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Socio-economic Correlates of High Fertility among Low Contraceptive Communities of Southern Ethiopia

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ABSTRACT This article is an empirical study aimed at examining the socio economic determinants or correlates of fertility in low contraceptive communities in Southern Ethiopia. The data were collected from 1467 ever-married women who were selected through the multistage stratified sampling technique. The study examined the adjusted and unadjusted effects of eleven predictors using a multivariate analysis model called Multiple Classification Analysis (MCA) The findings of the multivariate analysis using MCA model revealed that there exists significant relationship between seven explanatory variables and the dependent variable (children ever born). While Son preference, nutritional status, patriarchal structure and land size are found to have significant positive relationship with fertility, duration of abstinence is known to yield strong negative relationship with the response variable. Finally, on the basis of the findings, few policy recommendations were given.

1. INTRODUCTION

Human fertility involves both biological process (intercourse, conception and gestation, and parturition) and individual choice. While the former is modified by cultural patterns, the later is strongly influenced by economic, social and demographic factors. Demographers usually express the human fertility phenomena using three concepts: Potential fertility or fecundity (**F**), Natural fertility (**N**) and Actual or Controlled fertility (**C**). Potential fertility (F) represents the number of children that would be born, given the most favourable reproductive conditions; Natural fertility (N) refers to a situation in which no deliberate control of birth is attempted by cohabiting couples i.e, contraception and abortion are absent and other fertility inhibiting factors such as prolonged breast feeding, intercourse taboos or prolonged separation of spouses are not practiced as deliberate control to limit birth (UN, 1993; Coale and Trussell , 1975; Henry, 1961). The difference between F and N expresses the fact that at any given moment and in every society physiological and cultural restrictions such as sterility, sexual abstinence, breast feeding and the like prevents fertility from reaching its biological maximum, even in the absence of deliberate control. While potential fertility remains constant, however, natural fertility can actually increases with modernization, as a consequence of the breakdown of taboos, the shortening of the duration of breast feeding and the improvement of child survival. The actual or controlled fertility (C) refers to a situation where couples deliberately control birth through contraception and other methods. The gap between N and C indicates the extent of birth control, that is, birth averted.

Natural fertility (N), which is the concern of this study, typically characterizes many traditional communities of Ethiopia. Most communities in Ethiopia are still experiencing high and stable fertility (TFR of above 6 per woman) and the onset of fertility decline has not yet been well established in these dominantly agrarian communities. This scenario can easily be understood by looking at the absence of such deliberate control of birth as measured by contraceptive prevalence rate. According to recent estimate, the overall contraceptive prevalence for the country is about 8 percent (CSA, 2000). In the study area, Southern federal state, the scenario is even worse, with over all contraceptive prevalence of about 6 percent, which even comes down to almost nil if one looks at the sub district level (SNNPR, 2001). The high and sustained "natural fertility " in the region can also be inferred from the current level of TFR of some districts or zones which is ranging

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between 5.6 for Kembatta district to 7.9 in Sidama (DTRC, 1998) varying mainly due to differences in socio cultural experiences across communities.

In this region, where about 45 ethnic groups exist and where all fertility indicators are among the highest in the country standard, investigation of the determinants of fertility has paramount importance. So far, a very few empirical studies have been conducted to identify the key determinants of natural fertility among such communities in Ethiopia, and thus, this study is hoped to make significant contribution to the planning and implementation endeavour of population programs and policies at the regional and the country level as well.

2. COUNTRY PROFILE

Ethiopia is located in the horn of East Africa between 3 and 15 degrees north latitude and 33-48 degrees east longitude. It is an ancient country with a rich diversity of peoples and cultures. Covering a total area of some 1,130,000 square kilometer, Ethiopia is a country of great geographical diversity with rugged mountains, flat-topped plateaus, deep gorges, and rolling plains. The country is bordered by Djibouti, Eritrea, Sudan, Kenya, and Somalia (CSA, 2000).

With an estimated population of about 77 million, Ethiopia is the second most populous country of Africa, next to Nigeria. Fuelled by a high level of fertility rate, the country is experiencing high annual population growth rate of about 2.6 percent. The population increased over the decades from 42.6 million in 1984 to 77 million in 2004. Ethiopia is an agrarian country where agriculture accounts for more than sixty percent of the GDP, employing about 85 percent of the population, and accounts for about 90 percent of the export (CSA, 2000). The country is one of the least developed in the world, with a per capita Gross National Product (GNP) in year 2000 of US $ 98 (GoE, 2000). As one of the indicators of economic status of the population, the household expenditure shows very unpleasant distribution. According to the national level expenditure survey (CSA, 1996), about 68.5 percent of the households in the country spend less than 600 dollars (5400 Ethiopian birr) per year, and in rural Ethiopia, the average expenditure per household per year is about 190 dollars. Ethiopian households save only 6.6 percent of their total earnings (CSA, 1996), which is also another way of looking at the depth of the poverty of the nation.

Majority of Ethiopians have little or no education; 62 percent of males and 77 percent of females have no education, 27 percent of males and 17 percent of females have only some primary education, less than 3 percent of males and 1 percent of females have attended (but not completed) secondary level education. Only less than 4 percent of the population completed secondary or higher education. The main occupation of the settled population is farming while about 25 percent of the total land is left for pastoralists. Christian and Islam are the two main religions of the country; 51 percent of the population is orthodox Christian, 33 percent Muslims, 10 percent Protestants and the rest are following diversity of faiths. The country is a home to about 80 ethnic groups that vary in population size from more than 30 million to less than 100 (CSA, 1998; 2000).

It is estimated that about 75 percent of the population suffers from some type of communicable diseases and malnutrition (TGE, 1995). It is estimated that about 50-60 percent of the population is chronically food insecure and more than half of the children below the age of five are stunted; 11 percent of the children are moderately wasted and 1 percent of these children are severely wasted (CSA, 2000). Life expectancy at birth, as an indicator of the health status of the population, is estimated to be about 42 years (PRB, 2003) and the more sensitive indicator, infant mortality rate is 107 per 1000 births, whereas the average sub Saharan Africa IMR is less than 100 per 1000 live births (PRB, 2003). On top of these, maternal mortality ratio in the year 2003 was above 895 per 100,000 births, which is one of the highest in the world (PRB, 2003; CSA, 2000).

Among the nine federal states of the country (Amhara, Oromia, Tigrai, Afar, Somalia, Gambella, Benishangul, Region 14, and SNNPR), the Southern Nations ,Nationalities and Peoples Region (SNNPR) , which is the concern of this study, is located in the southern part of the country. With an area of 113,539 square kilometers, it accounts for about 10 percent of the total area of the country. The region is constitute of twelve sub-regional administrative areas called 'Zones' classified on the basis of ethnicity (Sidama , Guraghe, Hadya , Wolaita , Bench Maji, Semen Omo, Debub Omo, Gedeo ,

Keficho , Kembatta, Alaba Tembaro, and Silti ,).In the year 2000, the population of the region was estimated at about 12.5 million, of which 6.2 million male and 6.3 million were female population. The region's population accounts for 20 percent of the total population of the country, which makes it the third populous region in the country next to Oromia and Amhara federal states (SNNPR, 2001; CSA, 2000).

The population profile of the region is characterized by large number of children under 15 (46.7 percent) while those in the age group 15-64 and above 64 accounts for 50 and 3.3 percent respectively. The median age of the population in the year 2001 was estimated to be about 17 years, which again indicates high prevalence of dependency and high population momentum in the years to come. Out of the total population of the region, women in the reproductive age (15-49) account for about 2,970,650 in the year 2000 (47.3 percent of the total female population of the region). Out of these, only 8 percent live in urban areas while 92 percent reside in rural areas of the region.

The crude birth rates and Total Fertility Rate of the region in recent years was 48.6 and 6 respectively (CSA, 2000). The region is experiencing one of the highest Infant Mortality Rate (113.4 per 1000 live births), under five mortality of 191.5 for both sexes and maternal mortality rate of above 850 per 100,000 live births (CSA, 2000). About 53.9 percent of children are stunted ,12 percent are severely wasted and 52.5 percent are under weight (CSA ,2000)..On top of these, the region exhibits one of the lowest health service coverage in the country (RBOH, 1998). Lack of good antenatal delivery, poor postpartum care, malnutrition, anaemia, high fertility and the like contributed to the high regional maternal mortality rate. Moreover, sexually transmitted diseases are among the major health concern of the region. Currently, the HIV cases are increasing very alarmingly and threatening the health status of the citizens and thereby bringing about serious socio-economic consequences in the region.

Sidama zone is one of the 13 zones found in SNNPRG. It is found in the northeastern part of the region and it is bordered by Oromiya federal state in the north, east and southeast, with Gedeo zone in the South, and North Omo zone in the west (see the map on page vi).The zone has a total area of 7200 Km^2 divided into ten sub-zones , locally called '*woredas*' and two administrative towns. These ten woredas are ; Awassa, Shebedino, Dalle, Aleta Wondo, Darra, Hagere-selam, Arorresa, Bensa, Arbegona, and Boricha wordas and the two towns administrations of Yirgalem and Aleta wondo. .Among all *woredas* , Dale is the largest with a total area of 1494.630Km^2 while the smallest is Darra with 263.360 km^2. The zone has different landform characteristics varied from high mountains to low lands, as it is true for different parts of the country.

According to the recent estimate, the zone's total population is about 3 million with an average density of 386 persons per km^2 , making it one of the densely populated zone in the region. There is high variation in the population growth rate of rural and urban areas, which is 4.11 and 2.23 percent per annum respectively. Protestant chirstians account for the majority followed by orthodox Christian , catholic and Islam. The zone is one of the least developed areas of the country with very closed and rigid social system, and exhibiting very low level of literacy, high infant and child mortality, very low prevalence of contraceptive use (less than 4 percent), high level of maternal and child malnourishment (54 and 50 percent respectively) and very low status of women.

3. OBJECTIVES OF THE STUDY

The major objective of this study is to examine the socio-economic correlates or determinants of marital fertility among one of the low contraceptive communities of southern Ethiopia, Sidama Tribe/ethnic group.

4. DATA AND METHOD

The input data for this study was generated through primary source. The study population is ever married women in the conventional age group 15-49 who were selected from the population of one district (Administrative zones) of the Southern Federal Government. Two Questionnaires were developed to collect data for the study; the household and individual questionnaire. The data were collected from the sample households for four consecutive months (January to April 2005).

In order to make estimation of fertility of the region possible, a total sample size of 1140

households is statistically significant (i.e. 1140 is minimum required sample size statistically estimated). As indicated in section two above, there are twelve zones in the southern region, almost all having similar level of fertility (TFR of about 6). The study zone (Sidama) was purposefully selected among the twelve zones of the region due to the fact that the zone is the most populous with the lowest level of contraceptive prevalence, experiencing one of the highest fertility (TFR of above 6) and owns highest proportion of women in the age group 15-49, indicating high potentials for increasing population.

Generation of sampling of ever-married women (age 15-49) begun with the listing of all village segments or locally known as "*Kebeles*". Then, two stages proportionate stratified sampling technique was used to ensure that the different groups of the population are adequately represented in the sample. At the first stage of sampling, a total of twenty-four area segments were selected from a total of 110 segments using systematic sampling technique. At the second stage of sampling, a total of 1140 households were selected using systematic sampling technique and all eligible women were interviewed. The ultimate total number of eligible women interviewed was 1467.

Following the data collection, the data were coded and four experienced data entry operators carried out the data entry. Data re-coding and cleaning were performed following data entry. The quantitative data were analyzed using computer software called Statistical Package for Social Sciences (SPSS). The multivariate analysis on the socio-economic determinants of fertility is done using the Multiple Classification Analysis (MCA).

5. BACKGROUND CHARACTERISTICS OF THE RESPONDENTS

Information on the respondent's background characteristics, such as age, marital status, educational status, religious status and the like was collected. The percentage distributions of these background characteristics are given in table 1 below.

The age distribution of the respondents given on table 1. reveals that majority of them are represented from the age group 25-29 (26.8%) followed by age group 30-34 (26.3 %) and age

Table 1: Percentage distributions of respondents by background characteristics, Sidama zone , SNNNPRG, 2005

Characteristics	*Frequency (n=1467)*	*Percent*
Age of Respondent		
15-19	41	2.8
20-24	149	10.2
25-29	393	26.8
30-34	386	26.3
35-39	326	22.2
40-44	141	9.6
45-49	31	2.1
Current Marital Status		
Divorced	12	0.8
Separated	9	0.6
Widowed	69	4.7
Currently married	1377	93.9
Religious Status of the Respondent		
Orthodox Christian	72	4.8
Catholic	73	5.0
Protestant	1282	87.4
lslam	39	2.7
Traditional	1	0.1
Educational Status of Respondent		
Primary (1-6)	323	22.0
Junior secondary (7-8)	75	5.1
High school (9-12)	34	2.3
Diploma (12^{+2})	1	0.1
Illiterate	1034	70.5
Husband's Level of Education		
Elementary (1-6)	452	30.7
Junior secondary (7.8)	345	23.5
Secondary (9-10)	229	15.6
College diploma	7	0.6
Illiterate	434	29.6
Marital Form		
Polygamous	224	15.3
Monogamous	1243	84.7
Age at First Marriage		
Less than 15	339	23.1
15-19	973	66.3
20-24	132	9.0
25 and above	23	1.6
Current Use of Family Planning Methods		
Currently using	91	6.2
Currently not using	1376	93.8
Future Plan (Intention) to Use Family Planning		
Yes	1114	75.9
No	353	24.1
Work Status of the Respondent		
Self employed	148	10.1
Civil servant	38	2.6
Farmer	1036	70.6
Petty trader	156	10.6
Others	89	6.1
Standard of Living Index (SLI)		
Low	1247	85.0
Medium	207	14.1
High	13	0.9

group 35-39 (22.2%). Small proportions, 2.8 and 2.1 percent, represent respondents from very young and older age group, 15-19 and 45-49 respectively. With regards to the marital status distribution of respondents, it can be observed that the majority of women (93.9%) are currently in union while the divorced, separated and widowed women account for very small proportion of the sample population. The divorced, separated, and widowed women altogether account for only 6.1 percent of the total sample women.

Another background variable shown in table 1 is religion. The majority of the respondents are protestant Christians (87.4%) followed by Catholic (5.0%) and Orthodox Christians (4.5%) while Islam and Traditional religions account for very small proportion of the respondents. The religious distribution of the sample women is quite different from the distributions at national level. If one looks into the national population data for the year 2000, the Orthodox Christians accounts for about 51 percent of the total population of the country followed by Islam (35%). Contrary to this, the Southern part of Ethiopia is predominantly of Protestant Christians where missionary activities have been very strong and existed for the last many decades, and also accounts for the bulk of the proportion of Protestant religion in the national census

As expected, majority of the respondents fall under illiterate category (70.5%), about 22.0% have attained primary level of education and very small proportions are reported to have gone higher than primary level. The percentage distribution of the husbands by educational status reveals better picture compared to that of the respondents. Relatively larger number of the husbands attained primary and junior high school while still the proportion of illiterate husbands accounts the majority.Respondents were also asked to indicate whether their husband has another wife or not, and the rank they own among the wives. This simple and direct forward question helped in identifying whether the respondent is in monogamous or polygamous union. Accordingly, 15.3 percent of the respondents reported that their husband has another wife. This proportion is almost exactly the same as the proportion (14%) of polygamous women at regional level survey of year 2000.

Age at first marriage of respondents is presented in table 1. In many societies; age at marriage marks the point in women's life when childbearing becomes socially acceptable. This is also to mean that women who marry early will on average have a longer exposure to the risk of pregnancy resulting in higher level of fertility in the absence of effective contraceptive use. In this study, information on age at first marriage was obtained by asking all ever-married respondents the month and year they started living together with their first spouse. It is seen from the table that the majority of the sample women (66.3%) got married between age 15-19, which is very early compared to many other populations in fertility transition. The proportion reported to get married before age 15 is also very high (23.1 %). Table 1 also shows the work status of respondents during the last 12 months preceding the survey. The majority of the respondents (70.6%) reported to spend most of their time in direct agricultural activities. The fact that the input data for this study were collected from the rural districts only, it is natural to expect the majority of the respondents to be engaged in direct agricultural activities.

Finally, the table presents the standard of living index (SLI) as an alternative method of measuring economic status of households in a situation where information on household income is very difficult to get. Here, it is focused on the traditional practice of using proxy variables to measure economic status, owing to the fact that report on household income is unreliable. Montgomery et al (2000) assumed that ownership of durable goods and housing quality are proxies for the preferred measure of household economy. They derived 17 consumer durable goods such as sewing machine, stove, refrigerator or freezer, air conditioner, fan, radio, cassette player, photograph, stereo equipment, washing matching, black and white television, colour television, bicycle, motorbike, car, and camera. (Montgomery 2000) .In this study, by composing the household ownership of selected items (land, bike, Bullock, Cattle, and the like), an index ranging 0 to 100 was developed. Accordingly, 85% of the households fall under low SIL category while only 14.1 and 9.9 percent are reported to fall under average and high level of SLI respectively.

6. DETERMINANTS OF NATURAL FERTILITY: MULTIVARIATE ANALYSIS

In order to examine the relative importance of

each independent variable to the dependent variable, by controlling all the confounding effects, multivariate analysis (using multiple classification analysis) was employed. In this section eleven independent variables (predictors) were entertained in the multivariate analysis model, the selection of which was based on the theoretical background and the best fit model criteria.

In this regard, some traditional fertility influencing variables such as work status; contraceptive use and some community level variables were not included in the analysis. The exclusion of work status from the multivariate analysis, for instance, has two grounds: First, the study population is homogeneous and nearly all the respondents are unpaid family workers (see table 1) which entails that the role incompatibility and opportunity cost hypothesis are not applicable. Second, in the absence of detailed work histories, it is not possible to estimate the net effects in which work in a particular period is related to the number of births or the probability of having a birth in that or a later period. The exclusion of contraceptive use as a predictor variable is direct forward i.e the study population, from the very beginning is known to experience a natural fertility regime in which only small proportion of the total population experiences voluntary control of birth.

6.1 The Model

Multiple Classification Analysis (MCA) is one of the commonly used techniques of multivariate data analysis commonly employed to examine the contribution of each category of the predetermined predictor variables before and after adjustment for the controlling variables. It is an ordinary linear multivariate regression model consisting of the nominal variables as dummies. Multiple classification analysis is a technique for analyzing interrelationships between several predictor variables and a dependent variable within the context of an additive model. The predictors in an MCA can be measured either in ordinal or nominal scale. The dependent variable has to be either in interval scale or in dichotomous category.

Let Y_{ijklw} denotes the individual score on the number of children ever born (dependent variable) to W^{th} woman belonging to the i^{th} category of the variable ' income ' , j^{th} category of the variable 'education' , k^{th} category of the variable ' ethnicity ' , and l^{th} category of the variable ' religion' .Then, the model can be expressed in simple terms as:

$$Y_{ijklw} = Ü + a_i + b_j + c_k + d_l + e_{ijklw}$$

Where Ü = General effect

a_i = Effects of the ith category of the variable 'income'

b_j = effect of the j^{th} category of the variable ' education'

c_k = effect of the k^{th} category of the variable ' ethnicity'

d_l = effect of the l^{th} category of the variable 'religion'

e_{ijklw}= residual terms not accounted for by the variables taken in the model.

Let ø = Ü + a + b+ c+ d

$$Y_{ijklw} - ø = (a_i-a) + (b_j-b) + (c_k-c) + (d_l-d) + e_{ijklw}$$

The unknown constants a_i,b_j,c_k, and d_l are estimated by ordinary least square (OLS) procedure The MCA procedure provides figures and estimates for each predictor: It provides estimates of the "unadjusted" and "adjusted" effects of each of the independent variable on the response variable. The unadjusted effect (deviation) of a particular category of A (A_1 for example) is equal to mean value of Y among those belonging to category 1 of A minus overall mean of Y values of 1. This simply illustrates the extent to which values among women of first category of A differ from the overall mean value of Y. This does not reflect the effect since the distribution of women according to the levels in other predictors may be different for women belonging to category 1 of A.

The MCA table also provides Eta (Þ) which indicates the ability of a predictor, using the categories given, to explain variations in the dependent variable: Eta squared ($Þ^2$) which is the correlation ratio indicating the proportion of the total sum of squares explainable by the predictor: Beta and Beta squared (â and $â^2$) which are directly analogous to the Eta statistics., but are based on the adjusted means rather than the raw means , and provide a measure of the ability of the predictor to explain variation in the dependent variable after adjusting for the effects of all other predictors : Multiple correlation coefficient squared (unadjusted for degree of freedom) which indicates the proportion of variance explained by the whole model ;and multiple correlation coefficient squared (R^2 adjusted for degree of freedom) indicating the proportion of variance in the dependent variable explained by all predictors.

6.2 Results and Discussions

Pursuant to the above brief description of MCA model, the full MCA table is produced using SPSS computer software (to estimate the coefficients) and Excel sheet (to calculate all the required statistics leading to the ultimate mean for every category of the independent variable). Attempt was made to select about eleven best fitting predictors and a control variable (age of respondents) based on both theoretical bases and empirical model fitting procedures. Table 2 presents the grand mean, both adjusted and unadjusted mean number of children ever born for each predictor variable, the eta (**Þ)**, beta and other relevant statistics. At this juncture, it is important to indicate that the interpretation of each individual mean should basically be made as a deviation from the grand mean given at the bottom of the table.

Also, from the MCA table , it is noticed that some of the predictors are found to have relatively stronger influence on fertility while some others have weaker effects, and the rest are found to have no significant effects on the dependent variable. The relationship between some of the significant predictors (such as educational and nutritional status of respondents) and fertility is not in the expected direction.

To begin with, the beta (â) coefficients indicated in the last column of the table 2 tells us the level of importance or the magnitude of the contribution of the individual predictor, that is to say, the larger the value of beta (â), the greater its effect on fertility (children ever born) will be. Based on this premises, thus, the most important predictors explaining the variability in the dependent variable in order of prominence are: Number of sons a woman or preferably the couple wish to have during the course of their reproductive period, age difference between the wife and her husband, educational status of the respondent, household operational land size, duration of abstinence, religious status of the respondent, and nutritional status of the respondent. It is clearly indicated in the table below that the percentage of variations in children ever born explained by the predictors as well as the covariates was 66 percent ($R^2 = 0.66$) and the grand mean children ever born for all the 1467 ever married women was computed as 5.34.

The fact that four of the independent variables (namely, standard of living index, marriage type, food intake, and access to information) entered into the model are not found to yield significant contribution to the variations in the dependent variable, the following few paragraphs give more emphasis only to the seven significant variables.

It is apparent from the table 2 that the mean children ever born among the sample women varied significantly according to the number of sons the respondent wishes to have during the course of their life. The deviation of the adjusted mean from the grand mean increases as the number of sons wished to have increases from none to 6+. A woman who wishes to have 1-3 sons has, on an average, 0.87 children more than a woman who does not at all wish to have sons in her reproductive life. Also, a woman who wishes to have 4-6 sons during the course of her reproductive life had on the average, 0.23 children more than a woman who wishes to have 1-3 sons. Similarly, a woman who wishes to own 6^+ sons during the course of her reproductive life had on the average, 1.64 children more than a woman who wishes to have none It is also important to look at the deviation of the adjusted mean of each category of this predictor from the grand mean increasing as: -1.07, 0.2, 0.07, and 0.57 indicating that only those who wish to have no sons at all and 1-3 sons have a mean CEB below the grand mean.

Empirical studies in different parts of the world documented that sex preference has little or no effect on fertility in the pre-industrial era or in pre-transitional fertility regime mainly due to the fact that couples usually wish to have larger possible family size regardless of the sex composition of the children (i.e the larger the better principle). On the contrary, sex preference is known to have significant influence on fertility where a society is in the fertility transitional regime where there is small to intermediate family size norm. The finding in this study may not be comparable with the above premises as the variable used in this study has different orientation. Most of the conclusions drawn regarding this issue are derived from the study of birth history data while the variable employed here stands for measuring attitudinal aspect (how a couple's preference for a particular sex affects their fertility experience).

The study has included in its MCA model the age difference between the wife and husband, as it has been known since recently one of the good indicators of patriarchal family structure.

Table 2: Results of Multiple Classification Analysis (MCA) for mean children ever born (CEB) by selected predictors and covariates, Sidama zone, SNNPRG, 2005.

Variable	*Mean CEB*				
	N	*Unadjusted mean*	*Eta (Þ)*	*Adjusted mean*	*Beta (β)*
Religion					
Orthodox Christian	72	4.10	0.095	5.74	**0.033***
Catholic	73	4.19		4.73	
Protestant	1282	4.28		4.74	
Islam	39	4.38		5.11	
Standard of Living Index (SLI)					
Low	1247	5.16	-0.05	5.61	0.011
Medium	207	5.21		4.69	
High	13	5.26		4.70	
Land Size					
Landless	45	5.07	0.058	5.79	**0.036***
Less than one hectare	981	5.13		4.74	
Half to one hectare	398	5.19		4.78	
Greater than one hectare	43	5.25		5.12	
Marriage Type					
Polygamous	224	6.14	-0.07	5.80	0.006
Monogamous	1234	6.10		4.68	
Number of Sons Wished to Have					
Do not want at all	13	2.54	0.53	4.27	**0.234****
1-3	865	3.08		5.14	
4-6	567	3.61		5.37	
6+	221	4.14		5.91	
Age Difference Between the Wife and Husband					
No difference	18	5.17	0.064	5.12	**0.103****
<5 years	542	5.24		4.87	
6-10 years	632	5.30		4.98	
10+	275	5.36		5.39	
Food Intake Index					
Poor intake	720	5.12	0.031	6.86	-0.03
Average intake	723	5.15		4.61	
Better intake	24	5.18		5.18	
Nutritional Status of Respondent					
Malnourished	793	6.82	-	6.29	**-0.026***
Normal	674	6.73	0.094	4.62	
Educational Status of Respondents					
Illiterate	1034	5.27	0.21	5.19	**0.043***
Primary (1-6)	323	4.43		5.65	
Junior secondary (7-8)	79	4.64		4.75	
Secondary (9-12)	34	4.85		4.80	
Duration of Abstinence					
1-6 months	1247	5.34	0.08	5.78	**-0.034***
7-12 months	133	5.26		4.60	
More than 12 months	87	5.18		4.57	
Access to Information					
Poor access	1229	5.46	-	5.18	0.030
Better access	238	5.36	0.107	4.06	
Control variable (Age)	-	-	-	-	-

R = 0.81; R^2=0 .66 Grand mean = 5.34 Number of cases = 1467 * Significant at Ü .05 ** Significant at Ü .01

The unadjusted mean of the 'no difference category' (5.17) is below the grand mean and further declined to 5.12 after adjustment was made for the effects of other variables. Though both the unadjusted and adjusted values for all the categories, except the last one, are below the grand mean, it is understood that a couple with age difference of 10^+ years may have on an average 0.27, 0.52, and 0.41children more than couple who have no age difference, <5 years difference and 6-10 years difference respectively.

Education is the third important variable in the hierarchy of contributions to the variations in the dependent variable. It is observed from the MCA table that before adjustment, the mean values for all categories of education were below

the grand mean. However, the adjusted values for women in primary level of education (5.65) have shown a deviation of 0.31 from the grand mean. Thus, a woman in primary level of education on an average may have 0.46,0.9 and 0.85 children more than a woman of no schooling, Junior Secondary and Secondary level respectively. The curvilinear pattern, in which women with few years of schooling have higher level of fertility with women with no formal schooling have been documented by many studies conducted in sub-Saharan Africa (Caldwell, 1992; Cochrane, 1989; UN, 1987). In this regard, it is believed that when conscious birth control is rare, as is the case in this study population, education may increase fertility (mean CEB) by enhancing women's fecundability as a result of reduced breast-feeding and post-partum abstinence.

The nutritional status versus fertility dilemma is also tested in the MCA model. Despite lack of clear-cut theoretical and empirical evidences on the relationship between these two variables, the present analysis found out fairly negative relationship (β = -0.026) between the nutritional status of a woman and fertility. It is observed that the unadjusted mean for both the malnourished and normal women are above the grand mean, giving deviations of 1.48 and 1.39 respectively. After adjustment was made for the confounding factors, the deviation from the grand mean for the malnourished and normal women decreased to 0.29 and –0.72 respectively, showing that the adjusted mean for the normal has now become far below the grand mean. Put it other way, the adjusted mean reveals that a normal woman, on an average, has 1.67 children less than a malnourished woman.

The relationship between duration of abstinence and fertility level has been well established by several studies. In this study too, a negative relationship is found to exist between the two variables ($\hat{a}$ = -0.034). It is shown that the unadjusted mean for the women with 1-6 months abstention is exactly equal to the grand mean while the unadjusted means for the other two groups fall below the grand mean by about 0.08 and 0.16 respectively. Even after adjustment for confounding factors is made, only the 1-6 months duration group showed a positive deviation (0.44) from the grand mean Looking at the high range in the adjusted mean of the first group and the last two, it can be inferred that a woman with 1-6 months of abstention experiences 1.18 and 1.21 children more than a woman in the two categories respectively.

Though the overall duration of abstention is lower compared to some other Sub-Saharan Africa countries such as Nigeria and Kenya (as reported by Van De Walle, 1989), many women reported during the focus group discussion that they totally avoid sexual intercourse with their husband during the extended period of 4-6 months while few cases reported to have total abstention for about two years. It is learned from the focus group discussion that young women hardly have total abstention from sexual intercourse. In most of the cases, the rationale of abstinence from sexual intercourse is not considered as voluntary control of birth; rather it is a way of ensuring good health and survival of the newborn child. Fear of polluting the women's milk by having sexual intercourse during the first few months of lactation period was also reported during the focus group discussion session. This finding is consistent with large scale studies conducted in Sub-Saharan Africa by Bongaarts (1993),Caldwell (1992) and Van De Walle (1989).

Religion is the other significant variable in the MCA analysis (see table 2 above). The table revealed that the unadjusted means for all the four groups has shown a negative deviation from the grand mean (-1.24,-1.15, -1.06 and –0.96). After adjustment, however, only the mean value of the Orthodox Christian has shown a positive deviation, indicating that these group of women experience higher fertility than the other three groups. Though their adjusted mean value is below the grand mean, Muslim women also experience higher fertility compared to the Catholic and Protestant Christian. Put it other way, an Orthodox woman experiences about 1.01, 1.0 and 0.63 children more than a Catholic Christian, Protestant Christian and Muslim woman respectively.

Under the Ethiopian context, the Orthodox Christian are known for very strong and relatively impermeable traditional belief systems and practices which strictly adheres to the Biblical order of monogamous marriage and little or no emphasis on modern contraception use to control birth. The Protestant and Catholic Christians, on the contrary, used to have liberal systems and relatively Westernized culture as these religious beliefs are also believed to diffuse from western countries .It is also seen that the

Orthodox Christianity, an indigenous system of religion to the country, is impermeable to influence of Westernized culture particularly in issues of marriage, family formation, birth control and other reproductive decisions. As a result of these, it is likely to expect higher fertility among these groups of women than the other three groups. This finding is consistent with the previous findings which documented that Muslim and Orthodox Christian women, compared to Protestant and Catholic Christians, had higher number of children ever born (Assefa, 1990 and Abdulahi, 1989). However, this finding is found to be inconsistent with a study in Central Ethiopia by Betemariam (1994) which indicated that the Protestant and Muslim women experience higher fertility compared to other religious groups.

The relationship between land ownership and fertility has not been clearly set though some recent studies found a positive relationship. In this study, land (which is the main stay of the study population) was entered into the MCA model. The two variables are found to have positive relationship where the mean parity increases with increase in the size of household operational land. If we look at the adjusted mean of landless households, it is above the grand mean by 0.45 children while the adjusted deviations for the other three categories are fall short of the grand mean. While taking land ownership as a variable in studies of this type, it should be known that the value of land differs from place to place mainly depending on the type of crop grown, system of land use, population density, and other related factors. In the study area, more than 90 percent of the householders use the land for cash crop cultivation such as coffee, '*chat'*, banana, sugarcane and the like which usually requires smaller plot of land than cereals. In addition to this, the most common staple food in the study area, locally known as '*Cocho'*, requires very small plot of land.

7. CONCLUSION AND POLICY IMPLICATIONS

Based on the data collected from 1467 women and the aforementioned methodological considerations, the study has come up with the following conclusions and policy implications:

- The analysis presented in this study highlighted the role of son preference in sustaining high fertility levels. The mean children ever born among the sample women varied significantly according to the number of sons the respondent wishes to have during the course of their life. Like in other traditional societies, the material basis for son preference in the study population is evident mainly for the family lineage and economic reasons-first and foremost, security in old age.
- The land-fertility relationship, which has been scarcely investigated in many of the fertility studies, has been examined in this study. It is observed that households with large operational land usually go for possible higher parities, indicating positive associations between the two variables. In situations where women do not have true right of inheritance, like the study population, land (including the associated resources of cattle and cash crops) may continue to be bride wealth to marital union in the region, continue making women subordinate to the patriarch and land owner.
- The study documents that the mean number of children ever born to women has significant association with religious status. The analysis has shown that Orthodox Christian women experience higher fertility than Protestant, Catholic Christian and Muslim women. The fact that religion is deep rooted in the life of the community, it may continue to have detrimental effects on the fertility behavior of couple.
- It has been noted from this study that the persistence of high natural fertility is deeply rooted in the patriarchal system with its emphasis on family and descent. Patriarchal (patriarchy) is deeply entrenched in most of Ethiopian's social institutions, giving husbands absolute decision making power, and forcing wives to subordinate their interests to their husbands. Such a system of family life undoubtedly has great deal of repercussion on the prospects of fertility decline in the region. For example, in most instances, higher age difference between wife and husband diminishes the likelihood of communication and discussion on common reproductive issues, in which case the husband/patriarch may dominate the wishes of the wife. In this context, even if a woman feels like using family planning or

stop child bearing, she may not initiate the process without her husband's consent.

- Finally, this study would like to bring to the attention of the policy makers and regional administrators that more and more has to be done to bring the current high fertility scenario of the study population. Education of women is the foremost important strategies to improve the overall status of women, particularly their reproductive decision-making power thereby bringing about fast decline in both Total Fertility Rate (TFR). Though efforts in this regard have been done during the last few years, there is still a wide gap in promoting women's empowerment at grass root level. Also, there has to be a concerted effort to increase accessibility of affordable modern family planning methods at village level along with adequate reproductive counselling services and follow up. Above all, there has to be strong and continuous political commitment of the regional Government in order to bring about fast and sustainable behavioural changes among community members.

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