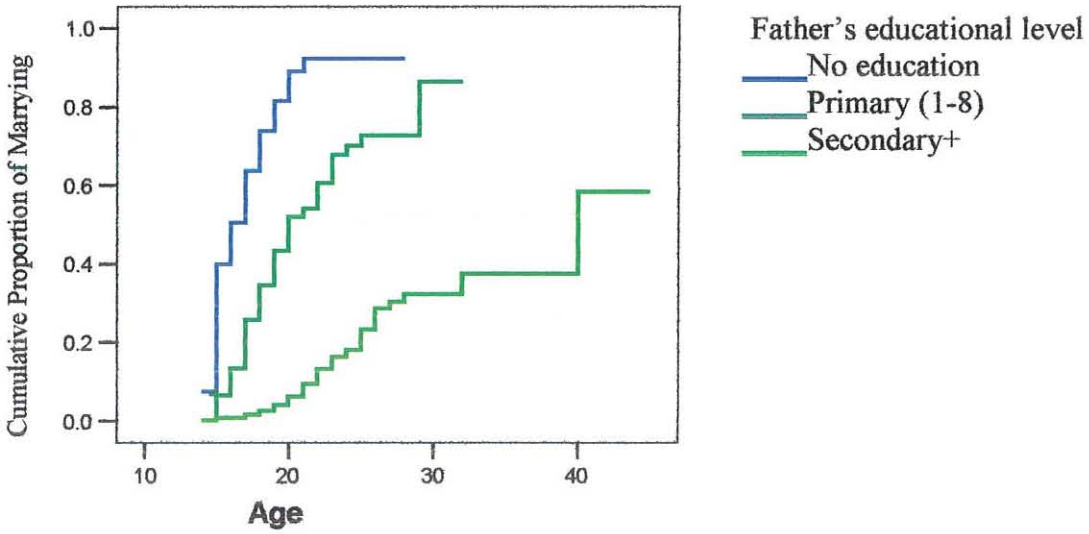
Source: Survey data, 2009

There was also a substantial variation in mean and median age at first marriage of women by educational status of father and mother. Parental educational level is affecting the timing of first marriage of their daughter through, their educational expectation. This in turn prolongs the time spent in school by women. So, a daughter with illiterate fathers and mothers enters in to first marriage earlier than those with primary education and followed by secondary and higher education. For example, the mean and median age at first marriage of daughter with illiterate mother is 20 and 17 years as compared to a daughter with secondary and higher education mother (38 and 40 years) respectively.

In Fig 5.7, author farther tried to explore the association using the cumulative proportions of women experiencing the first marriage at specified ages. It shows ample evidence that, the cumulative proportion of experiencing the first marriage was highest among women with illiterate father compared to women whose father education is primary level followed by women whose father educational level is at least secondary school. For example, at exact age 20 years, around 90 percent women whose illiterate father were married compared to about 40

percent women whose father with primary education and followed by only around 5 percent of women born from father with at least secondary school level.

Fig 5.7 Survival Plot of Age at First Marriage of Women in Addis Ababa by Father's Educational Level: 2009



Similarly, Fig 5.8 further confirmed the association between mother education and age at first marriage by using the cumulative proportions of women experiencing the first marriage at specified ages. For instance, at exact age 20 years, about more than 80 percent women with illiterate mother were already married compared to about 35 percent among women whose, mother with primary education and followed by only about 10 percent of women whose mother with at least secondary school.

In the study, the proportionality assumption of the model was examined statistically by plotting log minus log (LML) on the survival time and it was not violated (see appendix 4).

Testing Multicollinearity Effect

Multicollinearity is the intercorrelation of independent variables. There are different ways of testing (diagnosis) the intercorrelation between independent variables. But in this study coefficient of contingency table which was formulated by Yule's was used. The coefficient is given as (Kathari, 1990:205).

$$C = \sqrt{\frac{\chi 2}{\chi 2 + N}}$$

Where, C =Coefficient of contingency

N= Number of sample

The value of this coefficient will be some where between +1 and -1. If the variables are completely associated (perfect positive association), with each other, the coefficient will be +, and if they are completely disassociated (perfect negative association), the coefficient will be -1. If the associations are completely independent of each other, the coefficient of association will be 0. In this study, multicollinearity diagnosis shows weak relationships between the predictor variables with a maximum value of 0.28, so the multicollinearity is not the problem in this study (see appendix five).

Table 5.2 displays the proportional hazard coefficients (β) and the associated relative risks $e^{(\beta)}$ of first marriage in Addis Ababa. Similarly as indicated under methodology section, $e^{(\beta)}$ represents the relative risk of first marriage associated with each covariate relative to the risk for the reference or base line category. The relative risk for the base category of each factor is unity ($e^{(0)} = 1$), thus a coefficient of 1.00 for any of the other categories indicates that the variable category in question has the same effect as for the reference or base line group on the timing of first marriage. A value of $e^{(\beta)}$ higher than one indicates greater risk of first marriage than the base line category, whereas values less than unity indicate a lower relative risk.

5.2.1 Results of Multivariate Analysis

To see the factors that affect the age at first marriage among women in Addis Ababa, eight independent variables and two other control variables were entered in to the model. Of these, only father educational level has not net effect on the age at first marriage among women in the study area. The results obtained by fitting the Cox regression model are presented in Table 5.2.

Table 5.2 Coefficients and Relative Risks of First Marriage of Women from Cox Proportional Model, Addis Ababa, 2009

Variable/ category	Regression Coefficients (β)	Relative risk $e^{(\beta)}$	S.E
Educational level (base=No education)			
Primary (1-8)	- .843*	.431	.202
Secondary+	-1.260*	.284	.199
Educational enrolment (base= no student)			
Student	-.721*	.486	.176
Working status (base= not working)			
Working	1.157*	.314	.292
Birth cohort (base= 1960-1969)			
1970-1979	-.362	.696	.172
After 1980	-1.989*	.137	.197
Religion (base= Christians)			
Muslim	.512*	1.669	.145
Ethnic Origin (base= Amhara)			
Oromo	-1.004*	.367	.218
Others	-.415*	.660	.192
Father education (base= primary)			
No education	.451	1.570	.246
Secondary+	1. 563	.756	.215
Mother education (base= primary)			
No education	.462*	1.587	.195
Secondary+	-.822*	.439	.322
-2 Log likelihood			2701.4
(P-value)			0.00
Model $\chi 2$			868.98
Number of cases			598

Source: Computed by writer from the respective data sets
*statistically significant at 0.05 level

Educational attainment

Premarital educational attainment is highly significant and indicates an inverse relationship with the relative risk of the first marriage (Table 5.2). The result of the table clearly shows that net of other factors, primary (1-8) education tends to reduce the likelihood of the first marriage by about 57 percent [100-(1-0.431)], while secondary and above education depresses the likelihood of marriage approximately by 72 percent [100-(1-0.284)]. In other words, an increase in the educational level of the respondents reduces the relative risk of getting married early.

Educational enrollment

Education enrollment, was also found to be significantly related to the likelihood of first marriage among women in Addis Ababa ($P<0.05$). The result of the table clearly revealed that net of other factors, students tends to reduce the chance of first marriage by about 52 percent [100-(1-0.486)] as compared to their counterparts. This obviously indicates that being student it self contributes much to rise of age at first marriage as compared to women who did not attending school.

Premarital work status

Premarital work status of the women was found to be statistically significant with the likelihood of entering into the first marriage (Table, 5.2). Women who have engaged in any gainful work to earn their living were observed as lower relative risk of first marriage than women who have not engaged in any gainful work (i.e. who were depend up on some one else. Net of the effects of other factors, women who have engaged in any gainful work reduce the risk of first marriage by about 69 percent [100-(1-0.314)]. This clearly vivid that, participating in any gainful work contributes much to the rising of age at first marriage among women in Addis Ababa.

Birth Cohort

Women birth cohort has a statistically significant effect on the likelihood of first marriage (Table 5.2). The results of the table 5.2 revealed that net of other factor women who born between 1970 and 1979 had reduced the chance of first marriage by almost 31 percent [100-(1-0.696)] than women born between 1960 and 1969 (reference category). Similarly, women born after 1980 had reduced the chance of the first marriage by almost 87 percent [100-(1-0.137)].

Religious affiliation

Religious affiliation also tends to have a significant effect on the likelihood of the first marriage (Table 5.2). Controlling for the effects of possible differences in other socio-economic and cultural factors shown in the model, followers of Islamic religion had about 66 percent [100-(1.669-1)] higher chance of the first marriage than the reference category (Christians).

Ethnic origin

Similarly, the chance of entering into first marriage is also significantly vary among women of different ethnic origin. Net of the effects of other socio-economic and cultural factors in the model, with Oromo and Other ethnic origin had reduced the likelihood of the first marriage by about 64 percent [100-(1-0.367)] and 34 percent [100-(1-0.66)] than women with Amhara ethnic origin respectively.

Parental educational level

As regard to parental educational status mother educational level had statistically significant effect on the likelihood of entering into first marriage of their daughters, while father education is insignificant related to the likelihood of first marriage of their daughters ($P<0.05$) Table 5.2.

Controlling for the effects of possible differences in other socio-economic and cultural factor shown in the analysis, women with illiterate mother had increased the chance of entering into first marriage by about 59 percent [100-(1.587-1)] than women with primary education (reference category). In contrast, women with secondary and higher educated mother had reduced the chance of entering into first marriage by about 57 percent [100-(1-0.439)] in Addis Ababa. Except the educational level of father, all other variables included in the model showed a significant effect on the age at first marriage of the women in the study area irrespective of their magnitude and direction.

Women who attending school or college have less likelihood of entering into first marriage at all or quite early

Consistence with Carrier Entry theory and other related findings, there is a negative effect of educational enrollment (institutional effect) on the age at first marriage of women in Addis Ababa. Similarly, findings were also documented in different parts of the world at different period of time (Katus et al, 2007 and Thomson, 2007).

As explained by Carrier Entry theory and other findings the association between these variables may operate through the following logical thinking: (1) since completing at least high school education takes time and takes an individual well past the traditional (early marriage) a delay in marriage could occur simply by being in school; (2) people in school or those who are still attending class in school still be considered "young" even if they are in their late teens or early twenties(Sundaram, 2006); (3) when women enrolled in school or college it is neither desirable nor feasible for students to marry as it is disruptive and generally young people lack the financial resource and the prospect of a stable income that would be ideal for marriage and forming a family (Oppenheimer, 1988 and Dixon, 1971). In this regard, a 23 unmarried and college student had described in her words how being a student delays age at first marriage. She said:

> *"At the moment I do not want to form a family before completing my study, because for one thing, I don't want to share my time to cook and to give care for my partner and child instead of concentrating on my study. In addition to this,, I need my own income before marriage in order to establish more stable family rather than being dependent upon my husband's income, which is not good for women morally and economically."*

Premarital work status has the potential to postpone the timing of marriage among females.

Different researchers (Singh and Renee, 1996; Katus, et al 2007; Mensch et al, 2005 Abeje, 1995) confirmed the negative relationship between women premarital work status and age at first marriage. The results of this study also showed that there is an inverse relationship between premarital work status and the likelihood of entering into the first marriage and thus confirming the stated hypothesis in the relationship between the two variables. As explained by New Home Economic theory the explanation behind the relationship between the premarital women work

status and age at first marriage is as follows: (1) Employment may provide the economic independence (resource) to women to postpone marriage i.e. when women are working they are financially independent and not need a man to take care of them, which contradicts the Carrier Entry theory that states the economic independent of the women facilitate rather than delay age at first marriage; and (2) work experience particularly in the formal sector, exposes women to new idea and norms that discourage early marriage. Inline with this explanation, 25 years old unmarried working women had described, in her own worlds, how premarital work related to female age at first marriage. She said:

> *"If a girl is economically dependent on her parents or others, she is more likely to give a positive answer for a man who asked her for marriage than economically independent girl. This is because she doesn't have other alternative a part from accepting the marriage proposal in order to attain her economic needs. Unlike this, a girl who is working has no or little economic problem that forces her to form a union. In addition, working woman is more likely to expose her self to the new ideas that reduces early marriage than their counterparts. For similar reasons, I don't want to marry before the next two years. "*

Evidence on the effect of birth cohort on female's age at first marriage:

Different research findings (Tsutsui, 2008; Abeje, 1995 and Kinfu, 2001) revealed that birth cohort affects age at first marriage among females. This study also confirms the hypothesis that women of older birth cohorts marry earlier than women that belongs to younger birth cohort. The logic behind may be partly attributed to the broader socio- economic change affecting all sector of the population. The change in the status and aspirations of women also has contributed to this variation. In line with this explanation a 45 years old woman married at age 15 had described, in her own wards, how birth cohort affect age at first marriage. She said:

"In the past there were definite pressures on women in our society to get married. If the girl is not married at a certain age, say at about 16, people tend to feel sorry about her that make her to think there is something wrong with her and forces her to be married. For instance, I got married when I was 15. I think that this is changed completely in the city because women are now do not want to marry till they complete their education and become financially independent. Additionally, the attitude of the parents has also been changed. Now days parents think that their daughter's marriage is her own business than their own major concern. It is not something that parents arrange for them like what it used to be."

Religion and Ethnicity are also affecting age at first marriage among girls

In line with other findings, the chance of first marriage among women of different religious affiliation and ethnic origin also vary. According to the findings of the current study women with Oromo ethnic origin had the lower risks of age at first marriage than Amhara (reference category) and followed by women in "Other" category. Muslim women had higher risk of first marriage when compared to their counterparts i.e. Christian. This variation may be partially attributed to the variation in marriage norm and gender role. The response of in-depth interview from a 17 years old girl who has married at 16 years and Muslim religion follower describe the significant variation of age at first marriage between the followers of different religion. She said:

"I have got married early (when I was 16 years old) because of my religion (being the follower of Muslim) because, Muslim doctrine is encouraging a girl to marry relatively at earlier age that other religion doctrine."

Women born to educated mother marry late.

Mother education tends to have a negative significant effect on the risk of first marriage of their daughter. This finding is supported by different study documented in different parts of the world at different period of time (Feedman et al 2003; Niu, 2000; Quisumbing and Kelly, 2003 and Thomson&Eva, 2007). This may be partially attributed to the thinking that educated women delay the end of their daughter's educational careers.

Similarly, the response of in-depth interview from a 25 years old unmarried, third year college students and born from educated mother explained the effect of mother education on the age at first marriage of their daughters. She said:

> *"I support the saying: educating women is educating all family members. Because, she is my mother that encourage me to continue my further education that in turn encourage me to give much attention to my study than marriage till now. "*

The none significance of the father educational level on age at first marriage of their daughter, nonetheless, is probably due to presence of relatively less contact with their daughter rather than the contact they made with their mother.

have been married some time in the past. With regards to educational level of respondents 20.5 percent of them had no education whereas the remaining 79.5 percent had some education ranging from primary to higher level. Slightly over half (52%) of the respondents were students with in six month before the survey date or first marriage and the remaining 48 percent were not attending school. Nearly eighty percent of the respondents were not engaged into any gainful work before marriage and the rest 20 percent were working. The majority of the respondents were Amhara (58 %), followed by Oromo (35 %), Gurage (5%) and Tigire (2 %). As to religion of the respondents the majority of the respondents were Orthodox (62.2%) followed by Protestant (12 %) and Muslim (25.8%).

The data revealed that 21 %, 31 % and 48 % of respondents' fathers have no education, primary and secondary and higher education, respectively. Similarly, the data showed that 33 %, 44 % and 23 % of respondents' mothers have no education, primary and secondary and above, respectively.

According to the results of the current study, Addis Ababa is best characterized by a steady rise in proportion of single females and singulate mean age at first marriage (Table 4.1 and Fig 4.1). The proportion of never married women in the reproductive age group increased from 53 percent in 1995 to approximately to well over 60 percent in 2009. These changes were caused primarily by an increase in the proportion of never married persons among the youngsters.

Similarly, the values of SMAM demonstrate that there is a profound change in the timing of women's marriage in Addis Ababa. The singulate mean age at marriage in Addis Ababa among female increases by about 3 years between 1995 (26.5 years) to 2009 (29.3 years). There is a dramatic change of female literacy rate and female labour work participation in the city which may be partially the main driving force behind alarming rise of age at first marriage in the study area (Table 3.1 and Table 3.2.).

The differential in age at first marriage has also been analyzed in relation to different socio-economic and demographic variables using bivariate analysis (survival plot). The mean and median age at first marriage among women with secondary and higher is enormously higher (26

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Appendix one
Questionnaires Addis Ababa University School of Graduate,
College of Development Studies
Institute of Population Studies.

Informed Consent

Dear Respondent!

This questionnaire is designed to collect data about the socio-economic and demographic determinants of women age at first marriage in Addis Ababa. You have been selected to complete the questionnaire as part of a sample of the study population. I would very much appreciate your participation in this study.

The data collection from this questionnaire will be used for the purpose of the research. You are genuine responses are very important in order to meet the purpose of the study. To this end, what ever information you will provide will be kept strictly confidential and will not be shown to other persons. Participation in this study is voluntary and you can choose not to answer any individual question over all of the questions. However, I hope that you will participate in this study

Do you have any question with regard to this study?
Do you agree to take part in this study?
1/ Yes (Continue) 2/ No (Thank You)

Identification

1. Sub-city..... .....
2. Kebele .....
3. House number .....
4. Name of house hold head name..... .....
5. Name of Respondents .....sign.....
6. Supervisors name.....sign.....
7. Date of interview...../...../ 2001

Part I. Household Questionnaire

Line No.	Usual Residents and Visitors	Relationship (identify closest household relationship e.g. son of 2+3)	Sex	Age	Religion	Ethnic Group	Educational Status (For members aged five and above)		Place of birth and living			Eligibility
	Name of persons	Head Husband=H Wife= W Daughter=D Son=S Brother=B Sister=Z Adopted=A Father=F Mother=M Non-relative=NR	Male= 1 Female= 2	How old is ____?	What is Religion?_____	What is Ethnic Group?_____	Can___ read and write? Y= Yes N= No (skip t0 10)	What is the highest Grade ____ has completed?	Place of birth 1= AA	 2=Out side AA	Where have you live after 12 years 1 In AA 2 other than AA	Put a (√) mark for Eligible Woman if the women 1/sex=2 1/ aged 15-49 2/continuous living in AA since age 12
1	2	3	4	5	6	7	8	9	10		11	12
1												
2												
3												
4												
5												
6												
7												
8												
10												

Part II Questions for both married and never married women.

Now the following questions are asked to collect some socio-economic and demographic Condition from all women age between 15 and 49 years starting from their age 12 to age at first marriage for married or to survey date for never married women.

NQ	Filters and questions	Code
201	How old are you?	_____ years old 98 ..... don't know
202	In what year and month were you born?	_____ years _____ months 98 ..... don't know
203	Have you ever married?	1..... yes 2..... No (skip to 207)
204	How old were you when you first started living with your first husband?	_____years
205	In what month and year did you marry to first husband?	_____ month _____year 98.....don't know
206	Who arranged your first marriage?	1..... your family 2..... friends 3..... my self 4.....abduction Others _____ (Specify)
207	Was your first marriage postponed due to shortage of money, education, and intervention of your family?	1..... yes 2 .....No(Skip to 209)
208	If your answer is yes which was the main reason for you?	1 .....shortage of money 2..... For competing my education 3..... By my families

209	**For Married** What was your educational level when you were married to your first husband?	**For never married** What is your educational level at this moment	1..... Illiterate (No education) 2..... Primary (1-8) 3..... Secondary (9-12) 4..... Higher (Vocational, College & University
210	**For married** Have you a student, when you were married to your first husband?	**For never married** Are you a student, at this moment?	1..... Yes (skip to 213) 2..... No
211	**For married** At what time you interrupted your education before marriage	**For never married** At what time you interrupted your education from this time	1..... before 6 months 2..... not before 6 months
212	How did you leave school?		1..... unable to afford school fee 2..... Got married 3..... Got pregnant 4..... Poor family help 5..... Completed high school 6..... completed university 7..... fail Others _____ (Specify)

213	**For married** What was your father's education at your first marriage?	**For never married** What is your father's education at this moment?	1.....Illiterate (No education 2..... Primary (1-8) 3..... Secondary (9-12) 4.....Higher (12+) 5. .....No father
214	**For married** What was your mother's education at your first marriage?	**For never married** What is your mother's education at this moment?	1.....No education 2..... Primary (1-8) 3..... Secondary (9-12) 4.....Higher (12+) 5. .....No mother
215	**For married** During your first marriage on average, how much Birr your family earn per month?	**For never married** At this moment on average, how much birr your family earn?	_____Birr
216	**For married** What was your religion, when you married to your first husband?	**For never married** What is your religion at this moment?	1.....Orthodox 2..... Protestant 3..... Catholic 4.....Muslim Others _____ (Specify)

Appendix II

Life History Calendar – Guide Questions

The set of questions in this format are for all eligible women in the reproductive age (i.e. 15-49 years), it covers, about their time of birth educational status, work history, and parental education and income status.

Mark 'x' in the year where the activity/state began and draw a line extending through the period in to which the activity/state continued, then enter another 'x' in the year that the activity ended. You may be required to write the response using codes or in short description.

A. Year of Birth

- How old are you?
- In what year and month were you born?
  - ***Circle the year in which the woman was born***
  - ***Count 12 years from birth to get a year at which the respondents were at 12 years of age.***
  - ***Put a thick vertical line all the way through the column from top to bottom using a red pen or other unique color to indicate the year at which the respondents are at age 12.***
  - ***Put another a tick vertical line all the way through the column from the top to the bottom using similar color at the year of the first marriage for only married respondents to demarcate the time at which need focus.***
  - ***Make sure that you properly demarcated the area where you need to focus while collecting the required information through the help of this calendar.***

    That is:

    i/ Time from respondents 12 old to present(2001)

    ii/ Time from respondents 12 years old to year at first marriage

B. Educational Status

- Have you ever been student when you were age 12?
- What was your educational level at this time?

  Write month and year at which they started new educational level.

Appendix IV

Event History Record Form

Sub-City ________ Kebele ______ ID No________ Name of Respondent ______ Interviewee's name ________

A1	Age	( )																																																	
A2	Year of birth and month	( )	1960	61	62	63	64	65	66	67	68	69	1970	71	72	73	74	75	76	77	78	79	1980	81	82	83	84	85	86	87	88	89	1990	91	92	93	94	95	96	97	98	99	2000	01	02	03	04	05	06	07	08	09
Bo	**Educational status**		1960	61	62	63	64	65	66	67	68	69	1970	71	72	73	74	75	76	77	78	79	1980	81	82	83	84	85	86	87	88	89	1990	91	92	93	94	95	96	97	98	99	2000	01	02	03	04	05	06	07	08	09
B1	Are you educated?	1. Yes 2. No																																																	
B2	Educational Status																																																		
Co	**Labor force Condition**		1960	61	62	63	64	65	66	67	68	69	1970	71	72	73	74	75	76	77	78	79	1980	81	82	83	84	85	86	87	88	89	1990	91	92	93	94	95	96	97	98	99	2000	01	02	03	04	05	06	07	08	09
C1	Have you Done any work?	1. Yes 2. No																																																	
C2	Type of work																																																		
C3	Employment Condition																																																		
C4	In come of the Family																																																		

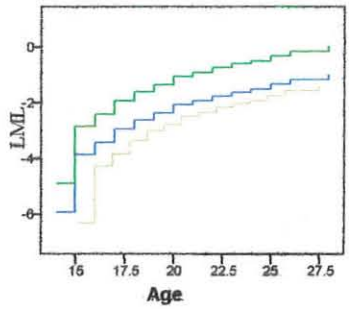
Use the following abbreviation
Type work

DL= domestic servant
MU= manual and unskilled work
SS=Skilled and semi-skilled

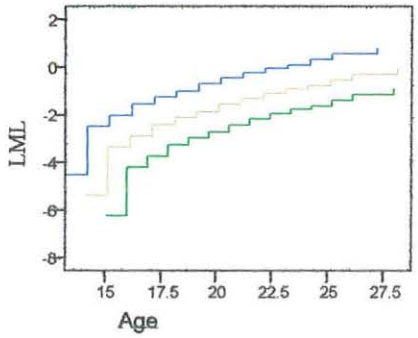
Employment condition

GV= Government Employment
FA= Family
PR= Private

LML Function for patterns mother education



LML Function for patterns for Ethnicity



Appendix VI

Coefficient of Contingency Table

	Educational level	Educational status	Work status	Ethnicity	Religion	Birth cohort	Father education	Mother education
Educational level	1							
Educational status	.259	1						
Work status	.273	.237	1					
Ethnicity	.176	.099	.06	1				
Religion	.273	.154	.098	.151	1			
Birth cohort	.36	.27	.163	.225	.237	1		
Father education	.28	.220	.072	.197	.267	.215	1	
Mother education	.278	.221	.092	.228	.213	.234	.280	1

Declaration

The thesis my work, has not been presented for a degree in any other university and that sources of material for thesis have been duly acknowledged.

Alemu Shiferaw		03/07/09
Student	Signature	Date

It confirms that this has been submitted with my approval as the survivor of the same.

Dr. Eshete Gurmu		03/07/09
Advisors	Signature	Date