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WOMEN'S STATUS AND FERTILITY IN EGYPT AND BANGLADESH

By

Abdullah Al-Said

A DISSERTATION

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ABSTRACT

WOMEN'S STATUS AND FERTILITY IN EGYPT AND BANGLADESH

By

Abdullah Al-Said

The purpose of this study was to investigate the effects of women's economic and gender status on the number of children ever born. Four indicators of women's status were chosen. Educational attainment and gainful employment indicated women's economic status, and religious affiliation and son preference indicated women's gender status.

The data were obtained from the Bangladesh Fertility Survey (1976) and the Egyptian Demographic and Health Survey (1988). A total of 5,128 Bangladeshi women and 7,774 Egyptian women currently married and still in their first marriage were included in this study.

The major findings of the study indicate that women's economic status is associated with the number of children ever born when age at first marriage, age at interview, and urban-rural residence were controlled. Egyptian women with higher levels of education had lower fertility. The effect of gainful employment on fertility was found to be weak in Egypt. Bangladeshi women with gainful employment had lower fertility than those who had no work; however, education had a weak effect on the number of children ever

born in Bangladesh. The effect of education was highly related to women's age at interview: younger women had fewer children but also had more years of schooling. Women's gender status was also related to the number of children ever born in both Egypt and Bangladesh. Muslim women in both countries had a higher number of children ever born than did non-Muslim women. In addition, in both countries, women with strong son preference had more children ever born than did women with no son preference.

Two interaction terms were observed in this study. The first interaction term was between women's religion and gainful employment. Gainful employment after marriage was associated with lower marital fertility, but it depressed fertility more strongly for non-Muslims than for Muslim wives. The second interaction term was found between level of education and country of residence. The strength of the depressant effect of women's education on their fertility differed between Egypt and Bangladesh. Egyptian women with no education had a higher number of children ever born than did the same group in Bangladesh, but Bangladeshi women with more than a primary level of education had higher fertility than did the same group in Egypt.

The implications for research and policy are explored.

DEDICATION

I dedicate this work to my wife Hessa and my
children Shatha and Khalid for their emotional
support, encouragement, and endless love.

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CHAPTER I

INTRODUCTION

Many demographers and policy makers are concerned about high fertility rates in the less developed countries (LDCs). While higher levels of social and economic development are causally associated with lower fertility, it is often less clear which aspects of economic development should be promoted first so as to accelerate fertility decline. Arguments are often made that the higher status of women in the more developed countries (MDCs) is an important reason for the lower fertility there. Higher rates of employment in the professions and of completion of secondary and tertiary levels of education place most women into higher economic statuses in MDCs than in LDCs. Because employment in the professions usually occurs away from the homesite, it usually creates incompatibilities between the roles of mother and worker. Moreover, since the completion of higher levels of education postpones marriage, it also delays the timings of first and later births so as to reduce the overall number. The message to policymakers is that schemes to promote the education of women, especially for the professions, should hasten fertility decline.

Women have status based not only on their socioeconomic class but also on their sex _per se_. The biological potentialities unique to females is that they alone can give birth to children and breastfeed them until the infants can cut teeth and begin to chew semi-solid foods. In poor LDCs, where children must begin to work as youngsters and where there are no pensions or health care programs for the elderly (such as the Social Security and Medicare plans in the United States), parents must rely chiefly on their offspring for financial, social, and political support, particularly in old age. This need pressures women in poor LDCs to put a premium on their social roles as childbearers and breastfeeders, even if this emphasis threatens their own physical health. Since men cannot bear and breastfeed children, their mandate to become parents does not pose the same physical risks as faced by women. These realities mean that the gender inequality between females and males is stronger in many of the LDCs, where offspring are subjectively perceived as important sources of economic support to parents and where alternative sources are less available. This root of gender inequality has been described as follows:

> Wives in developing countries are often said to suffer from frequent and closely spaced births and to be exploited by the male member of the household. This has been the motivation for women's groups and family planning agencies to stress the need for a woman to have control over her body and the reproductive process. (Anker, 1982, p. 37)

Indeed, the World Fertility Survey (WFS) found that wives in many developing countries desired to control the timing as well as number of their births (Lightbourne, 1985). Nonetheless, this generalization may not be true for most Muslim women. While the WFS included a number of Islamic nations from North Africa, the Middle East, and South Asia, few studies have systematically explored how Islam might temper the antinatalist effects of economic development.

Most Muslim societies, like other developing countries, have very high levels of fertility, and most, if not all, couples in the Muslim world prefer boys over girls (Williamson, 1976; Kirk, 1966). This sex preference most likely stems from the greater control of material and nonmaterial resources by men than women. The economic dependence of women on men means that women will typically want a large number of sons so as to increase the number of male kin on whom to lean for help. The economic advantages of having sons include financial help to the family and security in old age (Cain, 1981; Nugent, 1985). Moreover, sons can physically defend the family and carry on the family name. Evidence suggests that this strong desire for sons increases the number of children born per wife and discourages her use of contraception (for example, see Johnson and Sufian, 1991). Therefore, a higher level of economic development may provide greater educational and employment opportunities for women, reduce

their reliance on men for advice and material support, and increase women's access to health care. These factors ought to strengthen incentives to reduce fertility and provide means to do so. As such, any examination of factors producing variation in the fertility rates of Islamic nations at different levels of economic development should investigate how the relationships between women's education, women's work, and fertility change across those levels.

Economic development should not be seen as the all-powerful determinant of women's improved economic and gender statuses nor as the only pathway to fertility decline. For instance, The World Bank Atlas 1989 showed that the gross national product per capita (GNP/c) in 1988 U.S. dollars was much lower in Indonesia than in Egypt ($430 and $650, respectively) but that the total fertility rate (TFR) was also much lower in Indonesia than in Egypt (3.3 and 4.7 children, respectively, expected to be born per woman by age 49 if current age-specific fertility rates hold)(Haub, Kent, and Yanagishita, 1990).

Noting that the Indonesian TFR was the lowest for the 40 Islamic nations of the world, Weeks (1988) attributed this to the relatively high status of women in Indonesia. He noted that Islam was introduced into Indonesia by Arab traders in the fifteenth century, where the religion became blended with Hinduism, which had preceded it (Weeks, 1988:11-12). Caldwell (1980:245-246; 1986:202)

concluded that in nations where the predominant religious culture emphasizes enlightment (the stress of Buddhism, Hinduism, and most Christian cultures) over strict adherence to the literal "word of the book" (Islam and fundamentalist Christianity), there is less fear of educating girls. In poor nations, where most women are unschooled, female education is not synonymous with female autonomy from males but does help to bring this on (Caldwell, 1980, 1986). These considerations highlight the fact that a religious emphasis on education can promote female autonomy in very poor countries (such as Indonesia). But in nations where Islam has not been grafted onto an earlier religious culture that emphasized enlightenment, conservative Islamic cultures might slow the pace at which economic development can elevate the status of women.

I have just argued that economic development is not a necessary condition for women to gain high status, but neither is it always a sufficient condition. Even when new wealth is created through economic development, women's status may not rise if women are culturally seen as inferior to men or if men retain control of the wealth. For example, Caldwell (1986), in his study of low mortality in poor countries, argued that women's position is related to infant and child mortality. When women's position is relatively good, the health of the children is usually good as well. This was found to be true in the

poor countries. However, infant and child mortality was found to be high in most of the rich Arab Gulf countries, where the position of women is considered to be low. Thus, the social structure of a society may play a powerful role determining the status of women independently of the wealth of the society.

Bangladesh and Egypt differ in their level of economic development. This study uses data from these two Muslim countries to investigate the relationship between the status of women and fertility in the contexts of different levels of economic development. Although there are many measures of economic development, per capita GNP, life expectancy at birth, and the infant mortality rate will be used here as its indicators. The per capita GNP and life expectancy at birth are higher in Egypt than in Bangladesh ($650 and 60 years in Egypt; $170 and 54 years in Bangladesh), and the infant mortality rate is lower in Egypt than in Bangladesh (90 and 120 per 1000, respectively)(Haub et al., 1990). Hence, Egypt appears to be more advanced than Bangladesh in terms of economic development.

A comparison of some of the social and economic differences between Egypt and Bangladesh reinforces this conclusion. Egypt, for example, is much more urbanized than Bangladesh (45 percent and 13 percent, respectively; see Haub, Kent and Yanagishita, 1990). Egypt also enjoys a substantially higher literacy rate. In 1980, Egypt's

literacy rate was 28 percent for women and 58 percent for men over age 14 (Farid, 1987:341), while in 1981 in Bangladesh it was 13.2 percent for all women and 26 percent for all men (Heitzman and Worden, 1989). Moreover, this national inequality persisted even in 1988, when the overall literacy rates were 44 percent in Egypt and 33 percent in Bangladesh (Hoffman, 1991). Likewise, the healthcare delivery system of Egypt is more extensive than that of Bangladesh. In Egypt, the number of hospital beds was one per 505 persons; and physicians: one per 616 persons. In the same period, the number of hospital beds in Bangladesh was one per 3,187 persons; physicians: one per 6,219 persons (Hoffman, 1991). It is plausible that the expansion of health-care delivery as part of Egypt's greater economic development has reduced Egyptian fertility rates below Bangladeshi levels by making contraception and postnatal care more accessible. This antinatalist trend in Egypt may have been reinforced by more literate wives who can gain health care information for themselves and communicate more effectively with doctors and nurses. Finally, Bangladesh seems to have stronger cultural restrictions on female employment outside the home than does Egypt. Zurayk (1985), for example, writes:

> In Bangladesh, the underemployment of women and poor women in general relative to men is primarily a consequence of highly segregated markets for male and female labor, with the employment opportunities on the female side far fewer than on the male side. The degree of labor market

> segregation is not simply a neutral accommodation of women's childbearing role. Rather market segregation is both a consequence of and a means for perpetuating the system of patriarchy. (p. 52)

These social and economic differences between Egypt and Bangladesh determine the status of women. Egypt has better educational and health systems and fewer cultural restrictions on women's employment than does Bangladesh. In other words, the economic status of women is thought to be greater in Egypt.

The main objective of this study is to examine and compare the status of women in Egypt with that of women in Bangladesh and to explore how the status of women is related to fertility in both countries. The advance of economic development in Egypt (compared to Bangladesh) probably explains why an Egyptian wife can expect to have fewer children in a lifetime than a Bangladeshi wife (TFR = 4.7 and 4.9, respectively), desires fewer children (3.6 and 4.6, respectively), and is more likely to use contraception currently (38 percent and 33 percent, respectively) (Haub, Kent and Yanagishita, 1990; Lightbourne, 1985: 184). The reduction in actual and wanted fertility and the willingness to employ contraception over the course of economic development is probably an outcome of economic development and change in the status of women.

Egypt and Bangladesh:
A Demographic Overview

Egypt and Bangladesh, as two developing nations, share many social and demographic characteristics. In both countries, the majority of the population are Muslim: 91 percent in Egypt and 85 percent in Bangladesh (Weeks, 1988). Agriculture is predominant in both societies and most of the two populations live in rural areas (urban residency is 45 percent of the population in Egypt and 13 percent in Bangladesh)(Hoffman, 1990). Culturally, Egypt and Bangladesh are male-dominated societies and the status of women is objectively low in both countries.

The size and growth rate of the population are serious problems facing both Egypt and Bangladesh. According to the 1990 World Population Data Sheet (Haub et al., 1990), the Egyptian population was 54.7 million and its natural increase was 2.9 percent. In the same year, the crude birth rate was 38 per thousand (see Table 1) and the death rate was 9 per thousand. The population of Egypt is expected to reach 69 million by the year 2000, yet its birth rate is considered one of the lowest in the region. In fact, the birth rate in Egypt has not risen above 44 per thousand since the 1920s. The density of its population and the settled nature of the society are important reasons for the lower birth rate in Egypt (Caldwell, 1981).

According to the Egyptian Demographic and Health Survey Report (Sayed et al., 1989), the average number of

Table 1--Fertility rates and behavior in Egypt and
        Bangladesh, circa 1990.

Fertility Variables	Egypt	Bangladesh
Crude birth rate	38	39
TFR	4.7	4.9
Mean age at marriage[1]	21.3	16.3
Current usage of contraception	38%	33%
Mean number of children ever born*[1]	6.3	6.9
Sex preference ratio**[1]	1.5	3.3

*mean for age group 40-49

**ratio of number of women who preferred a son to those
  who preferred a daughter

[1]Fertility Behavior in the Context of Development:
  Evidence from the World Fertility Survey. United
  Nations, 1987.

All other data in the table are from Haub (1990).

births per household in urban areas was 3.5 compared to
5.4 in rural areas. In the same report, the median age at
first marriage in Egypt was 18.5 years, and urban women on
average appeared to marry three years later than rural
women. Women in Egypt breastfeed their children for an
average of 17 months.

The Egyptian Family Planning Program was established
in 1965 but did not prove effective until the 1970s.
Realization by Egyptian policymakers that socioeconomic
development was important for solving population problems
and for increasing the effectiveness of family planning
programs led to the introduction of the population and
development project in the late 1970s. This project
included about 1,500 villages across the country and had

the following objectives: (1) lower the birth rate; (2) improve population distribution; and (3) improve health, education, and training in rural areas. By 1982, the project covered 2,915 villages (92 percent of all Egyptian villages)(Stycos et al., 1988).

The population and development program has successfully supported and encouraged the use of family planning in Egypt. By 1988, 38 percent of currently married women were using contraception (52 percent in urban areas and 24 percent in rural areas) and 98 percent knew at least one method. Of those who knew of a contraceptive method, 87 percent approved of family planning, and, of those, 70 percent believed their husbands approved of using contraception (Sayed et al., 1989). These figures were much higher than those reported in the 1979 Egyptian Rural Fertility Survey (ERFS). According to the ERFS, only 15 percent of currently married women were using family planning and only 57.4 percent of females and 47 percent of males approved of the use of contraception (Kelley, Khalifa and El-Khorazaty, 1982).

Bangladesh, although smaller than Egypt in areal terms (55,598 square miles and 386,650 square miles, respectively), has a population more than twice that of Egypt. In 1990, the World Population Data Sheet indicated that the population of Bangladesh was 114.8 million. Its natural increase was 2.5 percent and the birth rate was as high as 39 per thousand. The death rate in Bangladesh was

also high (14 per thousand) and the infant mortality rate was 120 per thousand in 1990. Extrapolating these figures, the population in Bangladesh will be about 146.6 million by the year 2000.

Bangladesh is considered one of the poorest countries in the world and faces serious problems from rapid population growth. Realizing this, Bangladeshi officials introduced a family planning program in the early 1960s. As a result, knowledge of family planning increased so that 64 percent of married women knew at least one method of contracepton by the late 1960s, 82 percent by the mid-1970s, and 95 percent by 1980. The practice of family planning, however, has remained very low. In the late 1960s, only 6.4 percent of women in Bangladesh had ever used contraception, and only 3.7 percent were currently using some type of fertility control. In 1975, the rate of ever use of contraception increased to 13.6 percent and the current usage reached 9.6 percent. In 1980, 19.6 percent of women had ever used contraception, while current usage increased to 14 percent in the same period (Ahmed, 1987). The Bangladesh Contraceptive Prevalence Surveys of 1983 and 1989 indicate that current users now comprise 33 percent of the total population of married women.

The great discrepancy between knowledge and use of contraception in both Egypt and Bangladesh probably arises from the fact that the majority of women in both countries

have never been to school (60 percent of ever-married Egyptian women and 78 percent of ever-married Bangladeshi women)(United Nations, 1987:218). However, I shall argue that the higher average number of school years completed by ever-married women in Egypt than Bangladesh (2.1 years and 1.0 years, respectively) and the higher percentage of ever-married Egyptian than Bangladeshi women employed in professional or clerical jobs (4.9 percent and 0.5 percent, respectively) symbolize the higher status of women in Egypt (United Nations, 1987:218, 264). These social and economic factors perhaps explain the differences in fertility and fertility behavior in both countries (see Table 1). In chapters to follow, I shall explore whether Egyptian wives have lower fertility than their Bangladeshi counterparts not only because the composition of Egyptian wives in higher strata of education and work is greater but also because the antinatalist effect of women's education and work is greater in Egypt.

The Status of Women: Definition and Theoretical Background

There is no agreement on the definition of women's status in the demographic literature. Female autonomy, female dependency, and gender inequality are used in the literature as synonyms of women's status. According to Mason (1985), some authors believe that it is the social institutions of gender that influence fertility rather

than the economic status of individual women as shaped by economic institutions, while others argue that it is only their socioeconomic positions that influence women's fertility. Mason (1985) states that "Most terms and definitions refer at least in part to gender inequality, and most specifically focus on one of three basic dimensions of gender inequality, namely (1) inequality in prestige, (2) inequality in power, or (3) inequality in access to or control over resources" (p. 8). "Prestige" is epiphenomenal, according to Mason, and thus unworthy of theoretical debate. Instead, she emphasizes that people have status because they belong to a certain socioeconomic class (economic status) and to a certain biological sex (gender status), and that both statuses should influence fertility.

In this dissertation, female education and female labor force participation are used as indicators of women's economic status. Religion and son preference are used as indicators of gender status. Religion, as an indicator of gender status, plays an important role in determining the status of men and women in a society. Islam, for example, considers women inferior to men in many social and political aspects: the testimony of a woman is worth half that of a man; women inherit half of what men inherit; the wife is in the service of her husband, who has full authority over her; and women do not have the same right of divorce as men (Stowasser, 1984).

All of these and other religious restrictions on women, such as sex segregation, assign different social roles (gender statuses) to men and women. In general, women are constrained to work in the home and to care for children, and men are responsible for providing resources for the home and its residents. Son preference also reflects the gender status of women. Women who are more independent and can support themselves have less need for children as sources of social and economic support (Mason, 1985). Finally, women with higher gender status are more likely to have access to and use fertility regulation than are those with lower gender status.

However, for reasons to be outlined in Chapter II, I shall examine whether women who have a lower ascribed or achieved gender status (the Muslim religion or a preference for sons over daughters) have higher fertility even when they might have more favorable economic statuses (some schooling or gainful employment). Evidence in favor of this relationship will show that even when economic development can increase female employment and education, the antinatalist effects can be tempered by a patriarchal religion requiring gender stratification.

Organization of the Study

This research on the effect of women's status on fertility begins with this introductory chapter which has presented a statement of the problem, the definitions of and theoretical base for women's status

and fertility, and a brief overview of the demographic characteristics of Egypt and Bangladesh. Chapter II reviews some related literature regarding women's status and fertility and concludes with a statement of my hypotheses. The third chapter describes the data used for this study, presents the measurement of the variables of interest, and discusses the appropriate statistical methods. Chapter IV is devoted to an analysis of the data and a test of the hypotheses stated in Chapter II. Finally, Chapter V contains a summary, conclusions based on the findings of this study, and recommendations for future research.

CHAPTER II

RELATED RESEARCH AND LITERATURE

Many fertility studies consider the status of women an important determinant of fertility behavior. Weeks (1988) used worldwide data to show that even in nations where important gains have been made in Gross National Product per capita (e.g., most Arab Gulf states), high fertility persists if the status of women is low; and even in countries where little economic development has occurred, fertility has declined if the status of women is relatively high. Weeks used the sex ratio of school enrollment and of life expectancy as indicators of the status of women.

According to Anker (1982), the role and status of women may influence fertility in two ways:

1 - It can affect fertility by affecting the overall level of the household's well-being (which is stressed in the literature on socioeconomic determinants of fertility).

2 - It can affect fertility through the degree to which the interests of households and wives diverge and the relative ability of each spouse in determining the number of children they should have. (p. 38)

Mason (1987) has also examined the impact of women's status and social position on fertility in developing

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societies. She suggests that women's positions can influence and depress fertility in five situations through child supply, child demand, and child costs. These five situations are:

(1) women's autonomy is likely to be inversely related to the importance of urgency of marriage for daughters, something that should influence age at marriage and hence the supply of children.

(2) In situations where women want fewer children than men do or have more positive attitudes toward fertility control, the greater is their autonomy, the more power they will have in fertility decisions, and the more likely they will be to engage in innovative behaviors such as using modern contraceptives. These should in turn reduce fertility by reducing either the demand for children or the psychic costs of fertility regulation.

(3) The greater the woman's economic dependency, the more important children will be as security assets and the stronger will be preferences for sons.

(4) The seclusion of women is likely to lower the opportunity costs of children. Insofar as female autonomy leads to higher levels of female education, it should increase the opportunity costs of children. Both of these should affect the demand for children.

(5) The greater the equality of sex, the more the wife's health and well-being are likely to enter into fertility decisions. This means that where health considerations dictate limiting childbearing or lengthening birth intervals, higher female status may be associated with lower fertility. (p. 738)

To illustrate these points, a study of female autonomy and fertility in India by Dyson and Moore (1983) showed that fertility was lower in South India, where women had higher gender status. In North India, where fertility was observed to be high, women moved away from their own lineage groups at marriage. Brides were

socialized to believe that their own wishes and interests were subordinate to those of the husband's family group, who put them under strong pronatalist pressures. On the other hand, women in South India typically married lateral kin (uncles or cousins) and did not become physically separated from consanguineal relatives at marriage. This meant that South Indian women had more social support. Also, Southern women were more economically active outside the home and had greater education than Northern women. The higher status of Southern women was consistent with their lower fertility.

Women's Economic Status and Fertility

As discussed in the preceding chapter, I shall use two dimensions to represent the status of women. The first dimension, women's economic status, shall be measured in this dissertation research by female education and female participation in the labor force. Caldwell (1986) argued that the education and employment of women are not the same as female autonomy, but they contribute much to it. Education by itself, however, is considered the most effective factor for improving women's status. As Noman (1983) explains:

> Educated women have more possibility to have an equal share, more authority and equal participation in decision making processes both in the family and in the society. This leads to more personal autonomy of women, helping her to develop definite opinions and views regarding many important aspects of her own life. (p. 31)

Since education is one of the important indicators of female status, Caldwell also sees female education as playing the major role in fertility transition.

> The primary determinant of the timing of the onset of the fertility transition is the effect of mass education on the family economy. The direction of the wealth flow between generations is changed with the introduction of mass education, at least partly because the relationships between members of the family are transformed as the morality governing these relationships changes. (Caldwell, 1980, p. 225)

The greatest impact of education is not direct, says Caldwell, but through the restructuring of family relationships and family economies, and through the changed direction of wealth flow.

Most other researchers agree that there is an inverse relationship between female education and fertility. Farques (1989) delineates three factors that cause education to influence fertility. The first factor is demographic, where longer schooling contributes toward delaying the age at first marriage. The second is economic, where the spread of education, especially secondary education, is a sign of a transformation in the role of children. The balance between the gain of having a large family and the cost they require is reversed. Finally, there is a psychological factor, where education projects girls into a world outside their family circle. With education, they may gain occupational ambitions other than traditional home work.

Much empirical evidence supports the influence of women's economic status on fertility and contraceptive behavior. Using level of education and work for cash or kind to measure female status, Syed (1978) examined the influence of female status on fertility in Pakistan. His analysis shows that education played a powerful role in determining fertility. In both urban and rural areas, education postponed age at first marriage, while the effect of work status on age at first marriage was weak for both urban and rural women. Furthermore, an inverse relationship between education and children ever born was observed. Primary education was found to be stronger in rural areas with regard to children ever born. Also, women's education influenced the desired number of children in both urban and rural areas. Women with some years of schooling desired fewer children, whereas the effect of women's work status on desired number of children was not significant. Finally, women with schooling knew more about and used more contraception. Syed argued that "education broadens the outlook of females, increases their ability to plan their life more meaningfully, and enables them to find security through means other than excessive childbearing" (p. 428).

Following the same procedures, Shathar et al. (1988), in their study of women's status and fertility in Pakistan, found that women's education (as a measure of women's status) played a major role in lowering fertility.

In addition, women with higher levels of education desired fewer children and were less likely to have a preference for boys.

Noman (1983), in his investigation of women's status and fertility in Bangladesh, argues that fertility declines as education level increases. Women with higher levels of education were more likely to have contraceptive knowledge, to practice family planning, and to have a smaller family size than men. Noman also indicates that, in general, employed women in Bangladesh had somewhat lower fertility than non-employed women.

Thus, while most studies dealing with women's status and fertility use female education and labor force participation as measures of female status, most evidence shows that female education is stronger than female employment as a fertility determinant. When Speare et al. (1973), for example, examined the effect of urbanization, female employment, and female education on fertility behavior in Taiwan, they found that female education was the major factor affecting desired number of children, age at marriage, contraceptive use, and son preference. Residence background and work experience both had small effects on fertility attitudes and behavior. In Turkey, Stycos and Weller (1967) also found fertility differentials were associated with education and urban-rural residence rather than with female employment.

While women's education appears stronger than employment as a fertility determinant, other studies do indicate the influence of female employment on fertility. A cross-cultural study by Hirschman and Guest (1990), for example, examines a multilevel model of fertility determination with microlevel data from four Southeast Asian countries. They assumed that community attributes, including the status of women, children's economic roles, and the level of infant mortality, affect fertility behavior directly and indirectly through individual statuses. Their analysis showed that the economic context of women's status, especially modern sector employment, had the highest and most consistent effect on lowered fertility in all four countries: Indonesia, Malaysia, the Philippines, and Thailand.

Kasarda (1971) used data from 50 countries to examine the effect of female labor force participation on fertility. He found that high labor-force participation of females as wage or salaried employees in non-agricultural activities depressed a society's fertility level. In another study, Rosen and Simmons (1971) interviewed 726 Brazilian women in order to examine the relationship between women's work, their participation in family decisions, their fertility preference, and actual fertility. They found that work status of women, husband-wife decision making, and women's role attitudes all appeared to negatively influence fertility. More

specifically, smaller family size was associated with generally higher education, greater social contacts, more skilled employment, and equality in family decision-making.

<u>Gender Status and Fertility in
Bangladesh and Egypt</u>

The second dimension of women's status is the social position assigned to them by virtue of their biologically based roles as breeders and breastfeeders. I shall use two measures of gender status. The degree to which individual women have not become psychologically emancipated from traditional gender roles will be tapped by their preference for the birth of sons. Oyeka (1989), for example, examined the relationship between the number of living sons and the use of contraception among female teachers in urban Nigeria and found that women with no living sons were least likely to have ever used modern contraceptives. Contraceptive use increased with the number of living sons, and women with only one son and no daughters are less likely to have ever used contraception.

Most studies have emphasized that son preference raises fertility behavior. In her theoretical model regarding the influence of sex preference of children on fertility, Sheps (1963) states that

It is common knowledge that many parents do have such preference and some empirical studies have been made of the relationship between sex distribution and number of children. If parents really want three children regardless of sex, they might reasonably be expected to try not to have

> any more after the three have been born. Should
> they want three boys, however, and persist in the
> effort to reach this goal, they may have to have
> more than three children in order to have the
> three boys they desire. In fact, they will have
> an average of about six children by the time they
> succeed in having the three boys. (p. 66)

In other words, Sheps argues that if a certain number of

sons is strongly desired, then the total number of

children wanted by, or acceptable to, a couple can be

unstable and subject to upward revision until the desired

number of sons have been born.

Mannan (1989), in his investigation of the

rationality of large families in Bangladesh, illustrates

how children, especially male children, are valuable in

Bangladesh.

> The persistence of high fertility in Bangladesh
> appears to be deep-rooted in the structure of
> society and its culture. Children are regarded as
> a good for which there is no substitute. The
> rural child provides valuable labor services to
> the parental household during childhood.
> Dependent children, especially sons, who engage in
> wage labor usually give their earnings to their
> parents. Grown children living away from the
> parental household usually send regular remittance
> to their aging parents. They are also the most
> dependable source of old age security or of
> insurance against temporary disability or
> unemployment. Again, grown children contribute to
> the security of their families in a violent world
> by providing physical protection. (p. 67)

Mannan further illuminates the important role of male

children compared to female children by arguing that

"because of prevailing social custom, only male children

work outside the home. Thus daughters cannot help in most

of these activities, and to make matters worse, they cost

a large amount at the time of marriage by way of dowry, etc." (p. 67).

In Egypt, as in Bangladesh, a very strong preference for sons exists. Gadalla (1978) has argued that "It is generally recognized that Egyptian culture, especially the rural subculture, places a much higher value on male than on female children and emphasizes the necessity of each family's having at least one son" (p. 99). In his investigation of Egyptian fertility, Gadalla found that most respondents indicated they would continue to have more children if they had more than two daughters and no sons. There are two main reasons behind the importance of having male children in Egypt. The first is to continue the family and carry on the family name. The second is to support the family financially, help on the farm, and provide security for parents in their old age.

Since the son preference phenomenon in both Egypt and Bangladesh is well documented in the literature, it should influence fertility and fertility behavior in both societies. With regard to contraceptive use, son preference is found to play an important role. For example, Koening et al. (1987), in their study of son preference in Bangladesh, show that the use of contraceptives among currently married women increased with the number of living children and with the number of living sons. For instance, among women with 0, 1, 2, 3, or 4+ male children, the use of modern contraceptives

corresponded to 7.2, 17.4, 27.2, 33.1, and 34.4 percent, respectively.

In a similar but more recent study, Rahman, Akbar and Phillips (1990) used longitudinal data to examine the influence of sex composition of surviving children on the acceptance and continuation of contraceptive use among 3,145 women during 60 months in Matlab, Bangladesh. Their findings show a direct and strong relationship between the number of surviving sons and acceptance and continuation of contraceptive use. The acceptance rate increased with the number of living children, but more strongly with the number of surviving sons. The authors indicate that women with no living sons were less likely to accept contraception, while those with three or four sons were most likely to accept and continue to use contraception. The authors suggest that: "Couples make decisions regarding fertility regulation based on the achieved number of sons and daughters. Permanent contraception is more acceptable to couples with more sons than daughters" (p. 15). Furthermore, "It also appears that the effect of son preference is stronger on the acceptance of terminal contraceptive methods since nearly every couple who accepted sterilization had at least one son, and son composition predominates among children of couples who have terminated contraception" (p. 25). In this study, the use of data from only rural Bangladesh and the ever-usage of

contraception limited the generalizability of this investigation.

Somewhat surprisingly, Sufian and Johnson (1989) did not find that the death of a son in Bangladesh led to a speedier subsequent birth than did the death of a daughter, as would be expected from attempts by parents to replace dying sons. However, the failure of their analysis of the 1975-76 Bangladesh Fertility Survey to find shorter median birth intervals after the death of a son may have reflected a parental "strategy of hoarding" sons (having as many as possible as soon as possible) rather than a parental "strategy of replacing" sons (Preston, 1978:10).

Following this work, Johnson and Sufian (1990) examined the relationship between son preference, son mortality, and the adoption of contraception. Their analysis of the 1975-76 Bangladesh Fertility Survey showed a relationship between the mortality of sons, but not daughters, and a lower rate of contraceptive initiation (as indicated by proportions ever using contraception). In addition, their analysis indicated that the experience of son mortality was associated with a higher rate of discontinuation of contraceptive use (as indicated by proportions ever using but not currently using contraception).

In Egypt, Cochrane, Khan, and Osheba (1990) examined the determinants of desired family size using the 1980

Egyptian Fertility Survey, which was a component of the World Fertility Survey. Their analysis indicated that wealth or lifetime income was positively associated with the demand for children, and that education for both husband and wife was negatively related to desired family size. The couple's residence was found to be an important variable determining their desired family size. The most important determinant of desired family size was the husband's/wife's knowledge of family planning, which showed a negative effect on desired family size. Surprisingly, their analysis showed that the wife's desires for family size influenced the husband's desires. Husbands did not appear to determine much use of family planning. On the average, husbands in Egypt did not prefer a larger number of children than did their wives. These findings made it appear that women occupy greater decision-making power over their reproduction in Egypt than in Bangladesh.

Rizk, Stokes and Nelson (1982) have used data from rural Egypt to examine the influence of child mortality on birth spacing, additional children, and contraceptive use. They find no relationship between child mortality and length of birth intervals. However, child mortality was found to be associated with both contraceptive use and desired number of additional children. Women who had lost one or more children desired a larger number of additional children and were less likely to use contraception than

those with no experience of child mortality. This study had a limited sample size of rural residents only and failed to control for the sex of dying children, as was done by Sufian and Johnson (1989).

Gadalla, McCarthy and Campbell (1985) have examined the influence of the number of living sons on contraceptive use with data from 22,799 currently married women in 38 Egyptian villages. Their results show that, in general, contraceptive use increased regularly as the number of living children increased. Within each parity, women with no male children were less likely to be using contraception. However, the use of contraception increased with the increase in living sons in each parity. For example, 15.5 percent of all women with two living sons practiced contraception, compared to 7.4 percent of women with two daughters. Also, 13.0 percent of those with one son and one daughter were using contraception at a higher parity. Among women with four children, the use of contraception was the lowest when there were no sons. Among this group, the rate of contraceptive use increased with an increased number of living sons (14.9 percent with one son, 25.8 percent with two sons, 30.0 percent with three sons, and 32.0 percent with four sons). In this study, the authors indicate that contraceptive continuation rates increased regularly with the number of living sons.

In the same study, there was a contraceptive distribution program. Four different oral contraceptives were offered to eligible women. In a follow-up interview nine months after the visit, the results remained the same: women who had no male children or only one son were still less likely to be using contraception, compared to those with the same number of living children but with two or more living sons. At the first visit, among those women who did not use contraception, those with more sons were more likely to accept the offered contraceptives. A very low rate of contraceptive use was also found among women with a large number of female children but with no sons. The authors conclude that:

> Despite the efforts of the household distribution program to make contraceptive supplies and information readily available to all married women, and to remove the access barriers between the method and the potential users, the program did not achieve appreciable results among women with few or no sons. In addition, it did nothing to weaken the strong association between the number of living sons and the use of contraception. (Gadalla, McCarthy and Campbell, 1985:168)

According to Williamson (1978), sex preference influences fertility behavior through: (1) the strength of sex preference; (2) the amount by which the preferred sex ratio deviates from the natural sex ratio; (3) a small-to-moderate desired number of children; and (4) the availability of effective birth control. Because the higher level of economic development in Egypt than Bangladesh has put medical care (including contraception), primary schooling, and professional or clerical employment

more within the reach of Egyptian women, I maintain that the latter will have a weaker dependency on male children and thus a weaker preference for sons. In other words, while son preference prevails in Muslim countries, I surmise that it is stronger in those at the lower end of the scale of economic development (Pakistan, Bangladesh) than in those higher up the scale (Egypt).

The second measure of women's gender status in this dissertation is membership in the Muslim religion. Many Western studies that deal with the status of Muslim women have seen women in Islamic societies as subservient, submissive, and powerless. Although most of these religious obstacles to an equitable division of labor by sex were true, especially in the past, women in most Muslim societies are now overcoming these barriers (Allman, 1978). It seems that most of these obstacles are found in the more conservative Muslim societies, such as in the Arabian peninsula societies, where restrictions on women's emancipation still exist.

Weeks (1988) argued that Islam itself does not impose any particular restrictions on labor-force activity by women, but tradition has tended to impose itself in many Islamic nations. In virtually every Islamic nation, there are increasing numbers of women who are well-educated and/or are engaged in non-domestic, non-agricultural labor-force activities. Weeks pointed out that Muslim women are faced with the lowest status in Southern Asia,

particularly in Bangladesh, and with the highest status in Southeast Asian Islamic nations. This could explain the high level of fertility in Southern Asia and the lower fertility rate in Southeast Asia.

The low gender status of Muslim women probably causes a higher rate of fertility in order for them to maintain social and economic supports, especially in old age. The higher fertility rates of Muslims have often been empirically documented. Kirk (1967:568), for example, argued that "Muslim institutions, more than those of other world religions, favor a generally high natality. Religion and high natality are more closely correlated for Muslims than for any other religious group." In his study of Muslim countries, Kirk drew the following conclusions:

1 - Islamic countries uniformly have high birth rates.

2. These are supported by distinctive Islamic attitudes and practices in family life rather than by political or religious doctrines.

3 - The "normal" diffusion of birth control to and within Muslim countries on the European pattern has been inhibited by cultural discontinuity between Muslim peoples and their neighbors.

4 - The continuing high birth rates in Muslim countries, matched with encouraging progress in reducing deaths, now lead to rapid population

growth and its especially high visibility as a
handicap to economic and social progress.

5 - As a result, several Muslim countries have
adopted measures to introduce birth control.

Kirk gave several reasons explaining the high fertility
rates of the Muslim population:

1 - The high degree of tenacity with which old
beliefs and practices are maintained by Muslims.

2 - Conformity to religious and social practices
which are so closely interwoven in Muslim life.

3 - The strongly patrilinear and patrilocal quality
of the Muslim family, with male dominance and
responsibility prescribed by the Koran (the
Muslims' holy book).

4 - Religious precepts that are favorable to early
remarriage of the widowed and divorced.

5 - The belief that pleasures of flesh, especially
sexual intercourse, are God-given virtues to be
enjoyed and a conjugal obligation to be
fulfilled (celibacy is considered abnormal for
men and unthinkable for able-bodied women).

6 - The unusually subordinate place of women in
Muslim society.

Kirk considered the Islamic religion a major obstacle
to the diffusion of family planning, fertility control,
and modern demographic behavior. However, it seems that
while the Islamic religion may encourage people to have

large families, cultures, belief systems, and low socioeconomic development have more influence on Muslim fertility behavior other than Islamic theology itself. Allman (1978) argued that Islam is more favorable to family planning than other religions and that the obstacles to economic and social development are the major determinants of Muslim traditional demographic behavior.

In the last two decades, many studies have been devoted to examining and investigating Muslim fertility. In Lebanon, for example, Chamie (1981) found that Sunni and Shiite Muslims had higher birth rates than Catholic and non-Catholic Christians, and within each group Shiites had higher fertility than Sunnis, and Catholics had higher fertility than non-Catholics (5.7, 4.8, 3.9, and 3.6 children ever born per wife in each respective religious group). Nagi (1984) conducted a comprehensive study of 33 Muslim countries to examine the fertility trends and differentials between 1960 and 1978. The main conclusions of his analysis can be summarized as follows:

1 - Muslim fertility remains universally high and is generally higher than in non-Muslim countries in the same region;

2 - Very few Muslim countries have succeeded in bringing down their level of fertility to justify a search for the predictors of Muslim fertility levels;

3 - In spite of a sufficient range of variations in the economic and social correlates of fertility, the corresponding fertility variables in these countries do not suggest that the reproductive behavior of Muslim women has reached such variations;

4 - Efforts directed toward stronger family planning programs are clearly related to fertility decline.

Regardless of these conclusions, fertility rates and behavior have changed in many Muslim countries. Recent investigations of Muslims' fertility indicate that fertility rates dropped substantially in the Islamic countries of Southeast Asia and North Africa (Weeks, 1988; Farques, 1989).

Most studies of Muslim fertility compare Muslim countries with other countries rather than comparing the fertility of Muslims with others within the country. In an early investigation of social and psychological factors affecting fertility in Egypt, Rizk (1963) found a significantly higher fertility rate for Muslim women than for non-Muslim women. In Bangladesh, Kabir, Uddin, Chowdhury, and Ahmed (1986) observed that non-Muslim women were at higher levels of contraceptive knowledge than Muslim women. In addition, the use rates of modern as well as traditional methods were found to be higher for non-Muslims than for Muslim women. In a more recent study

in Bangladesh, Rahman et al. (1990) found that contraceptive use was higher among Hindu women (25 percent higher) than among Muslims and that Hindus had a higher continuation rate than Muslims.

Ahmed (1981) also examined the influence of religious affiliation on cumulative fertility in Bangladesh. He found that Muslim women in both urban and rural areas had higher fertility rates than non-Muslim women, at least partly because Muslim women had less education, a younger age at marriage, and husbands with less education. While Islamic values enshrining domestic roles as the proper sphere for women probably influence the low levels of female education and their youthful entry into marriage, Ahmed suggested that religion can influence fertility through other variables such as perception of sexuality, son preference, subordination of women, contraceptive use, and ritual and postpartum abstinence.

The higher fertility rate of Muslim than non-Muslim women probably is at least partly an outcome of the Muslim women's lower gender status. Although some scholars (for example, Farques, 1989) have argued that women's status in Islamic countries is improving, Muslim women still have a low status in most Muslim societies because of the religious restrictions on women's social and economic activities. In Bangladesh, for example, it is noted that:

> Rural women lack control over their own bodies and over the decision to have children. Child-bearing patterns depend on social status, which is often dictated by important family members, by child

mortality rate, the number of and sex of previous children, and by the family's economic status. (Islam, 1982, p. 86)

Yet, other empirical evidence questions the inverse effect of gender status on fertility in Bangladesh. For example, Harbison, Khalegue and Robinson (1989) examine female autonomy and fertility in the Garo villages in Bangladesh, where female status is considered higher than in the rest of the country. In Garo villages, women control all property, do not have to wear purdah, and can freely speak to other men. Moreover, Garo women play major roles in familial decision-making, which is unusual in Bangladesh. However, fertility of Garo women is high, regardless of their high status. The authors argue that, "Women's autonomy and high status are neither necessary nor sufficient conditions for fertility decline. The generally favorable economic and ecological settings made fertility limitation unnecessary" (p. 1006). This conclusion may be valid only in Garo villages.

Cain, Khanam and Nahar (1979) believe that women in Bangladesh depend more on men because of the powerful system of male dominance. In their analysis of women's roles in rural Bangladesh, they explain the influence of the patriarchal system on women and high fertility in two points:

> First, women of all economic classes face not only the risks common to all in rural Bangladesh, such as floods, political disruption, epidemics, and crop failure, but also the special risks associated with the patriarchal system. As the bonds of obligation between kin erode under the

pressure of poverty, the risks of precipitous decline in status for women increases. Second, women who, for whatever reason, have no male on whom to depend, and have to sell their labor, face a market that is highly restricted both spatially and functionally, entailing low wages and a high rate of unemployment. The risk and insecurity that partriarchy imposes on women represents a powerful systemic incentive for high fertility. (p. 432)

In summary, although a study by Cain et al. (1979) suggested that poverty may, in and of itself, reduce the gender status of women by making them more dependent on men for their physical survival, the work of Harbison et al. (1989) implied that greater material wealth may, in fact, be a precondition for greater female autonomy. As such, an innovation of this dissertation research will be to explore how the effects of women's gender status on fertility might be conditioned by their economic status.

Socioeconomic Development and Fertility: Macro-Level Analysis

To examine the relationship between fertility and socioeconomic development, many fertility research studies have focused on the micro- rather than the macro-level of analysis. Researchers have argued that some particular elements of economic development tend to reduce fertility, such as by postponement of the age of marriage because of women's educational attainment, while other elements tend to increase the rate of fertility, such as by the reduction of postpartum amenorrhea associated with shortening of the breast-feeding period (Tabah, 1989),

which in turn can be associated with women's labor-force participation. However, in a recent macro-analysis of the association between economic development and fertility in lesser developed countries, Raymont (1989) argued that the economic welfare of a population, as measured by equality in the distribution of income, is a powerful indicator of lower fertility rates across the developing countries. Raymont suggested that the mechanisms by which poverty induces high fertility are more important than those by which high fertility might cause poverty.

Raymond argued that rich people in most countries can achieve a low rate of infant mortality whereas the poor cannot. It is observed that high rates of infant and child mortality resulted in more births being necessary to achieve the desired family size. In addition, wealthy people are more likely to seek higher education and become involved in the labor force, which is negatively related to fertility. Hence, equity of income distribution may promote lower fertility by giving people equal access to education, employment, health systems, and changes for a better lifestyle.

Differences in socioeconomic factors do indeed seem to play an important role in influencing human fertility, as evidenced by numerous studies reported in the literature. In a study by the United Nations (1989) that included 27 developing countries, for example, child survival and female education were found to be strongly

correlated with lower fertility. Moreover, gross national product (GNP) was found to play a modest role in predicting not only the level of fertility but also those very factors of child survival and educational attainment as well as others. In other words, the level of the GNP per capita sets limits on how much the government can spend on building schools, hospitals, and roads and hiring teachers, doctors, nurses, and laborers, and providing other kinds of social services which alleviate poverty and illness and make families (especially women) less dependent on their children for their welfare.

In a similar study, Entwisle and Mason (1985) used a multilevel analysis to examine the effects of socioeconomic development and family planning programs on fertility in 15 developing countries. Specifically, they investigated the effect of socioeconomic characteristics of individuals (women's education and rural-urban childhood residence) on children ever born; and the effect of per capita GNP and official family planning program efforts on micro-level relationships between socioeconomic characteristics and fertility. Their results showed that the effect of micro socioeconomic characteristics on fertility changes from positive to negative as economic development proceeds. In addition, a positive micro socioeconomic-fertility difference was observed in countries at low level of economic development and with no family planning programs. Moreover, per capita GNP and

family planning programs influence women's fertility within each country (for example, a positive effect of GNP on fertility was found for women with a rural background and with no education, but the relationship was negative for women from an urban background with 10 years of education). Although this study shows interesting results, it failed to control for variables such as women's age at marriage.

Kelley, Khalifa, and El-Khorazaty (1982) analyzed community-level data from 32 villages in Egypt to examine the effect of socioeconomic development on fertility. Their findings show that, in general, a higher level of socioeconomic development is positively related to children ever born and negatively to the number of child deaths. Agricultural mechanization reduced both the desired number of children and children ever born; it was also associated with an increase in contraceptive use in rural areas. The authors concluded that:

1 - children ever born may increase in the short run with socioeconomic development, in general, and decrease with provision of mechanized agriculture, urban transportation, and communication services;

2 - child deaths will decrease with socioeconomic development and the provision of educational services;

3 - desired number of children will decrease with the provision of educational services and the expansion of mechanized agriculture; and

4 - contraceptive use will increase with provision of agricultural mechanization and educational services. (p. 201)

Findings such as these lend support to Hess' claim that "family planning program efforts depend on the level of socioeconomic development, which, in turn, stimulates lower fertility rates. This dependence decreases over time and with further advances in socioeconomic development" (1988:138). Recently, Faour (1989) has analyzed data from 11 Arab countries to examine the influence of family planning programs and socioeconomic conditions on contraceptive prevalence. He found that much of the variation (63 percent) in contraceptive prevalence was explained by socioeconomic setting, which is measured by urbanization, gross enrollment ratio, life expectancy at birth, infant mortality, and per capita GNP. Faour concluded that increase of contraceptive use was the outcome of improved socioeconomic conditions as well as stronger family planning program efforts.

In another study, Entwisle, Casterline and Sayed (1989) examined the effects of village characteristics on contraceptive behavior in rural Egypt. They concluded that "contraceptive behavior in rural Egypt varies systematically with village characteristics. The village

economy, modernization of agriculture, level of school participation, and family planning service environment positively influence contraceptive use and intentions" (p. 1030). Finally, Hoque (1988), examining the effects of rural electrification and village-level development on fertility behavior in Bangladesh, found significant differences in fertility-related behavior among the populations in electrified and nonelectrified villages. He argued that the expansion of education, family planning program, and communication through electrification provided essential changes in fertility behavior and shifted the functions of familial institutions to nonfamilial ones.

Most of these macro-level analyses indicated that a relationship between socioeconomic development and lower fertility exists within and between countries. In other words, a region or a country at a higher level of economic development is associated with a lower fertility rate.

Research Hypotheses

The purpose of this study is to investigate the influence of women's economic and gender status on the number of children ever born per wife in Egypt and Bangladesh. The first two hypotheses are deduced from the literature review:

1. - Wives who have greater economic status (i.e., higher levels of education or gainful employment) have fewer children ever born alive.

2. - Wives who have greater gender status (i.e., a non-Muslim religion or a weak preference for sons) have fewer children ever born alive.

An important goal of this comparative study is to explore how the effects on fertility of these two dimensions of women's status differ between Egypt and Bangladesh. The literature cited above suggested that the rising affluence in Egypt--as seen through the more extensive education of women to the point of literacy and the greater access per person to hospitals and doctors-- provides Egyptian women with greater access to information about the world outside their homes, more employable skills, and greater control over their own bodies, their illnesses, and their pregnancies. Simultaneously, we have seen that fertility remains high in Egypt, that son preference continues strong, and that the resistance of Egyptian women to family planning wears down gradually with the successive births of sons. These considerations lead to Hypothesis 3:

3.- The relationship put forth in Hypothesis 1 will be much weaker in Egypt for Muslims than for non-Muslims and for women who prefer many sons than for women who prefer few sons; but this relationship should be true in Bangladesh, too.

The final two hypotheses venture that the relationships in Hypotheses 1 and 2 are not uniform in the two Muslim countries under analysis because these

countries are at different levels of economic development. These hypotheses may be stated as follows:

4. - The relationship proposed in Hypothesis 1 will be stronger in Egypt, where economic development has allowed a more pervasive rise in women's economic status.

5. - The relationship proposed in Hypothesis 2 will be much stronger in Egypt, where economic development has lessened the dependency of women upon men.

CHAPTER III

RESEARCH METHODOLOGY

Economic status and gender status are hypothesized in this study to be two dimensions of women's status that should depress fertility, and this depression should be stronger at higher levels of economic development. Therefore, tests of these proposals required data from two countries at different levels of economic development. From criteria discussed in Chapter II, Bangladesh was chosen from countries at the lowest level of economic development, and Egypt was selected from countries at the middle-low level of economic development.

I argued in the last chapter that economic development may allow a more pervasive increase in the status of women. However, the Islamic religion supports family role segmentation. Conservative Muslims call for the subordination of females to males in both public and private life as being in harmony with the will of Allah and with biologically governed human capacities. Thus, strict observance of the Islamic religion will reduce the priority a society will place on education for girls in public primary schools, will limit their exposure to other (non-Islamic) cultures, and will relegate them to family

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roles in the private sphere. These restrictions will lower the status of women by reserving access to the public sphere to men. Therefore, an alternative hypothesis can be stated as follows: if men retain greater control over the new wealth created by economic development, then the status of women will not rise and fertility will not fall (Caldwell, 1980). To choose between my research hypothesis and its alternative, I shall compare the two Muslim countries at different levels of economic development.

In this chapter, I will first describe the data sources from Bangladesh and Egypt. Second, the measurement of variables of interest to this study will be explained. Finally, the appropriate statistical techniques for testing the hypotheses will be discussed.

The Data

Data for this study were obtained from the Bangladesh Fertility Survey (BFS)(1976) and the Egyptian Demographic and Health Survey (EDHS)(1988). The Bangladesh Fertility Survey (BFS), conducted in 1975-76 as part of the World Fertility Survey, had the primary objective of providing a reliable estimate of and data on fertility, mortality, and contraceptive use. It was carried out by the Population Control and Family Planning Division of the Health Ministry in Bangladesh.

In the BFS, a three-stage sampling procedure was followed. In the first two stages, urban and rural areas were selected; households were selected in the last stage. The primary sampling units (PSUs) were census circles. Bangladesh was divided into 4,949 census circles (4,241 in rural areas and 708 in urban areas). The census circle is an area determined by the boundaries of the Bangladeshi administrative divisions. As a sampling frame, the census office in Bangladesh provided two lists for urban and rural census circles, along with the population size and number of households in each census circle. 160 PSUs were selected from the 4,241 rural census circles, and 80 PSUs were selected from the 708 urban census circles. The probability that a given PSU would be randomly chosen was proportional to the number of households within it. In urban areas, one PSU consists of a few blocks, but in rural areas it consists of a few villages. Lists of all villages and urban blocks in the selected PSUs, along with the household numbers, were also obtained from the census office. Each village or census block with less than 50 households was added to the closest village or census block so that all units had 50 or more households. These units were used as intermediate sampling units (ISUs). From each PSU, one intermediate sampling unit was sampled with a probability proportional to size.

The ultimate sampling unit was a household which is defined as "a group of persons usually living and eating

together in a structure or dwelling" (Sufian, 1984:34). The ultimate sampling unit (i.e., a household) was sampled with a probability inversely proportional to the size that was used in sampling the PSU and ISU. From the total of 4,626 sampled rural households, 4,437 (95.9 percent) were successfully interviewed. In the urban areas, out of 1,519 households selected, 1,418 were successfully interviewed (93.4 percent).

The BFS sample covered 6,648 ever-married women under the age of 50 in both urban and rural areas. A total of 6,513 respondents were successfully interviewed (5,024 of the eligible 5,123 respondents in rural areas and 1,489 of the eligible 1,525 respondents in urban areas).

Data collection for the BFS occurred during a major rice harvest season (data collection began in December 1975 and ended in March 1976). During this season, men as well as women in rural areas spend long hours working out-of-doors. Failure to achieve a 100 percent response rate in urban Bangladesh may be because of the mobility of people where transportation facilities are available. Other threats to the response rate included the social distance that usually existed between older, illiterate ever-married women and younger, literate, never-married female interviewers. Despite these problems, the overall completion rate was 94.1 percent (.959 X .981 = .931) in

rural areas and 91.2 percent (.934 X .976 = .912) in urban areas.

Several strategies were followed in Bangladesh to increase the response rate to the BFS. For example, publicity about BFS objectives was broadcast in national newspapers and on public radio. In addition, expecting women's unwillingness to respond to male interviewers, a team of female interviewers was trained in order to minimize the non-response rate (Sufian, 1984).

It should be noted that urban women were oversampled in the BFS in order to obtain a larger sample of urban women to facilitate statistical control of a number of social factors that are related to fertility in urban areas (Sufian, 1984). This study was not affected by the oversampling of urban women since urban-rural residence was used as a control variable.

The Egyptian Demographic and Health Survey (EDHS) was conducted in Egypt in 1988 by the National Population Council, with support from the United States Agency for International Development (USAID) and the Institute for Resource Development (IRD). Its main objective was to provide current and reliable information on fertility, mortality, family planning, and maternal and child health measures in rural and urban areas. The EDHS was carried out in 21 of Egypt's 26 governates. Five governates were excluded because disproportionately high resources were

needed to survey the dispersed population in these governates.

Three stages of the EDHS sample design were used. In the EDHS, the primary sampling units (PSUs) were towns in urban areas and villages in rural areas. In the first stage, 228 PSUs were selected (108 towns and 120 villages). Within each governate, the sample of PSUs was systematically selected with probabilities proportional to sizes indicated in the 1986 Egyptian census. A list of all towns and villages grouped by governate was prepared. Any primary unit with less than 270 people, as reported in the 1986 census, was combined with the neighboring unit in the same governate. At the second stage, two segments (i.e., intermediate sampling units) were selected from each PSU, giving a total of 456 segments. In order to select segments, a detailed map for each selected PSU was obtained and divided into equal-sized segments. Each selected segment has well-defined boundaries. During the second stage, a complete listing of all the households living in the selected 456 segments was prepared by a well-trained staff. The third and final stage of the EDHS sampling involved the selection of households (i.e., ultimate sampling units). A systematic sampling procedure was followed to select households using the lists of all households prepared during the second stage. The household is defined as a dwelling which contains all

usual household members and any visitors who were present during the night prior to the interviewer's visit.

A total of 10,528 households were selected from the EDHS sample, of which 661 were ineligible because no person was in the household the night before the interview, the household was vacant, or the dwelling could not be contacted for other reasons. A total of 9,805 households (93.13 percent) were successfully interviewed (5,370 in urban areas and 4,435 in rural areas).

A person eligible for interview was defined as "an ever-married woman between the ages of 15 and 49 years who was present in a sampled household during the night before the household interview" (Sayed et al., 1989). Out of a total sample of 9,095 individuals, 8,911 (98 percent) were successfully interviewed (4,409 in urban areas and 4,502 in rural areas). Thus the overall completion rate was 91 percent (.931 X .98 = .91), the same as for Bangladesh.

As in the BFS, the target sample of the EDHS was divided among the governates in proportion to their size. However, there as oversampling in five governates (Port Said, Suez, Ismailia, Damietta, and Aswan). The reason for oversampling in these disproportionately urbanized governates was to obtain a sufficient household sample to allow for governate-level contraceptive prevalence estimates (Sayed et al., 1989).

The fieldwork for the EDHS began on October 29, 1988 and ended on January 27, 1989. All the field editors and

interviewers were females who were recent university graduates, while the supervisors were well-trained males (Sayed et al., 1989).

In Muslim countries, women's economic status is usually altered by divorce. In addition, it would be insulting to ask a post-married (widowed or divorced) woman the question used in the Bangladesh Fertility Survey to identify a preference for sons over daughters, namely, "Do you prefer your next child to be a boy?" Because widowhood or divorce could be expected to at least halt the pace of childbearing until remarriage, I chose to control the effects of marital disruption on fertility by limiting my study to currently married women in their first marriages. According to these criteria of sample selection, for this study 7,774 women were selected from the total sample of 8,911 in the EDHS and 5,128 currently married women still in their first marriage were chosen from the BFS sample (about 79 percent of the entire BFS sample). These samples are not only large but offer measures of all variables of interest to this study.

Dependent, Independent, and Control Variables

This study has six major variables--one dependent and five independent--and three control variables. The dependent variable is the number of children ever born alive to the respondent. Two independent variables--educational attainment and gainful employment--are used to measure women's economic status. Two other independent

variables--religion and son preference--are used to measure women's gender status. Country of residence is the fifth independent variable. Since the data for this study were obtained from two different samples (EDHS and BFS), every attempt has been made to obtain an identical measurement of the variables.

Dependent Variable

In the EDHS, three questions were used to measure the dependent variable and to obtain information similar to the BFS: (1) "How many sons live with you, and how many daughters live with you?"; (2) "How many sons are alive but do not live with you, and how many daughters are alive but do not live with you?"; and (3) "How many boys have died, and how many girls have died?" The sum of the responses to these questions was used as the total number of children ever born alive to the Egyptian women. This approach would be more likely to discourage underreporting of live births in Egypt.

In the Bangladesh Fertility Survey, the interviewer said: "Now I want to ask you some questions about each of your pregnancies; that is, each live birth, each stillbirth, each miscarriage, and each abortion. If you have had any of these or any children who have died or who live away from home, I would like to know about them." Then the interviewer asked the ever-married women to report in order of occurrence: each of their pregnancies; the name, date of birth, and sex of the child; if the

pregnancy ended in a live birth; survival status of the child (if it was born alive); and its age at death (if it died later after birth). It will be noticed that unlike the Egyptian Survey, the Bangladeshi questionnaire did not pose separate questions about sons who died, daughters who died, sons now living away, and daughters now living away. Thus, I wondered whether a cultural focus on sons would result in underreporting of daughters not now alive or living with the respondent, if she were not prompted by questions specifically on daughters. Selective omission of daughters' births would bias downwardly the total number of children reported as ever born alive to women in Bangladesh and would understate the differences in fertility rates between Bangladesh and Egypt.

One procedure to test the relative underreporting of sons' and daughters' live births is to use the sex ratio of children ever born in both countries. In the BFS, the sex ratio was 106 male births per 100 female births, which appears to be normal (Sufian, 1984). In the EDHS, the sex ratio was 106.5 (i.e., 106 males for every 100 females), which is also a normal sex ratio, since sex ratios of live births vary between 104 and 107 in countries where birth registration systems are complete (Shryock and Siegel, 1976:109). Thus there is no evidence that the sex-selective underreports of live births were more severe in Bangladesh.

Independent Variables

There are five major independent variables in this study. Two independent variables measure a woman's economic status, of which the first is her level of formal education. Both surveys have a very similar question about the respondent's level of education. In the BFS, the question related to educational level was, "Have you ever attended school?" Respondents answering "Yes" were then asked, "What was the highest level of school you attended? - 1) primary incomplete, 2) primary, 3) middle, 4) matric, 5) university." In the EDHS, the educational attainment question was, "Have you attended school in the past or are you currently attending school? - 1) yes, attended in the past, 2) yes, attending currently, 3) never attended." Respondents answering "1" or "2" were then asked, "What was the highest grade which you successfully completed? - 1) primary, 2) preparatory, 3) secondary, 4) upper intermediate, 5) university, 6) more than university."

To promote comparability in measuring the wife's educational level in the two countries, I have collapsed the measure into three categories because only a very small percentage of respondents achieved more than middle school, especially in the case of Bangladesh. These three categories of education are: (0) no formal education; (1) up to completed level of primary schooling; and (2) more than a primary level of education.

The second index of women's economic status is their work since marriage. This variable was measured in the BFS by asking the respondent, "Have you ever worked since you were married?" Respondents answering "Yes" were then asked, "Do/did you work for a member of your family, or on a family farm, or for someone else, or are/were you self-employed? - 1) family member, 2) work on family farm, 3) someone else, 4) self-employed." In the EDHS, the work question was more direct, asking, "Since you were first married, have you ever done any work for cash? - 0) Yes, 1) No."

To obtain a similar measurement of work status from both samples, the four categories in the second question of the BFS work status (work for family member, work on a family farm, work for someone else, self-employed) were recoded as working, scored "0." Those who responded negatively to the first question of work status in the BFS were scored as not working, scored "1."

Women's gender status in this study is measured by two independent variables, one ascribed and one achieved. The ascribed variable is religion, i.e., whether or not a woman is Muslim (0 = yes, 1 = no). The religion question is stated in the BFS as follows: "What is your religion? - 1) Islam, 2) Hindu, 3) Christian, 4) Buddhist, 5) other." The same question was asked in the EDHS but with different categories: "What is your religion? - 1) Muslim, 2) Christian, 3) other." Since the interest of this study

is whether the respondent is Muslim or not, and to make this variable comparable in both surveys, the religion variables was scored 0 = Muslim and 1 = others.

The achieved variable is whether women's preference for sons is strong or weak. From the Egyptian data, son preference is measured as the ratio of the desired number of sons to that of daughters. For the Bangladesh data, the procedure for arriving at strength of son preference is more complicated because there is no direct question about the desired number of male and female children. In Bangladesh, a mother preferring more children was asked whether she wanted her next birth to be a boy. If she said "yes," "1" is added to her number of sons already born alive, and the sum is divided by the number of daughters already born. If she said "no," "1" is added to the number of daughters already born, and the sum is divided into the number of sons already born. If the mother desired no additional children, the sex ratio of her children ever born is computed. This dimension of women's gender status is operationalized in such a way that higher scores mean lower status. The son preference variable in both Egypt and Bangladesh was scored 0 = no son preference (if the desired sex ratio was not greater than unity) and 1 = son preference (if the desired sex ratio was greater than unity).

Finally, because this dissertation is a comparative study, country of residence is used as the fifth predictor

variable. The survey data are pooled and each female respondent is scored by country (0 = Bangladesh, 1 = Egypt). The direction of this score should be inverse to fertility.

Control Variables

Testing the proposed negative effect of women's status on fertility is the basic objective of this study. Most of the literature on fertility in Egypt and Bangladesh reports that women's age and rural residence are positively related to their number of children ever born, while their age at first marriage is negatively related. Thus it is necessary to hold constant the effects on fertility of these factors that might confound the associations hypothesized between the independent variables and the dependent one. Therefore, three control variables are used in this study: women's age at interview, women's age at first marriage, and women's residence.

Women's age at interview was measured similarly in both the BFS and the EDHS. In the BFS the question of respondent's age was phrased as, "How old are you?" In the EDHS, the question was asked, "How old were you at your last birthday?" The responses were recorded in completed years of life.

Measurement of women's age at first marriage in the Bangladesh data was asked by a direct question, "In what month and year were you and your husband married? How old

were you then?" In the Egyptian data, age at first marriage was measured by two questions: "In what month and year were you born? In what month and year did you first enter into a marriage contract?" The Egyptian women's age at first marriage was computed by subtracting the year of birth from the year of first marriage.

It should be noted that in both Bangladesh and Egypt, the age at first marriage is not necessarily the same age at which the bride goes to live with the groom. This is because most marriages in both countries are arranged by the parents of the bride and groom, and the formal contracts may be drawn while both are still minor children. The marriage of little girls happens more often in Bangladesh. Forty-seven percent of the women in the BFS reported being married before age 13, while only 4 percent of the women in the EDHS reported being married at that age. While age at first marriage cannot accurately indicate the age at which the risk of pregnancy began, it does nonetheless suggest inversely the status that a particular woman occupied in her family of origin and thus should be inversely related to fertility.

Finally, women's place of residence was similarly measured in both surveys by scoring urban = 0 and rural = 1, according to both the Egyptian and Bangladeshi administrative definitions of urban-rural residence.

Statistical Techniques

Tests of the first two hypotheses require a multivariate statistical technique because each independent variable has been operationalized in two ways and because three control variables have been identified. For this reason, a multiple regression analysis was performed. The basic assumptions of regression analysis are:

1 - the samples are randomly selected from the population of interest;

2 - y is conceptually interval-scaled;

3 - y is a linear function of the independent variable x_i;

4 - with each population j, the distribution of y about x_{ij} is normal;

5 - within each population j, the variances σ^2_{ij} are equal;

6 - the error terms e_{ij} are independent and normally distributed within each group (Johnson, 1977).

The statistical equations of Hypotheses 1 and 2 are:

H_1: $y_i = a + B_1x_{i1} + B_2x_{i2} + B_3x_{i3} + B_4x_{i4} + B_5x_{i5} + e_i$, where

y_i = children ever born alive,

a = the intercept,

B_1, B_2, B_3, B_4, B_5 = the unstandardized regression coefficients,

x_{i1} = level of education,

x_{i2} = gainful employment,

x_{i3} = age at first marriage

x_{i4} = age at interview

x_{i5} = urban-rural residence,

e_i = the error term.

H_2: $y_i = a + B_1 x_{i1} + B_2 x_{i2} + B_3 x_{i3} + B_4 x_{i4} + B_5 x_{i5} + e_i$, where

y_i = children ever born alive,

a = the intercept,

B_1, B_2, B_3, B_4, B_5 = the unstandardized regression coefficients,

x_{i1} = religion,

x_{i2} = son preference,

x_{i3} = age at first marriage

x_{i4} = age at interview

x_{i5} = urban-rural residence,

e_i = the error term.

In order to test Hypotheses 3, 4 and 5 to examine the effect of the independent variables on the dependent variable while controlling the effect of other variables, multivariate analysis of covariance (MANCOVA) is required. It has been stated that, "If one or more variables are collected to statistically control for sources of variation with multiple criterion variables, then multivariate analysis of covariance (MANCOVA) is the appropriate method of analysis" (Bray and Maxwell, 1985).

Moreover, Hypothesis 3 expects a statistical interaction between women's economic status (educational attainment and gainful employment) and women's gender status (religion and son preference). Hypothesis 4 ventures a statistical interaction between women's economic status and country of residence, while Hypothesis 5 anticipates a statistical interaction between women's gender status and country of residence. As such, a multivariate technique was needed to test for interactive relationships between the independent variables while holding constant the effect of the control variables (women's age at interview, women's age at first marriage, and urban-rural residence). These two important requirements led to the choice of multivariate analysis of covariance (MANCOVA) as appropriate for testing Hypotheses 3, 4, and 5.

The structural equations for Hypotheses 3, 4, and 5 are as follows:

$$H_3: y_i = u + B_{x1}(x_1 - u_{x1}) + B_{x2}(x_2 - u_{x2}) +$$
$$B_{x3}(x_3 - u_{x3}) + E_i + W_j + R_k + S_L +$$
$$(ER)_{ik} + (WR)_{jk} + (ES)_{iL} + (WS)_{jL}, \text{ where}$$

y_i = children ever born alive,

B_1, B_2, B_3 = the unstandardized regression coefficients,

x_{i1} = the first covariate, age at interview,

x_{i2} = the second covariate, age at first marriage,

x_{i3} = the third covariate, urban-rural residence,

E_i = level of education,

W_j = gainful employment,

R_k = religion,

S_L = son preference,

ER_{ik} = interaction term between level of education and religion,

WR_{jk} = interaction term between work and religion

ES_{iL} = the interaction term between level of education and son preference,

WS_{jL} = the interaction term between work and son preference,

H_4: $y_i = u + B_{x1}(x_1 - u_{x1}) + B_{x2}(x_2 - u_{x2})$
$+ B_{x3}(x_3 - u_{x3}) + E_i + W_j + C_m + (EC)_{im}$
$+ (WC)_{jm}$, where

y_i = children ever born alive,

B_1, B_2, B_3 = the unstandardized regression coefficients,

x_{i1} = the first covariate, age at interview,

x_{i2} = the second covariate, age at first marriage,

x_{i3} = the third covariate, urban-rural residence,

E_i = educational attainment,

W_j = work for cash,

C_m = country of residence,

EC_{im} = interaction term between level of education and country of residence,

WC_{jm} = interaction term between work for cash and country of residence.

H_5: $y_i = u + B_{x1}(x_1 - u_{x1}) + B_{x2}(x_2 - u_{x2})$
$+ B_{x3}(x_3 - u_{x3}) + R_k + S_L + C_m + (RC)_{km}$
$+ (SC)_{Lm}$, where

y_i = children ever born alive,

B_1, B_2, B_3 = the unstandardized regression coefficients,

x_{i1} = the first covariate, age at interview,

x_{i2} = the second covariate, age at first marriage,

x_{i3} = the third covariate, urban-rural residence,

R_k = religion,

S_L = son preference,

C_m = country of residence,

RC_{km} = interaction term between religion and country of residence,

SC_{Lm} = interaction term between son preference and country of residence.

CHAPTER IV

DATA ANALYSIS

The aim of this research is to investigate the
influence of women's status on fertility.   In Chapter II,
I argued that the advance of socioeconomic development
should stimulate a higher level of women's status, which I
hypothesized to depress fertility.   In Chapter III, I
described the national surveys of two Muslim cultures at
different levels of economic development.   This chapter
presents the findings based on a total of 12,902 currently
married women respondents, still in their first marriage
(N = 7,774 cases from Egypt and 5,128 from Bangladesh).
Below, I first describe the differences between Egypt and
Bangladesh on the levels of the independent, dependent,
and control variables of my five hypotheses.   Second, some
important cross-tabulations are presented.   Finally,
multiple regression analysis and multiple analysis of
covariance are used to test the hypotheses established in
Chapter II.

Univariate Comparisons Between Egypt and Bangladesh

Table 2 shows that the majority of the respondents in
Bangladesh lived in rural areas (76.8 percent), whereas in

Table 2--Descriptive statistics for selected variables in Egypt and Bangladesh.

	Egypt		Bangladesh	
Variable	Frequency	Percent	Frequency	Percent
Residence				
Urban	3902	50.2	1191	23.2
Rural	3872	49.8	3937	76.8
Total	7774	100.0	5128	100.0
Religion				
Muslim	7236	93.1	4182	81.6
Others	535	6.9	944	18.4
Total	7771	100.0	5126	100.0
Education				
No school	3720	47.8	3591	70.3
Through primary	2150	27.7	1061	20.8
More than primary	1904	24.5	455	8.9
Total	7774	100.0	5107	100.0
Work status				
Working for cash	1190	15.3	488	9.5
Not working	6581	84.7	4640	90.5
Total	7771	100.0	5128	100.0
Son preference				
Yes	1572	20.2	2116	41.3
No	6199	79.8	3012	58.7
Total	7771	100.0	5128	100.0
Variable	Mean	Std.Dev.	Mean	Std.Dev.
Age at interview	31.834	8.409	27.137	9.372
Age at first marriage	18.911	4.139	12.848	2.638
Children ever born	3.975	2.847	3.982	3.117
Living children	3.295	2.190	3.040	2.395
Living sons	1.707	1.434	1.565	1.529
Living daughters	1.588	1.401	1.475	1.409

Egypt the distribution between urban and rural areas was nearly equal (50.2 and 49.8 percent, respectively) because of the sampling procedures. The higher level of urbanism did not imply greater religious diversity in Egypt, where the percentage of Muslim respondents was higher than in Bangladesh (93.1 and 81.6 percent, respectively).

Table 2 also shows that Egyptian women were more educated and more likely to work for cash than Bangladeshi women. For the Bangladeshi women, 29.7 percent had some education and 8.9 percent had more than a primary education. For the Egyptian women, 52.2 percent of the currently married women had some schooling; 24.5 percent had more than primary schooling. Only 9.5 percent of the Bangladeshi women worked for cash compared to 15.3 percent of the Egyptian women. These relationships are consistent with my thesis that the economic status of married women of childbearing age is greater in Egypt than in Bangladesh.

Mason (1985) pointed out that more highly educated females may have a greater voice in the planning of their marriages in cultures where marriages are arranged and where their families may be expected to raise larger dowries. Perhaps for this reason the mean age at first marriage was much later in Egypt (18.911 years) than in Bangladesh (12.848 years). In addition, the higher mean age of respondents at time of interview in Egypt (31.834 years) compared to respondents in Bangladesh (27.137

years) may reflect the shorter life expectancy in Bangladesh, a fact which occurs partly from an unusually high rate of maternal mortality during or shortly after childbirth. Mason (1985) noted that maternal mortality in Bangladesh often results from inadequate nutrition during pregnancy. But this in itself is a product of the low status of women in Bangladesh, where men eat meals first and women get the leftovers.

Another indicator of women's much lower gender status in Bangladesh compared to Egypt is in the preference for the births of sons instead of daughters. Indeed, this preference was expressed nearly twice as often by the Bangladeshi respondents than by the Egyptian respondents (41.3 percent and 20.2 percent, respectively). However, wives' preferences may have little impact on actual fertility if husbands dominate fertility decision-making.

Surprisingly, the fertility rate was almost the same in Egypt and Bangladesh. The average number of children ever born was 3.97 in Egypt and 3.98 in Bangladesh. However, this apparent similarity may be distorted by a lack of control for the age of the respondent. The Bangladeshi women were, on average, younger than the Egyptian women and would then be expected to average fewer, not similar, numbers of children ever born. In fact, within all but one age group, Bangladeshi women had on average a higher number of children ever born than did Egyptian women (see Table 3). The exception occurs only

Table 3--Average number of children ever born in Egypt and
        Bangladesh in each age group as a result of the
        analysis of variance.

Age group	Average number of children ever born	
	Egypt	Bangladesh
less than 15	.291	.213
16-19	.687	1.012
20-24	1.694	2.502
25-29	2.971	4.412
30-34	4.046	5.928
35 or more	5.858	7.423

in the first age category, where the number of children is
almost the same, probably due to the small number of
Egyptian respondents in that category. However, the
average numbers of living children, living sons, and
living daughters were somewhat higher in Egypt than in
Bangladesh (3.29, 1.7, and 1.58; and 3.04, 1.56, and 1.47,
respectively), perhaps because of the longer life
expectancy at birth in Egypt.

Table 4 shows the relationship between educational
attainment and number of children ever born to currently
married women in Egypt and Bangladesh. It is clear from
the table that the higher the level of education, the
lower the fertility rate for both countries. For example,
only 18.1 percent of Egyptian women and 24.6 percent of
Bangladeshi women who had more than a primary education
had 4-to-8 live births. However, the educational factor

Table 4 -Educational level of currently married women in
their first marriage by children ever born in
Egypt and Bangladesh.

| Level of Education | Number of children ever born | | | | | | | |
| | Egypt | | | | Bangladesh | | | |
	0-3	4-8	9+	Total	0-3	4-8	9+	Total
No school	1426	1837	457	3720	1661	1551	379	3591
	38.3%	49.4	12.3	100.0%	46.3%	43.2	10.6	100.1%
Through primary	940	1071	139	2150	562	403	96	1061
	43.7%	49.8	6.5	100.0%	53.0%	38.0	9.0	100.0%
More than primary	1546	345	13	1904	328	112	15	455
	81.2%	18.1	0.7	100.0%	72.1%	24.6	3.3	100.0%
Total	3912	3253	609	7774	2551	2066	490	5107
	50.3%	41.8	7.8	100.0%	50.0%	40.5	9.6	100.0%

Note: Percentages may not add to 100.0% due to rounding
error.

appears to be stronger in Egypt than in Bangladesh when
respondents had more than a primary level of education.

Table 5 presents a cross-tabulation of currently
married women who worked for cash since they entered into
the marriage union by the number of children ever born.
The table indicates that working for cash, like education,
depresses fertility in both Egypt and Bangladesh.
However, Egyptian women who worked for cash show lower
fertility than their counterparts in Bangladesh. For
example, of those who had worked for cash, only 25.8
percent of Egyptian women had 4-8 live births, compared to
51.2 percent of the Bangladeshi women. However, the World
Fertility Survey showed that the percentage of
ever-married women aged 15-49 whose current or most recent

Table 5--Currently married women who worked for cash
after marriage, distributed by number of children
ever born.

| Work for cash | Number of children ever born | | | | | | | |
| | Egypt | | | | Bangladesh | | | |
	0-3	4-8	9+	Total	0-3	4-8	9+	Total
Yes	843	307	40	1190	192	250	46	488
	70.8%	25.8	3.4	100.0%	39.3%	51.2	9.4	99.9%
No	3067	2945	569	6581	2370	1825	445	4640
	46.6%	44.8	8.6	100.0%	51.1%	39.3	9.6	100.0%
Total	3910	3252	609	7771	2562	2075	491	5128
	50.3%	41.8	7.8	99.9%	50.0%	40.5	9.6	100.1%

Note: Percentages may not add to 100.0% due to rounding
errors.

job since marriage was clerical or professional was much
higher in Egypt than in Bangladesh (25.3 percent and 3.6
percent, respectively; United Nations, 1987:264). As
such, a higher proportion of Egyptian women worked away
from home for nonrelatives and likely faced incompati-
bilities between their roles as mothers and workers.

In Table 6, the relationship between son preference
and children ever born is shown. Although the majority of
women in both countries had no son preference, this
majority was larger in Egypt (79.8 percent) than in
Bangladesh (58.7 percent), a fact consistent with our
argument that women's gender status improves with economic
development. In both countries, women preferring sons
were more likely to have borne four or more children than
were women not preferring sons.

Table 6--Son preference, distributed by number of children ever born, in Egypt and Bangladesh.

Son Preference	Number of children ever born							
	Egypt				Bangladesh			
	0-3	4-8	9+	Total	0-3	4-8	9+	Total
Yes	747 47.5%	697 44.3	128 8.1	1572 99.9%	995 47.0%	898 42.4	223 10.5	2116 99.9%
No	3162 51.0%	2556 41.2	481 7.8	6199 100.0%	1567 52.0%	1177 39.1	268 8.9	3012 100.0%
Total	3909 50.3%	3253 41.9	609 7.8	7771 100.0%	2562 50.0%	2075 40.5	491 9.6	5128 100.1%

Note: Percentages may not add to 100% due to rounding error.

Testing the Hypotheses

The remaining section of this chapter is devoted to testing the hypotheses stated in Chapter II. Two statistical techniques are used to examine the hypotheses under investigation. The first two hypotheses are tested by using multiple regression analysis, and the remaining three hypotheses are tested using multivariate analysis of covariance.

Hypothesis 1: The first hypothesis stated that wives who have greater economic status (i.e., higher levels of education or gainful employment) have fewer children ever born alive. I first regressed the number of children ever born to Egyptian respondents upon their education level, gainful employment, and the three control variables (their age at first marriage and their age and type of residence

at interview; see Table 7). Most of the variance in the dependent variable is explained by the wife's age (beta = 0.679) and age at first marriage (beta = -0.378). While the beta coefficient for wife's educational attainment is smaller (-0.098), it is statistically significant at the 0.001 level and is similar in absolute value to the beta weight for urban-rural residence (beta = 0.126). All of these predictor variables together determined 60.04 percent of the variance in number of children ever born. Gainful employment in Egypt makes no difference in the number of children ever born, as shown in Table 7. However, this variable has a small effect on the number of children ever born when tested separately from educational attainment. The reason it loses its significance is probably due to the high correlation between gainful employment and education (r = .433). These results for Egypt partially support Hypothesis 1.

Hypothesis 1 was also tested for Bangladesh (Table 8). The results in Table 8 are somewhat similar to the regression analysis for Egypt in Table 7 except that education is not significant and employment is statistically significant at the 0.05 level. Apparently, higher education in Bangladesh was associated with a much younger age in Bangladesh than Egypt (r = -0.14 and -0.07, respectively); thus, when the latter variable was present in the multiple regression, it absorbed all the inverse effect of education upon the number of children ever born

Table 7--Results of regression of the number of children
         ever born on educational attainment and gainful
         employment, controlling for age, age at first
         marriage, and rural-urban residence in Egypt.

Independent Variable	B	Beta	T	Sig. T
Age at first marriage	-.248	-.378	-40.65	.000
Age at interview	.223	.679	80.98	.000

Urban-rural residence
  0 = urban
  1 = rural
	.691	.126	14.18	.000

Gainful employment
  0 = work for cash
  1 = do not work
	-.041	-.006	-.63	.530

Educational attainment
  0 = no education
  1 = up to primary
  2 = more than primary
	-.318	-.098	-9.90	.000

Intercept	1.367		8.08	.000
Coefficient of determination, R^2 = 0.6004*				

*significant at the 0.001 level

to Bangladeshi women. In fact, much of the variance in
the number of children ever born was explained by age at
first marriage and age at interview (beta = -0.134 and
0.779, respectively). However, we cannot completely
reject Hypothesis 1 for Bangladesh since gainful
employment in Bangladesh explains some of the variance in
children ever born.

In addition, the urban-rural residence is not
statistically significant (see Table 8) in Bangladesh, but
it was very significant in Egypt (see Table 7). It is
generally expected that fertility is higher in rural than

Table 8--Results of regression of the number of children
ever born on educational attainment and gainful
employment, controlling for age, age at first
marriage, and rural-urban residence in
Bangladesh.

Independent Variable	B	Beta	T	Sig. T
Age at first marriage	-.158	-.134	-15.31	.000
Age at interview	.259	.779	91.73	.000
Urban-rural residence 0 = urban 1 = rural	-.112	-.015	-1.75	.080
Gainful employment 0 = work for cash 1 = do not work	.180	.017	2.02	.043
Educational attainment 0 = no education 1 = up to primary 2 = more than primary	-.069	-.014	-1.60	.109
Intercept	-1.066		-5.56	.000
Coefficient of determination, R^2 = 0.642*				

*significant at the 0.001 level

in urban areas. However, women in urban Bangladesh show
similar fertility rates to those in rural areas. This
similarity might be caused by the large number of urban
women who migrated from rural areas in Bangladesh (65.24
percent of women who lived in urban areas at the time of
the survey were originally from rural areas), but this was
not the case in Egypt, where 15 percent of the urbanites
had originated in rural areas. Those rural-to-urban women
migrants probably carried with them the strong values for
children, since children are an asset to those who depend
economically on agriculture.

Hypothesis 2: The second hypothesis stated that wives who have greater gender status (i.e., a non-Muslim religion or a weak preference for sons) have fewer children ever born alive. Two models have been used in order to test Hypothesis 2: one for the Egyptian sample and one for the Bangladeshi sample.

Table 9 illustrates the results of regression analysis of number of children ever born on religion and son preference in Egypt, controlling for age, age at first marriage, and urban-rural residence. It is clear from the table that although the beta weights for both son preference and religion are small (0.019 and -0.024, respectively), they are statistically significant at the 0.05 and 0.01 levels, respectively. The regression analysis of Hypothesis 2 for Egypt indicates that Muslim women in Egypt have a higher number of children ever born than do non-Muslim women. Also, Egyptian women who preferred sons had higher fertility than those with no son preference. This result supports Hypothesis 2, that Egyptian women with greater gender status have fewer children ever born.

Table 10 shows the regression analysis of number of children ever born on religion and son preference, controlling for age, age at first marriage, and urban-rural residence in Bangladesh. As reported for Egypt, son preference and religion play an important role in predicting the number of children ever born. The beta

Table 9--Results of regression of the number of children
ever born on religion and son preference,
controlling for age, age at first marriage, and
rural-urban residence in Egypt.

Independent Variable	B	Beta	T	Sig. T
Age at first marriage	-.268	-.407	-47.94	.000
Age at interview	.229	.697	84.63	.000
Urban-rural residence 0 = urban 1 = rural	.832	.152	17.76	.000
Son preference 0 = no son preference 1 = son preference	.130	.019	2.34	.019
Religion 0 = Muslim 1 = other	-.282	-.024	-2.95	.003
Intercept	1.171		8.39	.000
Coefficient of determination, R^2 = 0.595*				

*significant at the 0.001 level

weight for son preference is statistically significant at
the 0.05 level, and the beta weight for religion is
significant at the 0.001 level. This means that Muslim
women in Bangladesh had higher fertility than non-Muslim
women, and those with son preference had a higher number
of children ever born. As in the case for Egypt, much of
the variance in the dependent variable (children ever
born) is explained by the wife's age at interview and age
at first marriage. However, Hypothesis 2 should not be
rejected. Hence, the greater the gender status of women
in both Egypt and Bangladesh, the fewer the number of
children ever born alive.

Table 10--Results of regression of the number of children
ever born on religion and son preference,
controlling for age, age at first marriage, and
rural-urban residence in Bangladesh.

Independent Variable	B	Beta	T	Sig. T
Age at first marriage	-.160	-.135	-15.94	.000
Age at interview	.259	.782	93.34	.000
Urban-rural residence 0 = urban 1 = rural	-.075	-.010	-1.20	.229
Son preference 0 = no son preference 1 = son preference	.125	.019	2.36	.018
Religion 0 = Muslim 1 = other	-.279	-.035	-4.15	.000
Intercept	-.960		-5.62	.000
Coefficient of determination, $R^2 = 0.644*$				

*significant at the 0.001 level

Hypothesis 3:   The third hypothesis stated that the
relationship posited in Hypothesis 1 will be much weaker
in Egypt for Muslims than for non-Muslims and for women
who prefer many sons than for women who prefer few sons,
but this relationship should also be true in Bangladesh.

By using multivariate analysis of covariance
(MANOCOVA), we can test Hypothesis 3 by means of the
statistical significance of four interaction terms:
education by religion, education by son preference, work
by religion, and work by son preference.   In addition, the
covariates (urban-rural residence, age at interview, and

age at first marriage) are included in the model (Table 11). The only one of the interaction effects to attain statistical significance is work by religion (F = 18.97, significant at the 0.001 level). This interaction indicates that the effect of women's employment on number of children ever born depends on religious affiliation in both Egypt and Bangladesh.

In order to examine the significant interaction term (work by religion) shown in Table 11, we disaggregated the variance in fertility jointly explained by work status and religion into three orthogonal vectors. Although Table 12 shows statistical significance for all three contrasts, the differences are clear when we look at the optimal Scheffe contrast coefficient and adjusted means for the contrasts. The coefficient for the first contrast (i.e., working women vs. non-working women regardless of religion) is -0.748 and is significant at the 0.001 level. Working women in both countries had fewer children ever born alive. The coefficient for second contrast (Muslim women who work versus non-Muslim women who work) was 0.7733 and it is statistically significant at the 0.001 level. This indicates that Muslim women who worked for cash had more children than non-Muslim women who also worked for cash in both Egypt and Bangladesh. Finally, the coefficient for Muslim women and non-Muslim women who did not work was 0.1839; it is significant at the 0.002 level. In other words, among women who did not work for

Table 11—Summary table for MANOCOVA of the number of children ever
born on educational attainment, gainful employment,
religion, son preference, and country with urban-rural
residence, age, and age at first marriage as covariates and
the interaction terms.

Source of Variation	SS	DF	MS	F	Sig. of F
Within cells	3684 9.55	11309	3.26		
Regression	50990.80	3	16996.93	5216.30	.000
Constant	32.65	1	32.65	10.02	.002
Education 0 = no education 1 = up to primary 2 = more than primary	40.55	2	20.28	6.22	.002
Religion 0 = Muslim 1 = other	129.46	1	129.46	39.73	.000
Employment 0 = work for cash 1 = do not work	48.63	1	48.63	14.92	.000
Son preference 0 = no son preference 1 = son preference	17.40	1	17.40	5.34	.021
Country 0 = Bangladesh 1 = Egypt	2.08	1	2.08	.64	.424
Education by religion	4.31	2	2.15	.66	.516
Work by religion	61.80	1	61.80	18.97	.000
Education by country	186.34	2	93.17	28.59	.000
Work by country	1.95	1	1.95	.60	.439
Religion by country	.04	1	.04	.01	.909
Son preference by country	.00	1	.00	.00	.992
Son preference by education	2.43	2	1.22	.37	.688
Son preference by employment	.15	1	.15	.05	.829

Table 11, continued.

Controlling for:

Covariate	B	Beta	Std. Error	t-value	Sig. of t
Urban-rural residence	.39715	.06195	.040	10.007	.000
Age	.23965	.74190	.002	120.449	.000
Age at first marriage	-.22472	-.25346	.005	-41.199	.000

Table 12--Interaction between religion and gainful employment,
controlling for other variables.

Source of Variation	SS	DF	MS	F	Sig. of F
Within cells	36845.55	11309	3.26		
Regression	50990.80	3	16996.93	5216.30	.000
Contrast 1	79.31	1	79.31	24.34	.000
Contrast 2	109.55	1	109.55	33.62	.000
Contrast 3	31.13	1	31.13	9.55	.002
Education	291.41	2	145.71	44.72	.000
Son preference	40.37	1	40.37	12.39	.000
Country	125.56	1	125.56	38.53	.000

Contrast 1 = working vs. non-working women, regardless of religion

Contrast 2 = Muslim women vs. non-Muslim women who work for cash

Contrast 3 = Muslim women vs. non-Muslim women who did not work

cash, Muslim women had more children ever born than non-Muslim women; but the difference was smaller than that between Muslim and non-Muslim women who worked for cash.

To illustrate this work-religion interaction more clearly, Table 13 shows the adjusted means for religion and work. The highest number of children ever born was for Muslim women who did not work for cash (x_3 = 3.876), and the lowest number of children ever born was for non-Muslim women who did work for cash (x_2 = 3.023). Graphing these adjusted means (Figure 1) illustrates that the interaction between gainful employment and religion arises because work for gain is more sharply antinatalist for non-Muslim than Muslim wives. This relationship may signify that their higher fertility propels Muslim women more often to work from need or that Muslim women less often retain control over their wages. If either possibility were true, then Muslim women would have fewer work-induced incentives to keep their fertility in check. These results provide partial support for Hypothesis 3.

Hypothesis 4: The fourth hypothesis stated that the relationship proposed in Hypothesis 1 will be stronger in Egypt, where economic development has allowed a more pervasive rise in women's economic status. The above hypothesis anticipates interactions between women's education, employment and country. In other words, the effect of educational attainment or working for cash on

Table 13--Combined adjusted* means of children ever born
for the interaction of work and religion, in
Egypt and Bangladesh.

Religion	Work Status	
	Working for cash	Not working for cash
Muslim	x_1 = 3.7965	x_3 = 3.876
Others	x_2 = 3.023	x_4 = 3.692

*These means have been adjusted for age at marriage, age
at interview, and urban-rural residence.
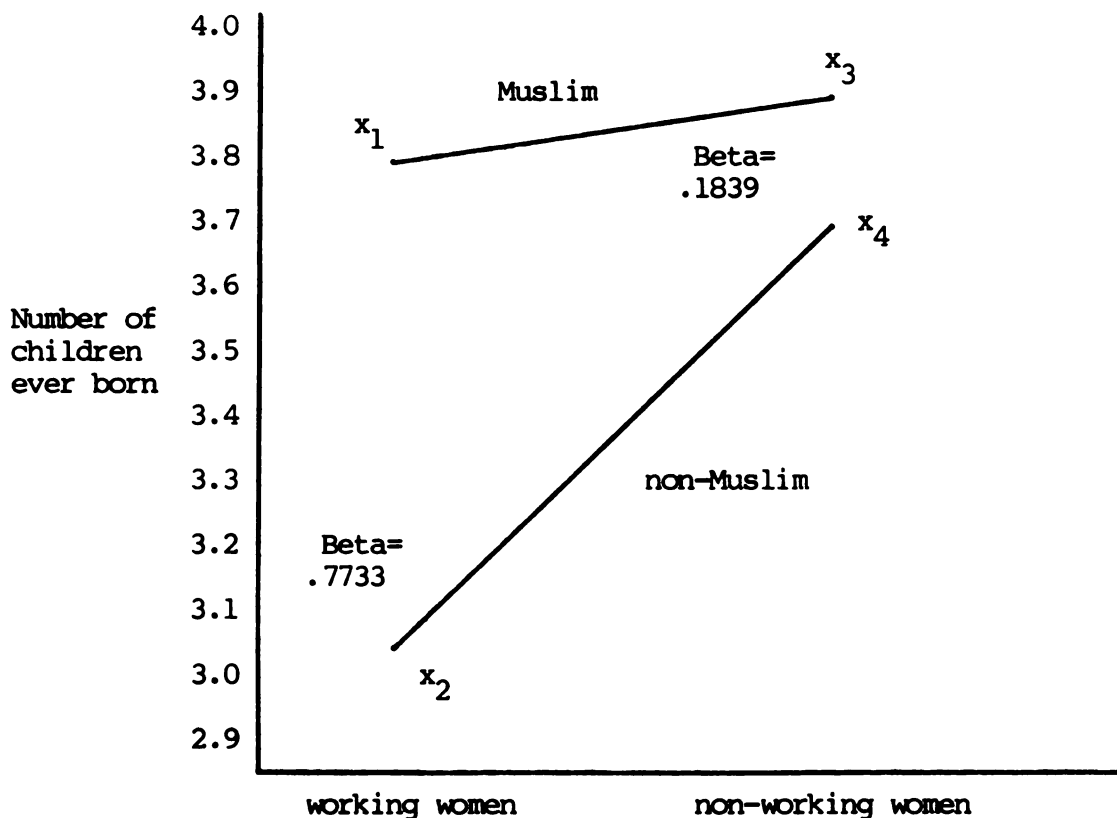
Figure 1--Interaction between work and religion.

the number of children ever born should depend on country of origin.

The multivariate analysis of covariance shown in Table 11 enables us to test the interaction terms stated in Hypothesis 4 (education-by-country, work-by-country). Table 11 shows that the work by country interaction term is not statistically significant. This indicates that the depressant effect of women's work for cash on fertility is about equally strong in Egypt and Bangladesh. As stated earlier, Islam is dominant in both Egypt and Bangladesh. the Islamic religion places many restrictions on women's work outside the home. For example, Muslim women must be veiled when they are outside the home and they cannot work together with men. These restrictions mean that a majority of gainfully employed women in both Egypt and Bangladesh work in sex-segregated occupational structures: for examples, women trade with other women; women teachers instruct female students; and women physicians deliver health care to female patients. These realities may account for the similar effect of women's work on fertility in Egypt and Bangladesh.

On the other hand, the strength of the depressant effect of women's education on their number of children ever born differed between Egypt and Bangladesh (F-statistic for education by country interaction = 28.59, which is significant at the 0.001 level). To understand the form of this statistical interaction, we computed an

analysis of covariance in which the covariates were women's age at interview, urban-rural residence, and age at first marriage. The main effects were work, religion, son preference, and five orthogonally coded vectors which disaggregated the variance in fertility jointly explained by women's education and country (Table 14).

Table 14 shows that all orthogonal contrasts were statistically significant except contrast 4 (Egyptian women versus Bangladeshi women, with up to a primary level of schooling completed). Table 15 shows the coefficients for the contrasts. Contrast 3 (women in Bangladesh with no education versus the same group in Egypt) and contrast 5 (Bangladeshi women with more than a primary level of schooling versus the same group in Egypt) appeared to be the most important elements in the interaction term between education and country factors. In other words, Egyptian women with no education had a higher adjusted mean number of children ever born (4.149) than the same group in Bangladesh (3.625); but Bangladeshi women with more than a primary level of schooling had a higher adjusted mean (3.656) than the same group in Egypt (3.367)(see Table 16). The graph of these adjusted means (Figure 2) illustrates that education more sharply depresses fertility in Egypt than in Bangladesh, as was posited in Hypothesis 4.

The adjusted mean for the education by country interaction term provides additional clarification of the

Table 14--Contrast procedure in MANOCOVA of the effect of level of
education and country of origin on children ever born, in
Egypt and Bangladesh, controlling for other variables.

Source of Variation	SS	DF	MS	F	Sig. of F
Within cells	36849.55	11309	3.26		
Regression	50990.80	3	16996.93	5216.30	.000
Contrast 1	12.20	1	12.20	3.74	.053
Contrast 2	112.80	1	112.80	34.62	.000
Contrast 3	288.61	1	288.61	88.57	.000
Contrast 4	3.95	1	3.95	1.21	.271
Contrast 5	25.73	1	25.73	7.90	.005
Work	5.56	2	5.56	1.71	.192
Son preference	39.33	1	39.33	12.07	.001
Religion	79.72	1	79.72	24.46	.000

Contrast 1 = no education vs. up to completed primary level

Contrast 2 = no education vs. more than a primary education level

Contrast 3 = No education: Bangladesh vs. Egypt

Contrast 4 = Up to completed primary: Bangladesh vs. Egypt

Contrast 5 = More than primary level of education: Bangladesh vs. Egypt

Table 15--Coefficients for the contrasts in Table 14.

Contrast	Coefficient	T	Sig. T
Contrast 1	0.1653	1.935	0.053
Contrast 2	1.335	5.883	0.000
Contrast 3	-.524	-9.411	0.000
Contrast 4	-.085	-1.101	0.271
Contrast 5	.289	2.809	0.005
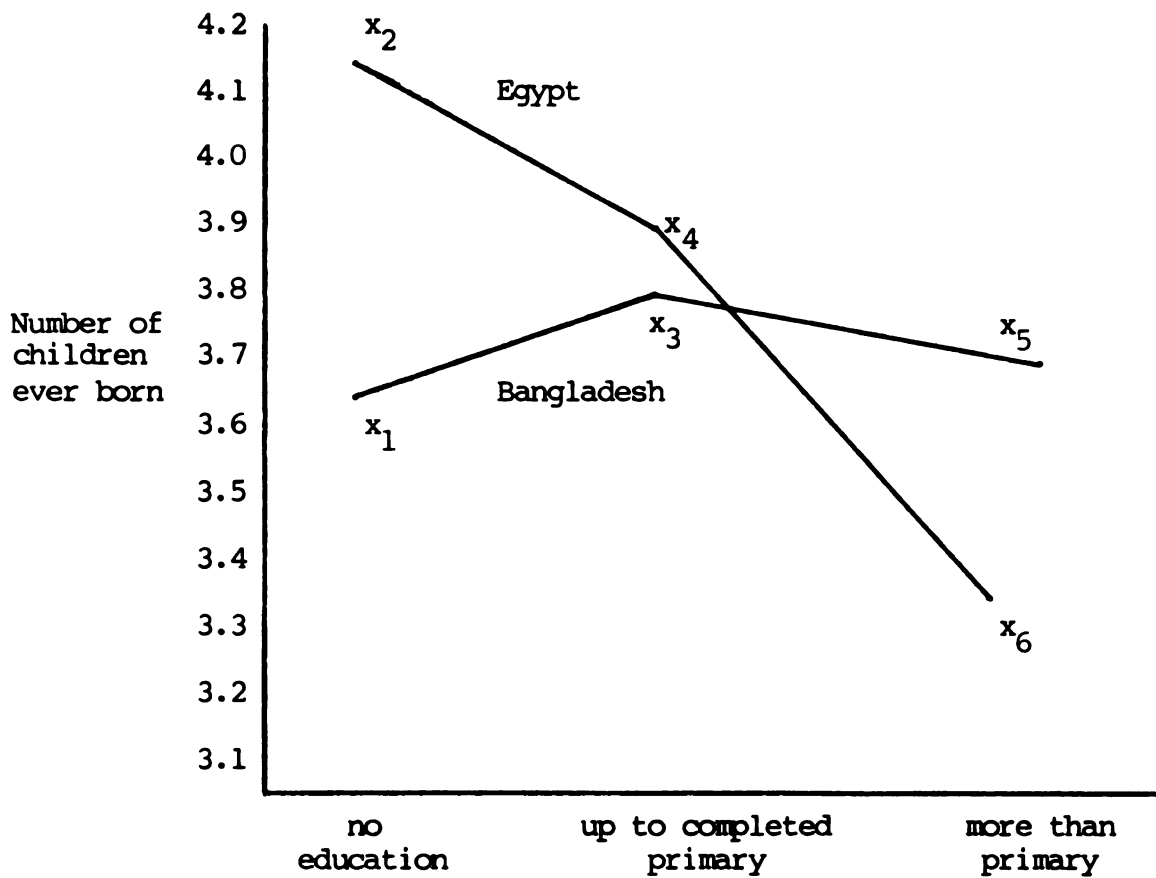
Figure 2--Interaction between education and country.

Table 16--Adjusted* means for the effect of education on
children ever born in Egypt and Bangladesh.

Education level	Country	
	Bangladesh	Egypt
No education	x_1 = 3.625	x_2 = 4.149
Up to completed primary	x_3 = 3.762	x_4 = 3.847
More than primary	x_5 = 3.656	x_6 = 3.367

*These means have been adjusted for age at marriage, age
at interview, and urban-rural residence.

effect of education on fertility, which depends on the country of origin.

Table 16 illustrates how the effect of educational attainment on children ever born depends on country of origin. The table shows that Egyptian women with no education have higher fertility than Bangladeshi women. The difference in number of children ever born, on average, to Bangladeshi and Egyptian women with more than a primary level of education (3.656 and 3.367, respectively), is statistically significant at the 0.01 level. This indicates that Egyptian women with more than a primary level of schooling have lower fertility than the same group in Bangladesh. In this case antinatalist conditions in Egypt (I assert that these conditions are created by economic development) combine with the effects of having secondary or tertiary schooling to reinforce the antinatalist consequences of the latter. Figure 2 shows the interaction between educational attainment and country of origin.

An interpretation of this interaction term can be ventured. Egyptian women with no education probably have more children ever born than the Bangladeshi women because fertility usually rises in the early stages of economic development due to improved health conditions which reduce subfecundity and intrauterine mortality. Although Egyptian women with some primary education appear to have higher fertility than the same group in Bangladesh, the

difference is very small and not statistically significant. On the other hand, Egyptian women with more than a primary level of education have lower fertility than their counterparts in Bangladesh probably because this level of education in Egypt is more apt to lead women into employment as clerks or professionals (United Nations, 1987:264). Education beyond the primary level does not have the same payoff in Bangladesh, since its lower level of economic development means less opportunity for both men and women to work in the modern sector.

Hypothesis 5: The final hypothesis stated that a non-Muslim religion or a weak preference for sons would more strongly depress fertility in Egypt, where economic development has lessened the dependency of women upon men. This hypothesis assumes two interactions: one between the country variable and religion, and one between country and son preference. When the design of multivariate analysis of covariance was created (see Table 11) to test for interaction in the above relationship, no such interactions were found. Although Table 11 shows a significant effect of both religion and son preference on the number of children ever born alive, the strengths of these effects were about the same for the two Muslim countries. These findings refute Hypothesis 5.

CHAPTER V

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Egypt and Bangladesh have several demographic similarities. The majority of both populations are Muslims. In both countries policymakers are concerned about population problems: birth rates as well as death rates are high in both Egypt and Bangladesh. Several measures have been taken in both countries to reduce the high birth rates. In Egypt, for example, as early as 1965 family planning programs were started to improve the population's health and reduce the high birth rate. After several years, because these programs were not successful, the Egyptian government inaugurated the population and development program project, with similar goals of family planning. This project enjoyed some success in improving the health conditions of the population and increasing the number of contraceptive users in Egypt. Bangladesh employed a strategy similar to Egypt's for reducing its high birth rate. The national family planning program was established in the early 1960s. About a decade later, as in the Egyptian case, very little success had been achieved in reducing the fertility rate or increasing the prevalence of family planning use. In fact, only eight

percent of married women were using contraception ten years after the establishment of the family planning program in Bangladesh (Sufian, 1984).

From the experience of family planning programs, both Egypt and Bangladesh have had very limited success in reducing high birth rates. This study turns the focus away from programs as such and toward the important issue of the status of women and its relation to fertility and fertility behavior. Previous research studies (see, for example, Anker, 1982; Mason, 1987) support the argument that the investment in raising the status of women can reduce the fertility rate more effectively than many techniques of fertility control.

Egypt and Bangladesh are well-chosen for comparing the effects of two dimensions of women's status on fertility, since these countries are at different levels of economic development. The two dimensions were women's economic status and their gender status. I posited that the level of a nation's economic development would place limits on the amount of economic status that women (or men) could achieve. Since schooling imparts marketable skills, I hypothesized that women's education would more strongly depress fertility in Egypt than in Bangladesh, because Egypt is at a higher level of economic development.

Indeed, education was found to be an important factor reducing fertility in the Egyptian case. Although the

educational factor was a weak indicator of lower fertility in Bangladesh, its effect was highly related to women's ages at interview: younger women had fewer children but also more years of schooling. This finding may portend a future emergence of an inverse relationship between education and fertility for younger cohorts of Bangladeshi women. These results are consistent with the finding from 38 nations participating in the World Fertility Survey: that the relationship of education to fertility becomes more sharply inverse as the level of economic development becomes higher (United Nations, 1987). An implication for policymakers is that a retention of girls in school systems beyond the primary level is necessary for an appreciable impact on fertility in countries as poor as Bangladesh or Egypt. However, the Muslim religion does not buffer the growing negative impact of education on fertility at higher levels of economic development, as Caldwell (1980) had speculated that it might.

Gainful employment, the second indicator of women's economic status, was related to fertility in Bangladesh, but not in Egypt. Women in Bangladesh who worked after marriage had fewer children ever born alive than those who did not work, probably because working gave women more material resources and made them less economically dependent on men and children. Dixon (1985) contends that women's involvement in the labor force (especially when they work for nonrelatives) gives them an independent

power base, provides a direct source of income over which they have control, and reduces their dependency on male kinfolk for economic and social support. Dixon suggests that expansion of employment opportunities for females in low-income households is not only a valuable end in itself but also a means to enable women to transcend the inherent pro-natalism of a patriarchal kin-based institution (p. 16).

An important finding of this research was that independently of women's economic characteristics, their membership in a religious grouping assigning lower statuses to women (Muslims) or their psychological commitment to the higher status of males over females (as indicated by a preference for sons over daughters) was associated with higher fertility. In fact, membership in the Muslim religion dampened the negative effect that women's work had on their fertility. In other words, employment of women reduced the fertility of Muslims much less than that of non-Muslims. Perhaps the social distance between men and women required by Islam restricts the occupational choices of Muslim women wishing to enter the labor force (since they cannot have male coworkers or colleagues) and relegates them to low-prestige jobs inviting weaker career commitments. Or perhaps Muslim women wishing to keep purdah are more reluctant than non-Muslim women to work far away from home, and the

proximity to the homesite reduces the role conflicts between parenthood and employment.

It is probable that Muslim women have a lower gender status than do others because they are given limited social rights and because males are dominant in most Islamic nations. However, in general, the principles of Islam neither regard women as inferior to men nor place restrictions on women's work or education. Rather, particular Muslim cultures and traditions impose these restrictions and resist gender equality. Weeks (1988), in a discussion of women in the history of Islam, informs us that "In a world in which women were often little more than chattel or slaves, Islam accorded to women secure legal rights, including independent legal status, the right to own and dispose of property, and the right to receive a share of inheritance" (p. 7).

Son preference was also used as an indicator of women's gender status in this study. The results of this study show that women with son preference had more children ever born in both Egypt and Bangladesh. This finding suggests that male children are more valuable than female children which, in turn, leads to higher fertility. Sheps (1963) argued that the strong desire for sons influences the total number of children wanted by a couple. This may increase the number of children ever born alive until the desired number of sons have been born. One implication regarding the son preference

finding is that improving the social security systems in both countries may benefit people, especially in old age, and reduce their dependence on sons for their social and economic needs. In addition, improving the status of females by formal education and involvement in the labor force participation may reduce the high value placed on male children which, in turn, may negatively influence fertility rates.

However, an implication for development policy is that policies that create jobs for all women--Muslim and non-Muslim--who want to work after marriage will be followed by a fertility decline. Policies that improve women's earning capacities might also soften a preference for sons. Nevertheless, the People's Republic of China has used direct propaganda to proclaim the value of daughters and this frontal attack on son preference has probably spurred the impressive fertility decline there.

In addition to the results discussed above, the control variables, women's age at first marriage and women's age at interview, accounted for most of the explained variance in the number of children ever born in both Egypt and Bangladesh. Women's age at first marriage was found to be inversely related to the number of children ever born. Also, the older the women, the greater the number of children ever born. The other control variable, urban-rural residence, was found to be important in Egypt, where rural women had higher fertility

than urban women, but this relationship was weak in Bangladesh, where the majority of urban women had migrated from rural areas and probably brought with them strong values for large families. A similar result was observed by Ahmad (1985) in his study of urban-rural fertility in Bangladesh, where he found no significant differential in marital fertility by place of residence.

Another policy implication that should be considered in both Egypt and Bangladesh is to raise the age at first marriage. This has been a successful policy for reducing fertility in China (Coale et al., 1991). However, raising the age at first marriage may be difficult to apply in countries with a lack of birth registration or those that have other social and religious obstacles to enforce raising the age at first marriage. Another possibility is to delay the age at first birth. Policymakers may emphasize the health risks of both the mother and the child if births occur before the mother is 17 years old.

With regard to urban-rural residence, coordination between population policymakers and development planners is an important issue influencing population growth. Equity of income distribution and other social and economic services in urban and rural areas is a crucial issue for improving lifestyle, especially in rural areas. Clausen (1984), for example, observed that the subsequent decline of fertility in developing countries was a result of a "different kind of development: education, health,

the alleviation of poverty, improved opportunities for women, and government effort to assure widespread access to family planning services" (p. 18). Sri Lanka, Thailand, and Turkey were cited as examples of countries experiencing fertility decline, where income and other social and economic services were relatively more evenly distributed among the population.

The findings of this study confirm that both economic status and gender status covary inversely with the number of children ever born to women in both Egypt and Bangladesh. Policymakers in both countries should direct attention to the improvement of women's status; without such improvements, women's status depends largely on the number of children they bear (Germain, 1975). Availability of, access to, and encouragement of female education, especially in rural areas, are crucial steps to improving women's economic status. The involvement of women in economic development will also benefit the status of women, beginning with the provision of more employment opportunities in both urban and rural areas. Women's situations, in relation to men's, will improve when they are provided increased access to material and social resources. In addition, to forestall women's dependence on men and to provide alternative sources of old-age security, social security systems can be improved, and in some cases created especially for women.

Suggestions for Further Research

This study has investigated the influence of women's status on fertility. While it is successful in answering some of the major research concerns, it leaves some questions unanswered and raises additional ones that need to be addressed. It is clear from the findings of this study that the status of women is one of the most important factors influencing fertility and fertility behavior. The status of women is significantly associated with the number of children ever born. Women who had some indicators of higher status, such as education, employment, or no son preference, had a lower fertility rate. However, the measurement of the status of women in this study depended on and derived from otherwise available data, rather than being the object itself of precise and accurate measurement. Along with the important variables used in this study to measure women's status, other variables are needed for more comprehensive measurement of the status of women.

The results of this study lead to the strong recommendation that further research on the status of women and fertility explore more fully the effect of the status of women on reducing or raising the fertility rate. These future studies should include many more variables in order to give a more extensive measurement of women's status, which in turn will contribute beneficial information to the fertility literature and to

policymakers. Variables such as income, general decision making (including familial decision making), and reproductive decision making might be included. Future research should ask about the nature of work women do and what type of returns they receive. It would be interesting to explore whether women paid in cash rather than in kind have lower fertility, since cash is a more versatile, liquid asset. It should also be interesting to see whether women who retain control of their cash income have lower fertility than women who deposit their earned money into a common family pot. It has been suggested that higher economic status empowers the wife to be more involved in reproductive decision making. When both spouses decide the timing, as well as the number of children they should have, their fertility must be different than when only the husband makes the reproductive decisions.

In this study, religion was found to be an important independent predictor of the number of children ever born. It seems that levels of religiosity may have different effects on both women's status and fertility behavior. There are certain core religious duties that must be observed by all Muslims, such as the five daily prayers, paying the <u>zakat</u> tax, and fasting during the month of Ramadan. However, there are many peripheral religious norms in Islam. For example, not all Muslim women are requested to cover their entire body when they

go outside the home. Also, some Muslim women can work outside the home whereas others must stay at home and look after the children. In addition, the use of contraception is permitted for some Muslim women but forbidden for others. All these norms depend on the husband's level of religiosity. It is recommended that future research not only include religion as an important variable but also measure the degree of husband's religiosity within each religion. For example, future research may ask if a woman is required by her husband to cover her entire body, not to work outside the home, and not practice birth control.

In future research, other factors related to women's status which cluster around women's control of self and property need to be considered. The age difference between spouses can be an important indicator of women's status. A large difference between spouses' ages at first marriage, for example, may indicate an arranged marriage, which may indicate a lower status for the woman. This leads to another important factor related to the status of women, especially in the developing countries: women's freedom of choice regarding spouse and time of marriage.

In addition, the use of age at cohabitation rather than age at marital contract would offer a more sensitive prediction of the number of children ever born. Freedom of movement is also a good indicator of women's status that needs to be included in future research. In some instances, women with higher status may go outside the

home whenever it is possible, while lower-status women are restricted to the home most of the time.

Future research might include the husband's opinion about women, in general, and his wife, in particular. His views on women's decisions in the family, the types of work they should do, and other related issues may contribute useful information to the issue of the status of women and fertility.

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