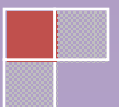




# LESSON SIX

## FERTILITY DIFFERENTIALS AND DETERMINANTS



# Learning Objectives

## Fertility Differentials and Determinants

Indirect Determinants  
(Underlying Factors)

Direct  
Determinants

Social  
Factors

Economic  
Factors

Proximate  
Determinants

## Determinants of Fertility:

Why does fertility differ from one individual/society to another? The answer lies in two categories of determinants:

- A) Underlying socioeconomic factors and fecundity
- B) Proximate (intermediate) determinants

### Proximate Determinants:

**Table 6.1 Rating of Intermediate Fertility Variables**

Intermediate Fertility Variables	Sensitivity of fertility to intermediate variable	Variability among populations	Overall rating
	+++	+++	+++
Proportions married	+++	+++	+++
Contraceptive use	+++	+++	+++
Prevalence of induced abortion	++	+++	+++
Postpartum infecundability	++	+++	+++
Fecundability	++	++	++
Spontaneous intrauterine mortality	+	+	+
Permanent sterility	++	+	+
	+++ = High	++ = Medium	+ = Low or Absent

Source: [1,2]

The table above is derived from the seminal work by John Bongarts [3] on direct determinants of fertility which he also named intermediate variables:

Proportions married  
 Level of contraceptive use  
 Induced abortion  
 Postpartum / Lactational/ amenorrhea  
 Fecundability  
 Spontaneous intrauterine mortality  
 Sterility

“An intermediate fertility variable is defined as any behavioral or biological factor through which socioeconomic, cultural, or environmental variables affect fertility. A complete set of eight intermediate fertility variables is proposed, but it is shown that only four are important determinants of fertility differentials among populations: proportions married, contraception, induced abortion, and lactational infecundability. A simple model that allows quantitative estimation of the fertility effects of each of these four variables is outlined, and its application is illustrated.”

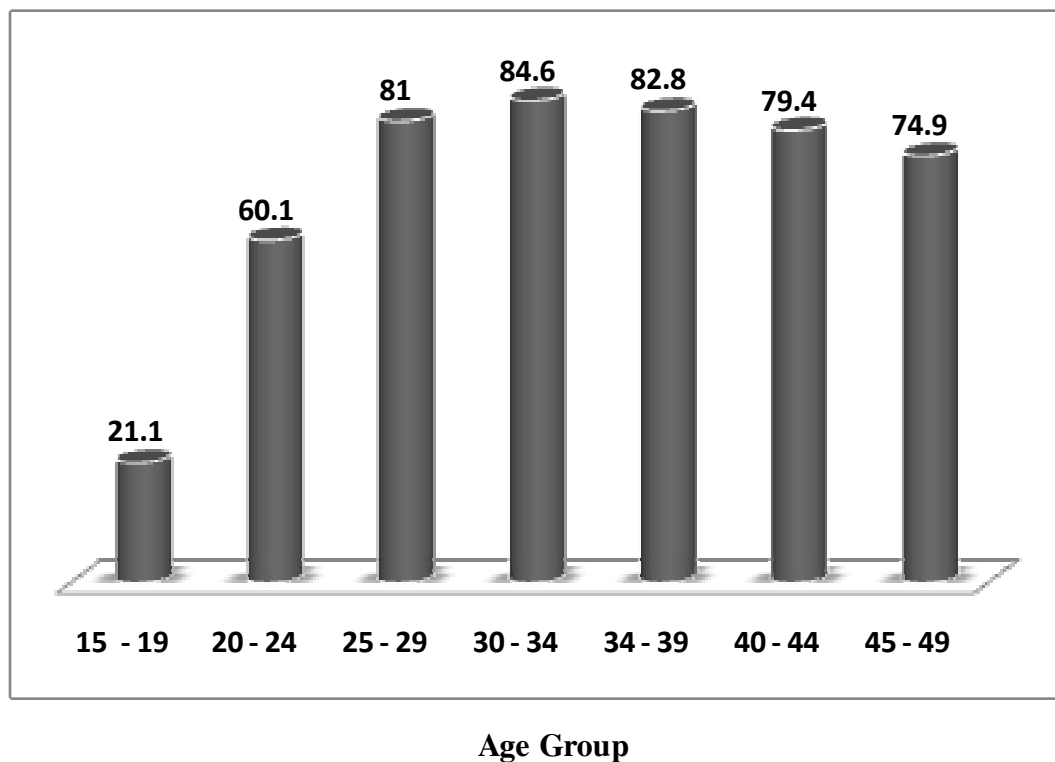
## I. PROPORTIONS MARRIED

**Definition [4]:** “Percentage of women according to current status of marriage or cohabitation.”

“Numerator categories: Numbers of women who are 1) currently legally or formally married, 2) not married but living with a man in a consensual union, divorced from a legal or formal marriage, 3) separated from a marriage or consensual union, 4) widowed from a marriage or consensual union and not remarried or not in a consensual union, and 5) who never married nor lived in a consensual union.

Denominator: Number of women in sample”.

**Fig. 6.1 Percentage Proportion of Married Women by Age Group (2005)**



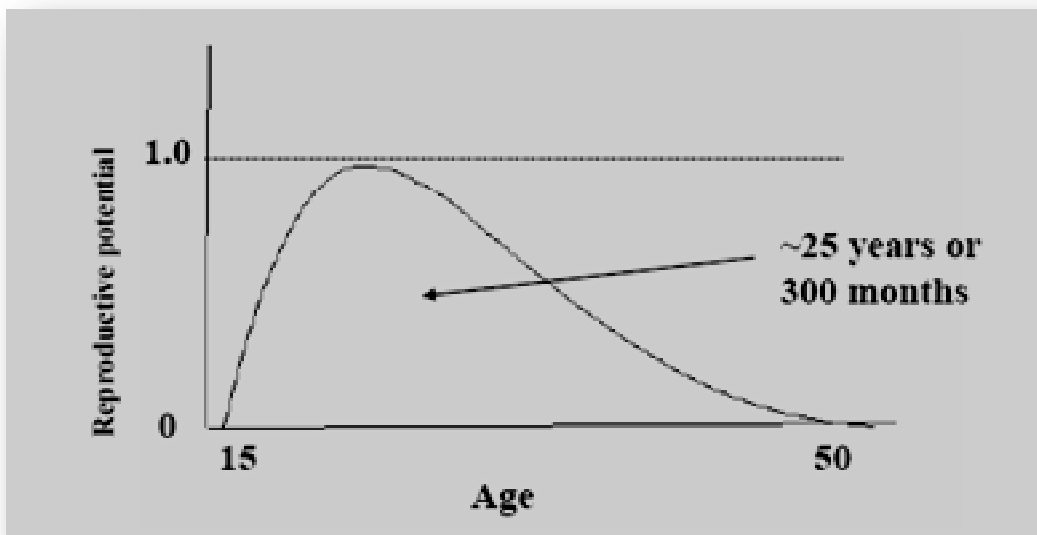
Source: [5]

In a traditional society like Ethiopia, first sexual intercourse, and hence exposure to pregnancy almost invariably happens coincidentally with marriage. This is especially true of rural areas where over four-fifths of the population lives. Figure 6.1 shows that close to two-thirds of Ethiopian women who would ever marry are already married by age 25. The proportion married peaks around age 32 after which the percentages decline due, possibly, to widowhood, divorce, and separation. Another reason the percentage of married women plateaus and then declines after age 35 would be an increase in rate of marriage of among the cohorts of younger women in recent years. However, since this suggests that today's daughters are marrying at higher rates than their mothers, it is a less plausible explanation.

### **Age at First Marriage**

Women who marry early, say at age fifteen, have roughly twice as many years of reproductivity as those marrying at 30, but their reproductivity is more than twice that of those marrying age 30. This is because, even though those marrying at 30 expose themselves to pregnancy half as many years as those marrying at 15, their reproductive years are not as productive as the 15 years between age 15 and 30 (Fig. 6.2) due to a reduced fecundity (biological potential to reproduce). In Ethiopia, the median age at marriage among women aged 25 – 49 is 16.1 years, and 79 percent of them were already married by age 20. [5].

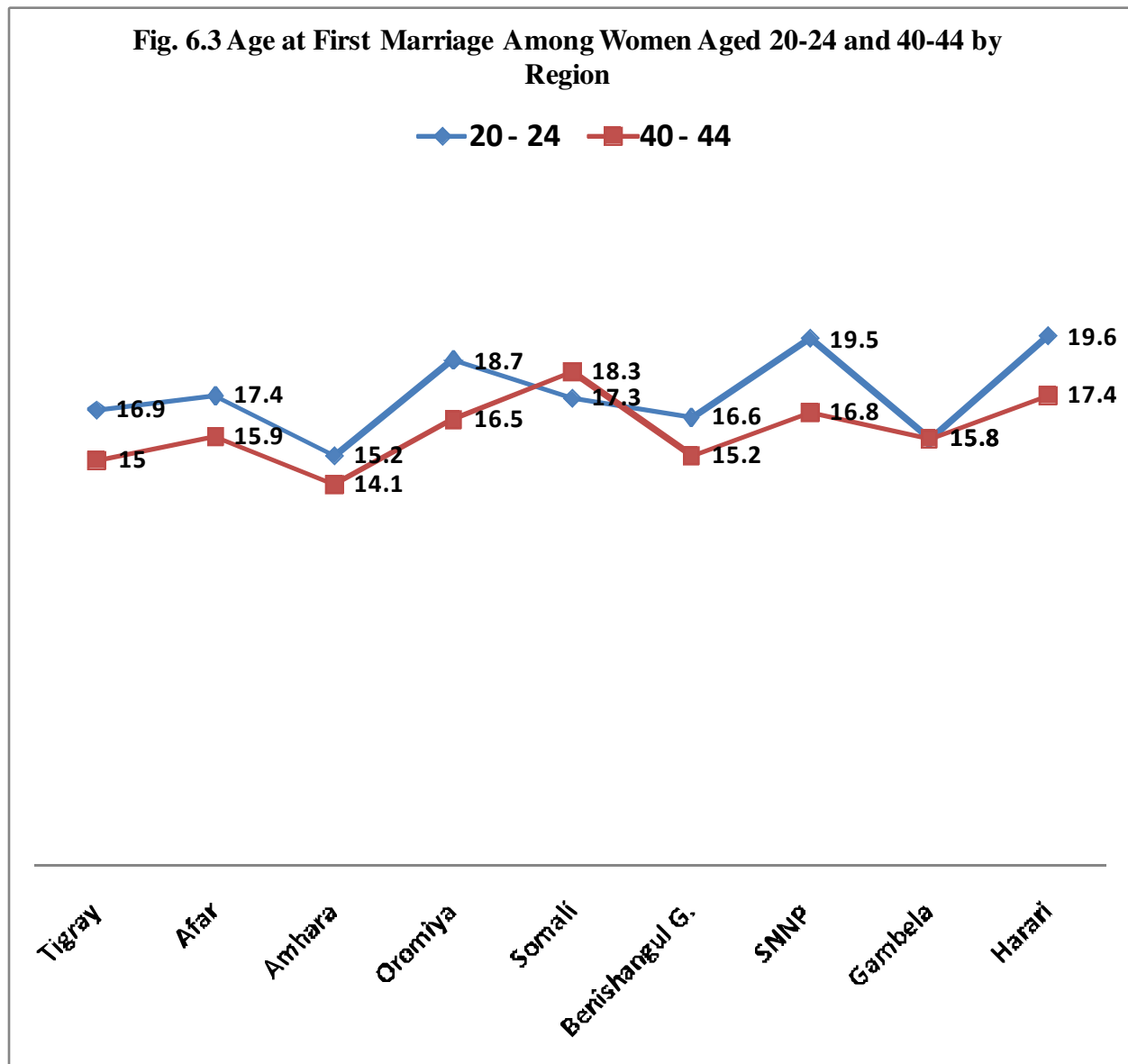
**Figure 6.2 Potential Reproductive Life-Spans**



Source: [1]

Figure 6.3 shows age at first marriage among women aged 20 to 24 and 40 to 44 in the 2005 Demographic and Health Survey (DHS) by region. There is very little variability between the

regions but there is a slight hint of an earlier age at marriage in Tigray, Amhara, Benishangul and Gambela among the 40 – 44 year olds where the median marriage age is less than 16. Generationally, there is a slight increase in age at marriage among the “daughter generation” (20 -24) when compared to the “mother generation” (40 – 44). This assumes, of course, that there are no reporting errors or other data problems arising from the long duration since marriage for the 40 – 44 group.



Source: [5]

## II. CONTRACEPTIVE USE

### Knowledge:

Knowledge of contraceptive methods is widespread in Ethiopia. “For example, knowledge of any modern method among currently married women was 85 percent in 2000 and 87 percent in 2005” but actual use is very low. Moreover, among couples in which only one partner knows of a method, husbands are more likely to know the method than their wives”. [5]

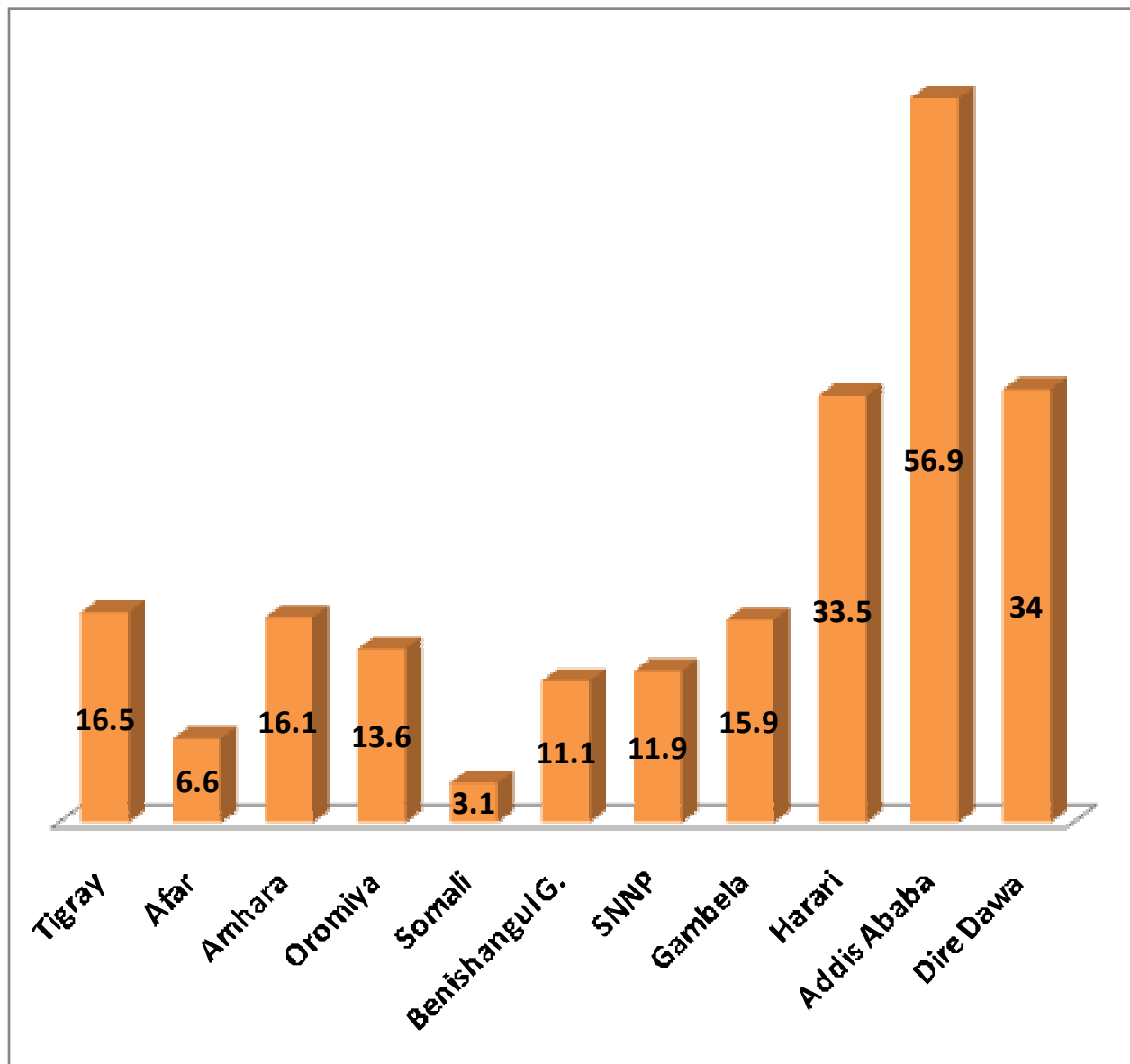
### Ever use

The data indicate that 18 percent of all women and 24 percent of currently married women have used a method at some time. Women are much more likely to have used a modern method than a traditional method. For example, 23 percent of currently married women have used a modern method at some time compared with 2 percent who have used a traditional method. Injectables have been the most commonly used modern method (18 percent) among currently married women. Rhythm has been the most widely employed traditional method. Among currently married women ever use of any method rises from 16 percent among those age 15-19, peaks at 27 percent among those age 25-29, and remains consistently high until age 40-44, before falling markedly to 14 percent among the oldest age group. [5]

### Current use

Fifteen percent of married Ethiopian women are currently using contraceptive. Almost all are users of modern methods. “ The most widely used method is injectables (10 percent) followed by the pill (3 percent)” [5]

**Fig. 6.4 Percentage of Married Women Currently Using Contraceptives (any method), by Region**



Source: [5]

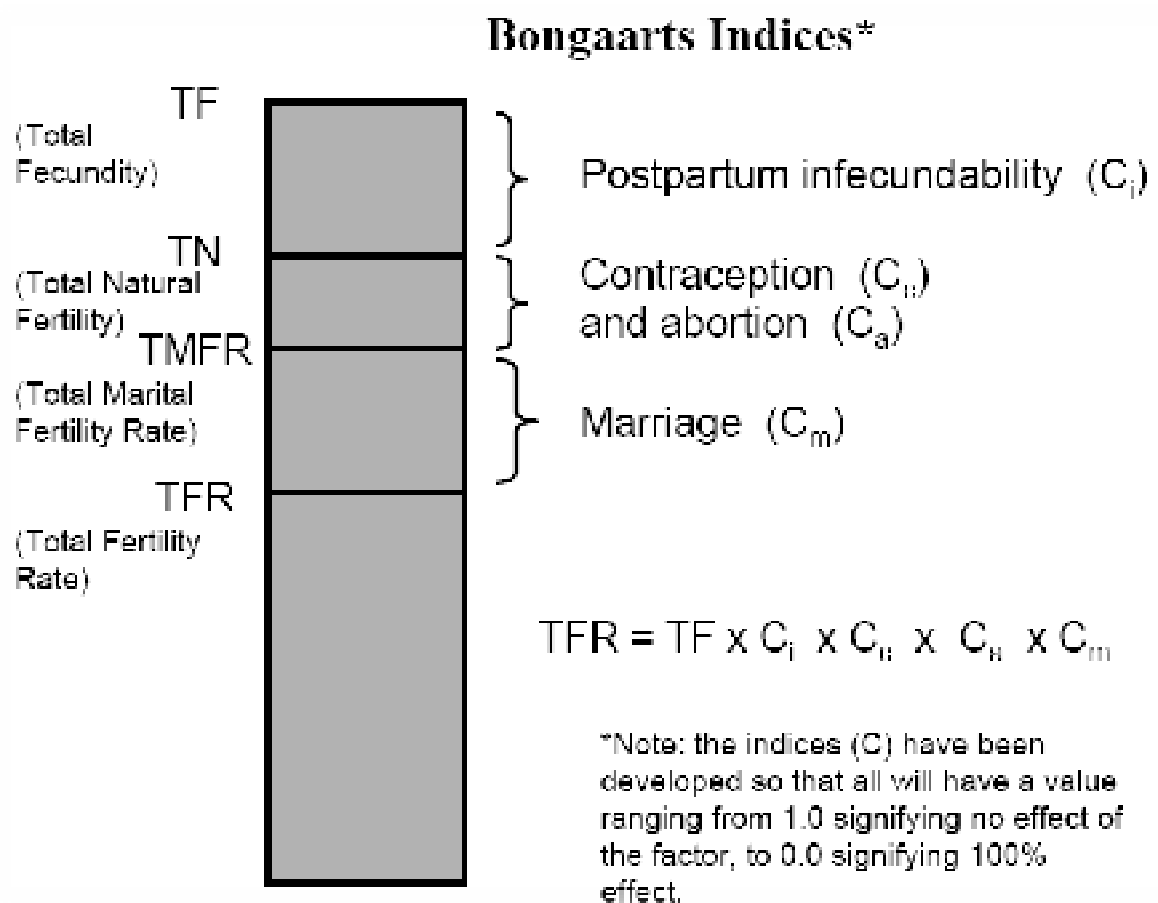
A clear pattern of a higher prevalence in predominantly urban than rural regions is evident with the highest prevalence rate of 57 percent in the capital. The eastern cities administrations of Harari and Dire Dawa are roughly evenly matched. As is clearly apparent in Figure 6.5, the preponderance of nomadic existence has resulted in very low current use among Somali and Afar women at 3.1 and 6.6 percent respectively. The good news is that most regions have now crept up into double digit percentages from the dismal coverage reports of 4 or 5 percent in the 1990s and the decades before.



### III. INDUCED ABORTION

According to the Family Guidance Association of Ethiopia “... unsafe/illegal abortions accounted [for] 54% of all direct obstetric deaths. Studies have shown that unsafe illegal abortion is rampant among single women, teenagers, students, and factory workers..”[6] Unfortunately, however, data is not available on a national level to compute the national fertility impacts of induced abortion. Such a calculation is done using the formula below:

**Fig. 6.5 Bongaart’s Model of Intermediate Fertility Determinants**



Source: [1].

#### IV. POSTPARTUM / Lactational/ AMENORRHEA

A little over 9 percent of Ethiopian women know that the period of intense breastfeeding after giving birth is also a period of temporary infecundity. However, tiny fractions are actively using this as a birth control technique. The percentages are less than 0.1 for the 15 to 24 age group, 0.6 for the 25- 44 age group, and 0.1 for the 45 to 49 age group [5]. The 2005 DHS survey does not provide values to be used in the calculation of (Ci) in the above shown method by Bongaarts.

## **Socio – economic Determinants**

### **Social Determinants**

Perhaps the most important social determinant of a woman's fertility behavior is the amount of control she is able to exercise over her own body, and a say on whether or not to have a child, how many children, and when to have them. More importantly, her ability to make decisions on whether or not to engage in sex, the kind of sex (protected or unprotected) and the timing of sex vis-à-vis the natural monthly fertility cycle are crucial factors. Here we are talking about women's rights and empowerment. This also has significant implications for women's health including reproductive health and prevention of sexually transmitted diseases. The 2005 DHS survey provides a glimpse into the status of women and their position in marriage. Indirect measures such as control over earnings, participation in decision making, attitudes towards refusing sex with husband, attitude towards wife beating, and female genital mutilation (FGM) have been studied [5]. The picture is not pretty.

### ***Control over Earnings***

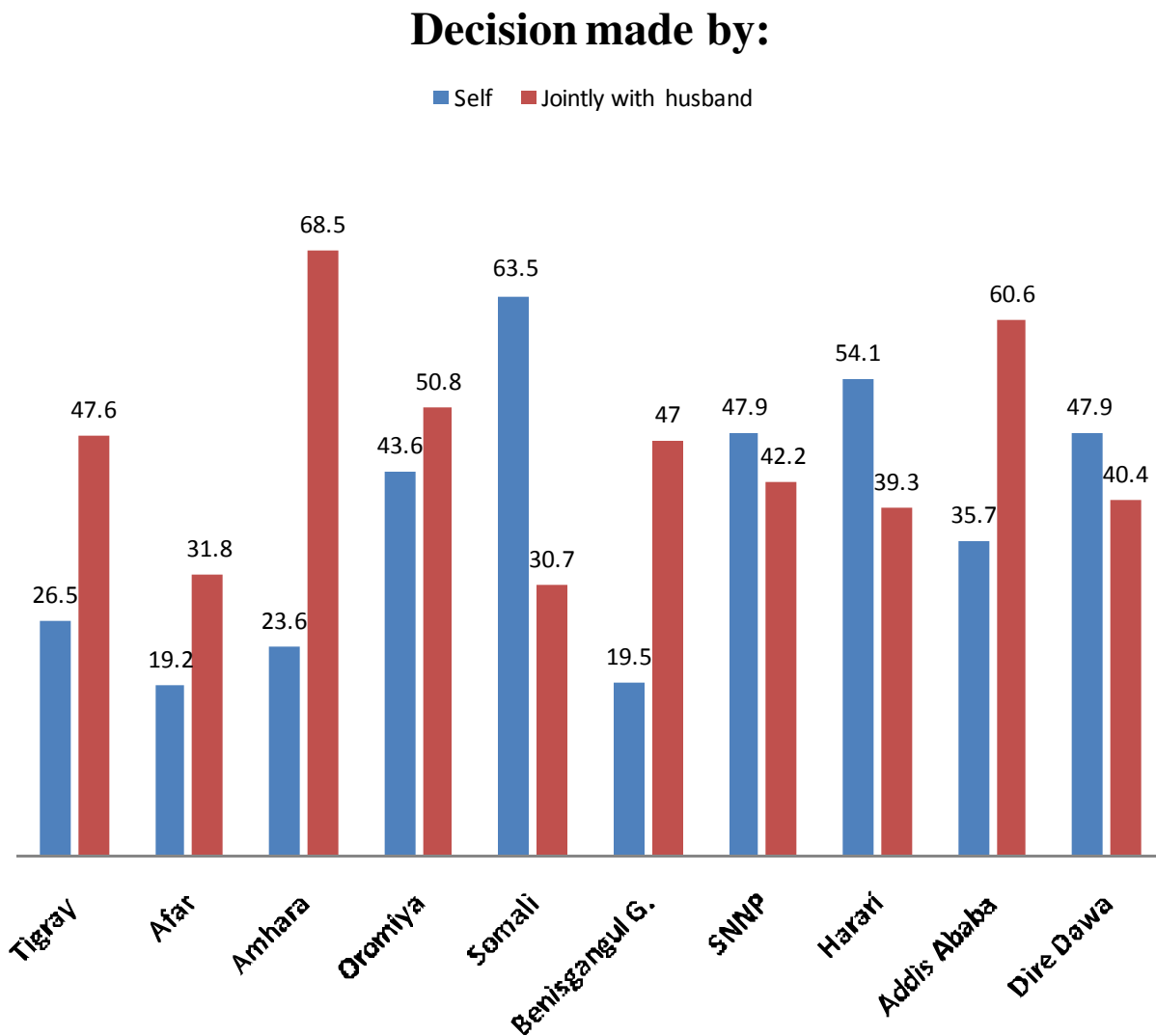
Nearly a third of currently married women reported themselves as “employed” and 27 % reported cash incomes. However, “Three in five employed women do not receive any form of payment for their work. The percentage of currently married women who were employed increases with age up to age 44 and then declines slightly for the oldest age group” [5].

Younger women age 15-19 and older women age 45-49 are somewhat more likely to make independent decisions on their earnings than women in the middle age groups. Women with five or more children are more likely to decide on their own how to use their earnings than women with fewer children or no children at all. Sixty percent of currently married women with one or two children make joint decisions with their husbands or partners. [5]

### *Participation in decision making*

There is a significant regional variation in decision making by women. Women respondents were asked who made the household decision regarding expenditure of earned income. The regional picture is as follows:

**Fig. 6.6. Decision Making Among Cash-earning Currently Married Employed Women by Region.**



In Fig. 6.6 Somali women represent the highest percentage of women able to exercise full financial control of monetary earnings. If this alone was a measure of empowerment as well as ability to exercise all decisions freely, including fertility decisions, they would have the lowest fertility. In reality, with a TFR of 6 they have the second highest fertility after women in Oromiya.

### *Attitude towards refusing sex with a husband*

The 2005 DHS survey attempted to gauge Ethiopian women's attitude and belief regarding consent in sexual matters, and whether or not a woman should be able to say no to sex, and the circumstances under which she should say no. They were asked the opinion on whether or not it was ok to say no to sex under the following conditions [5]:

- a) The woman knows that her husband has a sexually transmitted disease
- b) She knows that her husband is having sex with other women
- c) She is tired or not in the mood.

“Women in the middle age groups, those with no education, unemployed women, women who have married, those who have five children or more, and poorer women are the least likely to agree with all of the reasons for refusing sex....Overall, the majority of women agree with each specified reason for refusing to have sex. Slightly more than three-fifths (62 percent) of women and 72 percent of men agree that all of the above reasons are justification for a woman to refuse to have sexual relations with her husband’ [5].

There is a significant regional variation however with Somali and Afar women at the forefront of those who disagree that a woman should refuse to engage in sex under the three conditions (above). A quarter of women in SNNP, forty percent of Somali and Afar women, two thirds of women in Benishangul Gumuz, and almost half of women in Gambella say women should not refuse to engage in sex with their husbands when confronted with all or one of the three reasons. There is a clear urban-rural divide with less than 10 percent and 21 per cent respectively, of urban and rural women agreeing that a husband should husband should have his way, and that a woman should engage in sex under the three conditions. Expectedly, the highest percentage of women who said no (94.3%) lived in Addis Ababa, the capital. [5]

If the ‘attitude towards having sex’ variable was a better a surrogate for a woman's fertility decision making ability than financial decision making ability, the regions with low percentages of women saying no to sex under the three conditions – SNNP, Afar, Somali, Benishangul-

Gumuz, and Gambella, - would all have high fertility with TFRs above the national average. But, that is not the case. Afar, Benishangul-Gumuz, and Gambella actually have a lower TFR than the national average.

### *Attitude towards wife-beating*

The most fundamental human right of an individual is a right to personal safety. In Ethiopia, cultural dictates and the usurping of religious edicts in favor of men have resulted in traditions whereby women are socialized to be inferior and feel inferior to men to the point of accepting beating as one of the powers husbands should have over women. The 2005 DHS survey sought to uncover women's (and men's) attitude towards wife beating by asking whether or not a husband is justified in beating his wife if she [5]:

- a) Burns the food
- b) Argues with him
- c) Goes out without telling him
- d) Neglects the children
- e) Refuses to have sexual relations with him

The survey design stipulated that “women who believe that a husband is justified in hitting or beating his wife for any of the five specified reasons may believe themselves to be low in status both absolutely and relative to men. Such a perception could act as a barrier to accessing health care for themselves and their children, affect their attitude towards contraceptive use, and impact their general well being.” [5]. The results are not surprising to an Ethiopian reader.

“A sizeable majority of women (81 percent) believe that a husband is justified in beating his wife for at least one of the specified reasons. This is not unexpected because many traditional customs in Ethiopia as in many other countries teach and expect women to accept, tolerate and even rationalize wife beating. This impedes women's empowerment and has serious health consequences.”<sup>5</sup>

Most demographic observations show clear urban-rural differences but the attitude towards wife beating is not among the sharpest differences with urban residents with 59 percent of urban and 86 percent of rural residents deeming it acceptable on grounds of at least one of the stated reasons. There is a sharp difference, however, when individual reasons are considered separately [5]:

#### **Female respondents: Okay to beat wife if she:**

	<b><u>Urban</u> %</b>	<b><u>Rural</u> %</b>
Burns the food	30.8	67.5
Argues with him	34.6	63.9
Goes out without telling him	41.5	69.1
Neglects the children	44.2	69.0
Refuses to have sex with him	19.9	49.6

There are significant regional differences too but not as stark as the urban rural difference. It is clear from the observation of responses to the surrogate “women’s status” variables above that the majority of Ethiopian women do not feel empowered as individuals and as bearers of children, to make decisions that are in their best interest. As a result, they will continue to face many more pregnancies in their life times than they would if they had the negotiating power or decision making abilities in the hours and minutes prior to a sexual encounter. A telling proof is the inevitable but unquantified correlation between the implied higher empowerment scores urban women have achieved on the variables discussed above, and a low and declining urban fertility.

## *Education*

Uneducated Ethiopian women have three times as many children as their educated counterparts with at least secondary education. Since maternal education is also strongly correlated with child survival, many of the additional births among uneducated women would go under what is referred to in demography as replacement fertility.

The DHS data shed some light on the status of women in Ethiopia. While the majority of Ethiopians have little or no education, women are generally less educated than men. However, the male-female gap in education is more obvious at higher than at lower levels of education, indicating the government’s recognition and successful intervention to address gender disparity in more recent years.[5]

A significant proportion of Ethiopian mothers are teenagers, and the impact of education is most profound in the teen years where even an elementary education reduces teenage births three-fold and secondary education by a factor of ten. Attaining a secondary education delays the start of childbearing by at least four years and increases the interval between births significantly. Moreover, educated Ethiopian women conclude their reproductive activity early [5].

# FERTILITY DIFFERENTIALS

## *Urban-Rural Differential*

Childbearing starts early in Ethiopia, and the typical woman “... will have had more than half of her lifetime births by age 30, and nearly three-fourths by age 35” [5]. Since age is the most important and most obvious determinant (Fig 6.8) of a woman’s fecundity and fertility we would not discuss it in detail here.

Urban-rural fertility difference is most pronounced in the early years of reproductivity. The age specific fertility rate (ASFR) of urban teens aged 15 – 19 is only 29 percent of rural teens (Table

6.2). A group, urban women in the 20 – 24 age category gave birth to less than half as many babies as a similar-sized group of rural women in the twelve months prior to the 2005 DHS, and those in the 25 – 29 group gave birth to a little more than half as many babies as rural women. The difference widens again in the 35 to 45 age group where the ASFR for urban women is only a third of that for rural women (See the Fig. 6.8 also).

**Table 6.2. Urban Age Specific Fertility as a Proportion of Rural Fertility, 2005**

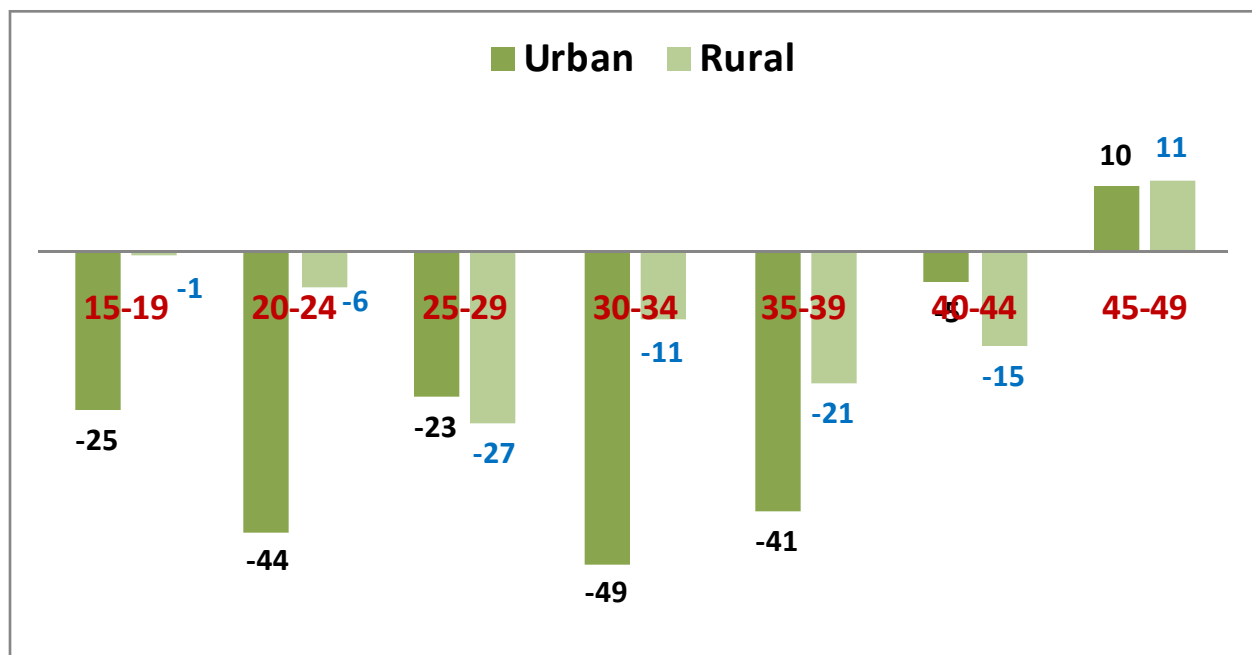
Age Group	ASFR Urban ÷ ASFR Rural
15 - 19	0.29
20 - 24	0.40
25 - 29	0.51
30 - 34	0.40
35 - 39	0.33
40 - 44	0.30
45 - 49	0.37

Source [5]

### Differentials in Urban-Rural Fertility Trends

Fertility is on a decline in both urban and rural Ethiopia in all age groups of women (except the very old), but at different rates. The highest among urban women in the 30-34 age group where a group of 1000 women in that age group had 49 fewer children between them in the 12 months preceding the 2005 DHS than the 2000 DHS. The second and third highest declines are among urban women in the 20-24 and 35-39 age groups where 44 and 41 fewer children were born in the latter DHS respectively.

**Figure 6.3. Age-Specific Fertility Change (Per 1000), Urban - Rural, from year 2000 to 2005 by Age Group of Women.**



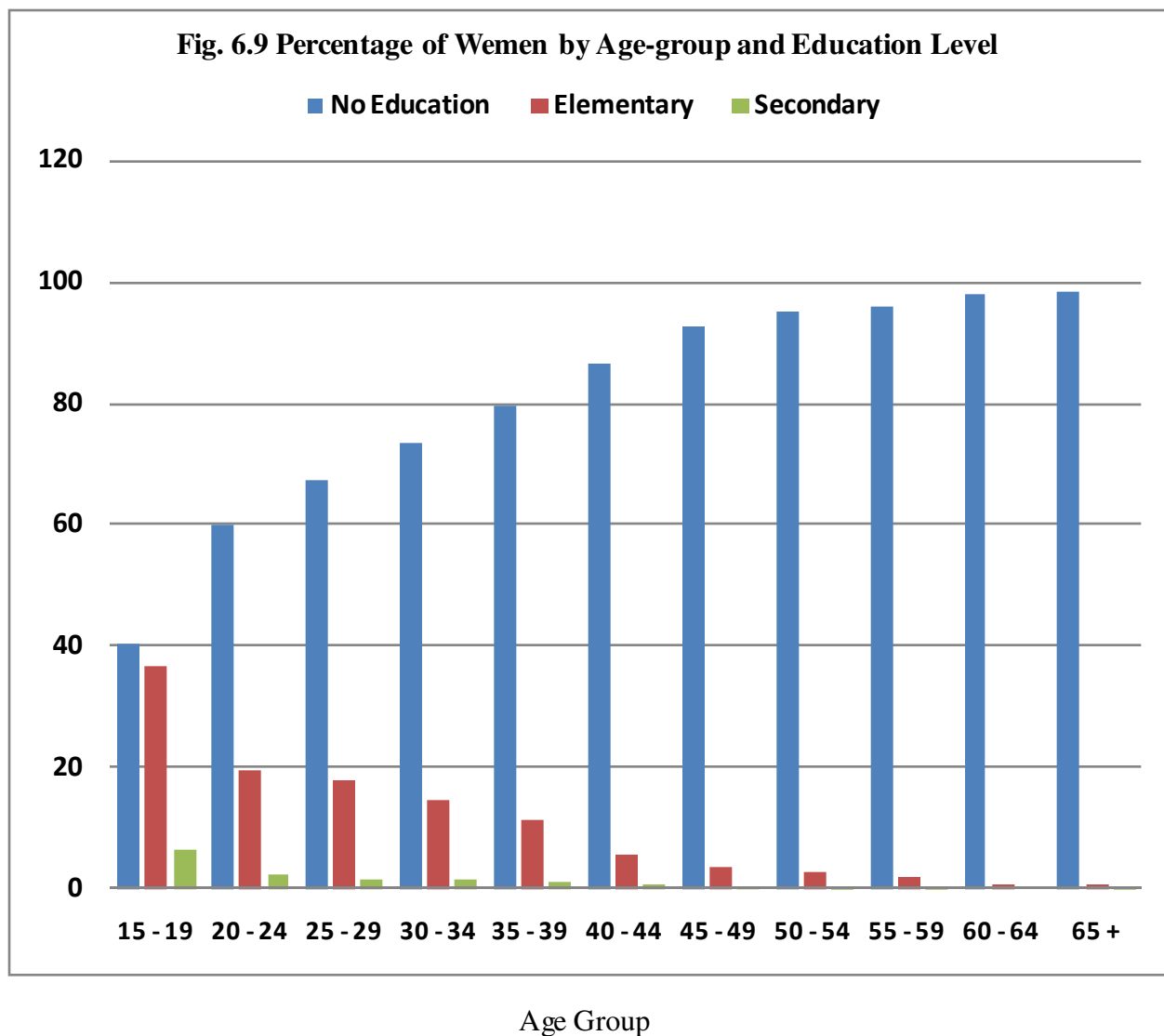
Source [5, 7]

Significant reductions have also been noted among rural women. This is significant because very little changes in rural Ethiopia; and when change comes it often proceeds at glacial speeds. In just a span of five years rural women in the 25-29 age group reduced fertility by 27 children per thousand and those in the 35-39 group by 21. A higher fertility in the 2005 DHS than the 2000 DHS was observed only among women in the 45-49 age group.



## Educational Differential

The lowest percentage (41%) of women with no education is in the 10 – 19 age group representing recent government-sponsored advances in educational gains. Figure 6.9 is a display of the appalling history of neglect on the part of past and current Ethiopian governments, of the education of its citizens, especially of female children and adults. Past governments are to blame for the 60 of women in the 25 – 29 age group still illiterate and the continued rise in the proportion of the illiterate to over 90 percent in the age groups 45 and higher.



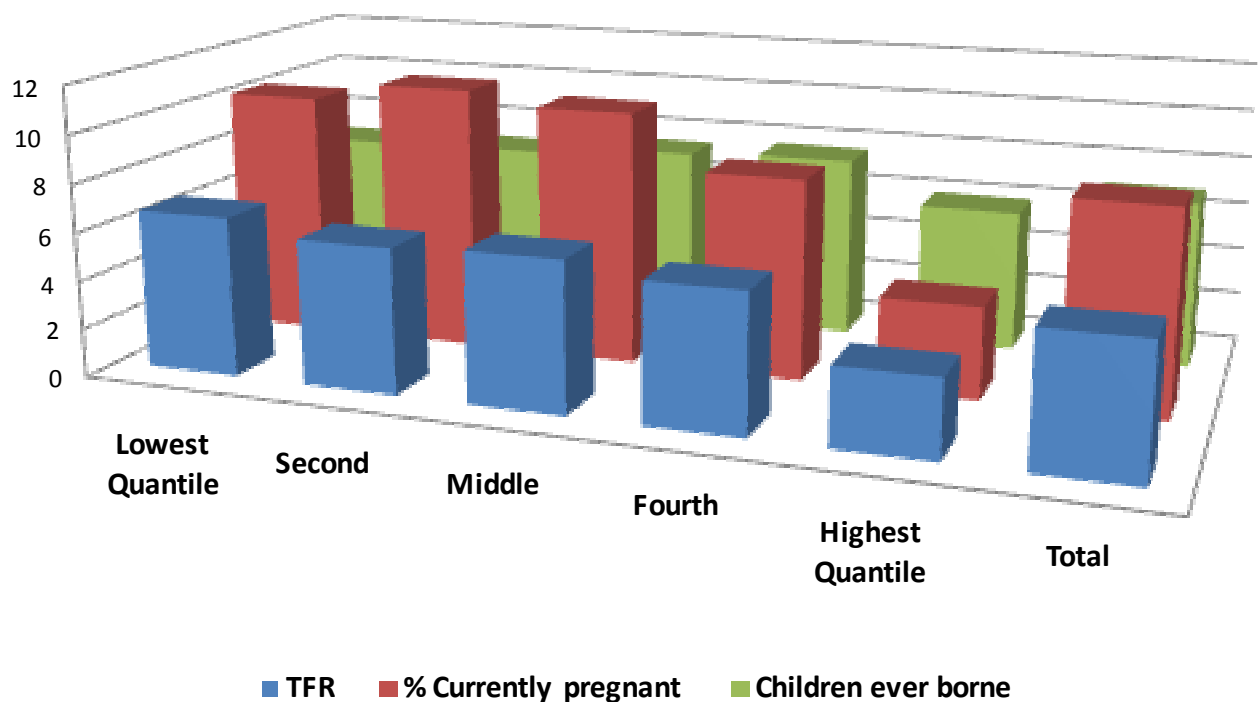
Source: [5]

The fertility implications are obvious from the 3 to 1 ratio of the number of children born to uneducated women and to those with secondary education. It is also evident in the fact that the fertility rates have been falling in Ethiopia both in urban and rural areas mirroring the declines from older to younger age groups (Fig. 6.9) in the proportion of uneducated women.

## *Income Differential*

The 2005 DHS showed that Ethiopian women in the lowest wealth quintile have twice as many children as those in the highest wealth quintile. The fact that “....84 percent of women in the lowest quintile have no education compared with 38 percent in the highest quintile” shows the obvious fact that wealth and education go hand-in-hand and, together, make biggest fertility impact. It no wonder, then that the wealthy countries of the world have low fertility while most African countries plagued by poverty and illiteracy have, as a group, the highest fertility in the world.

**Fig. 6.10 Fertility by Wealth Quintile, 2005**



Source: [5]

The difference in fertility by wealth quartiles is not impressive or significant except when those in the highest quartile are compared with those in all of the lower quartiles.

#### References:

1. Henry Mosley: Family Planning Policies and Programs: Fertility Measurement, Trends, Proximate Determinants and Contraceptive Continuation and Failure. Johns Hopkins, Bloomberg School of Public Health. 2006.
2. <http://www.measuredhs.com/help/Datasets/Other Proximate Determinants of Fertility.htm>
3. Bongaarts J. A Framework for Analyzing the Proximate Determinants of Fertility  
*Population and Development Review* Vol. 4, No. 1 (Mar., 1978), pp. 105-132
4. <http://www.measuredhs.com/help/Datasets/Nuptiality.htm>
5. Ethiopia Demographic and Health Survey 2005 Central Statistical Agency, Addis Ababa, Ethiopia, RC Macro, Calverton, Maryland, USA, September 2006.
6. [Afr J Fertil Sexual Reprod Heal](#). 1996 Mar;1(1):68-71
7. Ethiopia Demographic and Health Survey 2000 Central Statistical Agency, Addis Ababa, Ethiopia, RC Macro, Calverton, Maryland, USA, September 2001.