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UNIVERSITY OF ALBERTA

HUMAN FERTILITY IN JORDAN AND SYRIA: A COMPARATIVE ANALYSIS

(C)

BY

EDWARD SHIHADEH

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Research for acceptance, a thesis entitled **Human Fertility in Jordan and Syria: A Comparative Analysis** submitted by Edward Shihadeh in partial fulfilment of the requirements of the degree of Masters of Arts in Sociology/Demography.

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Abstract

The present study sought to identify the determinants of fertility in both Jordan and Syria and compare them, using World Fertility Survey data. Guided by the Davis-Blake theory of intermediate variables, a model was created that identified the mechanism by which certain social variables determine fertility behavior. Also, the possibility of son preference relative to fertility was examined. Education was found to facilitate contraceptive use and inhibit breastfeeding . Contraceptive use was largely contingent upon the acquisition of a specific orientation; most prevalent in the urban environment, and among the educated. Jordanians showed the greatest level of contraceptive use. Background knowledge of contraception, was not seen as a determinant of contraception. It was considered to be linked to more efficient contraceptive use, reducing the need for abortions. Jordanians and Syrians marry at very young ages. Jordanians reported the lowest age at first marriage. This is a crucial element in the explanation of higher Jordan birth rates. In terms of behavior, breastfeeding is placed in a converse position relative to contraception; low breastfeeding intervals are associated with high levels of contraceptive use, and vice versa. In terms of fertility, long breastfeeding intervals, have a similar function to that of contraception. Long breastfeeding intervals were observed, especially in the case of Syrian women; another piece in the puzzle of higher Jordanian fertility. A substantial level of sex preference in Jordan and Syria was determined. Women were less likely to use contraceptives, given a dissatisfaction with their number of sons. Gender contingent post partum care was determined through the identification of sex differentials in breastfeeding intervals. This led to the examination of favoritism in overall child care

which uncovered sex differentials in infant and child mortality rates. In addition, the perception of an ideal family size was found to be influenced by the existing son ratio of the family.

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Chapter 1

Introduction

The cultural, religious, and geographic heterogeneity of the Arab world provides a rich background for population inquiries. In cultural terms the people of the region are faced with the problem of embodying one Arab identity while at the same time remaining cognizant of the differing nationalist identities. On the one hand, the concept of an Arab identity, or what Gamel Abdel Nassar termed Pan-Arabism, is a tangible element of the region. It is what allows us to call it 'a region'. On the other hand, however, inter Arab nation conflict forces us to consider another tangible; the reality of separate national identities that can be seen as antithetical to pan Arabism from the point of view of promoting division rather that unity.

Compounding this issue is the question of religion and the extent it determines the Arab identity. While Moslems clearly make up most of the people in the Arab world, to look at them alone would ignore the sizable minority of Christians. Furthermore, this would also ignore the reality of serious divisions within present day Islam, manifesting themselves in the Persian Gulf conflict and the civil war in Lebanon.

The interweaving of culture, religion and nationalism, in the Arab world, provides us with a rich background for population inquiries. At

the same time, however, there exists significant technological and sociopolitical barriers to demographic research.

In a technological sense, a major problem facing the Arab world is the relatively small number of trained personnel. In addition, the comparatively low level of education, and the fact that few of the text books are written in Arabic, all go together to create on environment that is not conducive to research (Weller 1981:57).

El Khodary (1976) points out several problems of data collection that are related to the prevailing environmental and social conditions in Arab countries. He outlines six problems:

1) Widespread illiteracy and lack of statistical awareness.
2) Data obtainable only from one family head.
3) Mobile populations and multiple nationality.
4) Problem of dialects and diverse languages.
5) The perceived relation between data collection and citizen's rights and obligations.
6) Lack of well trained manpower.

(El Khodary 1976:91)

Traditionally, the perception of education in the Arab world has tended to emphasize the Liberal Arts studies: poetry, philosophy, literature etc.. The educational institutions reflect this cultural perception to the extent that Liberal Arts studies form a significant part of most curricula (Shalakani 1985:7,9). Consequently what the Arab student gains in the

areas of language, history and philosophy, he loses in the areas of applied science and research; the requisite foundations for the development of demographic inquiry.

However, these problems are basically obstacles to the actual process of data collection. They are somewhat similar to the difficulties encountered in any less developed context and cannot, therefore, be considered unique to the Arab world. A more fundamental issue is the social and political forces in the region which create a formidable resistance to population study, and in turn allow the technological deficiencies to exist.

Until fairly recently, the Middle East was dominated by Western colonial powers: England controlled, or had a mandate over, Palestine, Jordan, and Egypt; France controlled Lebanon, Algeria and Tunisia; and Italy virtually occupied Libya. It was around the time that Western powers were losing much of their influence in the region, that systematic demographic activity began to appear. It is quite conceivable that this newly acquired autonomy or self-determination provided the impetus for the inquiry.

This is a vital step that most Arab countries have taken, but serious inhibitions to demographic research still exist. Several are listed below:

a) Attenuation of economic growth due to population pressure is a relatively recent phenomenon in this region. Population increase has been, until recently, easily absorbed by large geographical areas and financially supported by massive subsidies from oil revenues.

Saudi Arabia, clearly one of the wealthiest nations in the world, has a population density of approximately 5/km2. Within this context, even a rate of growth of 3.3 percent, cannot, either economically and politically, justify the effort and the expense of a population program (Population... No.4:10).

In Egypt, however, the situation has become critical. Massive population growth, coupled with political and economic isolation from the rest of the Arab world, has led the Egyptian government to consider population policies very seriously, and to coordinate their implementation as soon as possible.

Unbridled population growth, concentrated in the Nile Delta, has produced a population density of 46/km2 (U.N.Stat... No. 14:146). But this figure is misleading in light of the comparatively high level of primacy found in Egypt. In an analysis of growth of the core regions in the Developing World, Danial Vining (1985) points out that Cairo has become one of the densest cities in the world (Vining 1985:47).

b) Birth control, which is invariably linked to population control, is interpreted by many as being expressly forbidden under Islamic law. Recent efforts by the Egyptian government to introduce population control are being strongly resisted by that country's Moslem fundamentalist community. The Moslem Brotherhood, which for the most part represents Islamic fundamentalism in Egypt, is a political factor that is integral to the

political equation of the Middle East, especially after gaining momentum during the 1980 revolution in Iran (CNN June 1986).

This of course is not the first time that family planning efforts have been met with organized resistance for religious reasons. Family planning programs in Latin America have long been challenged by the Catholic church. While such efforts are formidable, they cannot match the potential volatility of Islamic fundamentalist resistance in the Middle East.

c) From the governments' point of view a census may be politically undesirable. As pointed out earlier, the Arab world is made up of many distinct cultural and religious groups which are, in essence, the source of Arab identity. The governments in many cases lack a base of widespread popular support. Consequently, the role of the political leadership manifests itself as a fine balance between groups that have , at times, opposing interests. Should a census indicate a change in the demographic distribution of a country, there exists no democratic mechanism which can facilitate a response in terms of an adjustment in proportional representation. This imbalance in turn creates the potential for political disruption which in the extreme can lead to a coup, or worse, a civil war, as was the case in Lebanon in 1975.

Lebanon has not held a census since 1932 for fear of disrupting that country's fragile coalition of Moslems and Christians. Saudi Arabia is very sensitive to what it perceives as the national security

implications of demographic results. As a consequence, census results have never been officially published by the government (Newsweek June 1, 1987:49)).

Nevertheless, there exists a legitimate need for data gathering. The governments, accept this need but at the same time remain cognizant of political reality. A good example is the Syrian Fertility Survey, a World Fertility Survey (WFS) data set used in this study, which conspicuously contains no data regarding religion despite the obvious fact that religious background is a key cultural determinant in the region (SFS Data Dictionary 1981, Chamie 1977:3). The reason for the omission lies in a major problem facing the Syrian government. The leadership of Syria, including most of the executive, is made up of individuals of the Allowite sect of Islam, a minority in Syria (Isham et al. 1985). The government is therefore understandably sensitive to issues regarding the demographics of religion and,consequently, one sees the censure of certain types of data.

There has been some recent work in the area of fertility determinants in the Arab region. Sultan Ahmad (1985) conducted a multivariate analysis of factors affecting fertility in four Moslem, though not necessarily Arab, populations (Jordan was the only Arab country included). The analysis showed that the demographic variables age at first marriage, duration of marriage, status of first marriage and experience of child loss explain many of the variations in fertility (Population Index 1985:506).

Sahir Abdel-Hadi (1984) examined the role of family planning programs and socioeconomic development in the fertility decline of various developing nations, including those in the Arab region. It was found that family planning programs have an independent effect on fertility decline over and above the effect of socioeconomic development (Hadi 1984:89).

Kandis (1977), in studying female education and fertility decline in Jordan, found that educating either the wife or the husband leads to substantial reductions in family size (Kandis 1977:19).

Abdullah Abdel-Aziz (1983) in a study of birth intervals in Jordan found among other things that women are remarkably homogeneous with respect to their fertility patterns. Also, the likelihood of bearing another child was almost independent of the present number of children (Aziz 1983:20).

Akin et al. (1986) showed that for Jordan, the factors that affect the decisions to continue breastfeeding differ for women who breastfeed for different lengths of time. For example education was found to be negatively correlated to breast feeding intervals. But a policy directive, specifically targeting educated women, was deemed unnecessary.

Abbas and Kalule-Sabiti (1985) analyzed the proximate determinants of fertility in North Sudan. They concluded that lactational amenorrhoea plays the most important role in suppressing potential fertility, followed by delayed marriage (ie. age at marriage). Contraception, post partum

abstinence and marital dissolution were also found to have negative impacts on fertility.

David Yaukey (1961) conducted a comprehensive analysis of Lebanese couples. In terms of religious differentials with respect to fertility, Moslem couples had higher fertility than that of Christians. However, intrareligious differentials varied considerably. Christians had a strong urban / rural differentials in fertility; urban Christians had lower fertility than their rural counterparts. The Moslems most strongly differentiated along socioeconomic lines; as expected, those of higher socioeconomic status had lower fertility. Age at first marriage was an important determinant of fertility for respondents of both religions. Another point of similarity between the two religions was the level of contraceptive use, which varied primarely by socioeconomic status and type of residence.

Several Studies have indicated a marked son preference as an important component in desired fertility. In rural Egypt, birth control pill use was found to be positively correlated with the number of sons a woman had (Gadalla at al. 1986). As well, there are a number of other studies dealing with son preference that will be addressed in the methodology.

What becomes obvious upon an examination of the recent literature is an emphasis upon Jordan and Egypt as targets for demographic research. Very little work, beyond data summaries, can be found for the other Arab countries. Furthermore, as will be discussed later, much of the recent work contains very serious theoretical aberrations or, in some cases, no theoretical consideration at all. This thesis is an attempt to broaden, as

well as more clearly define, the research scope within the area of Arab fertility.

Thesis Objectives

This analysis meets a need for demographic research in an area of the world that has only recently begun to come to terms with its demographic issues. Specifically, in the area of fertility, there is a requirement to identify and isolate the determinants of fertility, not only from an academic point of view, but in terms of the future implementation of an informed and effective population policy.

The general objectives of this study are as follows:

1) to identify, through path analysis, the mechanism by which certain social variables determine fertility behavior. This analysis will go beyond the often used technique of grouping a series of independent variables together and then concentrating on only those variables that survive certain statistical hurdles. Instead, after isolating and determining the relative strengths of several variables, a conceptual map will be created using the technique of path analysis. This analysis will attempt to establish the plausible mechanism, or path, certain background characteristics take in influencing fertility behavior.

2) to identify differentials in the determinants of fertility among subgroups of the two countries. This objective will not require a

deliberate nor separate effort . Rather, it represents a natural outcome of the main objective, since it is the existence of determinants that allows the differentials to exist. A further distinction of this objective can be made:

a) The differentials in fertility to be identified will be group specific and therefore broken down in terms of subgroups within each country.

b) Differentials, within the subgroups identified in step a), will be identified in order to produce a comparative analysis between Syria and Jordan. This is a crucial step for several reasons. First, the analysis of two countries creates a broader foundation of support for findings. Second, in methodological terms, one is faced with the challenge of bridging the gap between two data sets. Finally, the countries participating in the World Fertility Survey stipulate that unless a researcher is a citizen of the country for whom the data set belongs, a comparative analysis between two countries must be performed.

3) to test for the possibility of son preference relative to its influence on contraceptive and breastfeeding behavior, and to what extent it determines future fertility preferences. This subsidiary objective will also include the dimension of mortality. Specifically, it will be determined whether the presence of a social selectivity favouring males manifests itself in a measurable differential in child mortality.

The plan of the thesis is as follows. In chapter 2 the historical and cultural context of Jordan and Syria is established. In chapter 3 the

theoretical and methodological issues that guide the research is addressed. In chapter 4 the general characteristics of the two samples are discussed. Chapter 5 deals with the correlates of fertility. Chapter 6 addresses the dimensions of fertility. In chapter 7 the findings in a discussion of the determinants of fertility are consolidated. Finally, in chapter 8, is devoted to a summary of the analysis as well as possible directions for future research.

Chapter 2

Jordan and Syria

Jordan

The Hashemite Kingdom of Jordan is bordered by four countries; Syria to the north , Iraq to the northeast, Saudi Arabia to the south, and Israel to the west. The country is divided into two parts by the River Jordan; the East bank of the river which contains most of the area of Jordan, and the West bank, including east Jerusalem, occupied by Israel since 1967. The latter point must be kept in mind in any discussion of Jordan since this occupation has resulted in a substantial displacement of Palestinians from the West Bank to the East Bank of the River Jordan . Some of these refugees have acquired Jordanian citizenship which makes precise estimates of their numbers impossible. Nevertheless the refugees form a substantial segment of Jordan's population (Kossaifi 1985). Interestingly, a majority of the population of Jordan, claims a Palestinian identity (Gubser 1983:13).

To date there have been three censuses, the latest one being conducted in 1979. The current population is now estimated at 2.8 million not including the West Bank for which accurate figures are not available (Population... No. 4:10).

The over all age sex structure is bottom heavy in that 51.0 percent of the population under 15 years of age. There is a deficit of males between 15-45 due to out migration to the Gulf counties and an excess of males in other age groups due to the under enumeration and higher mortality of females (U.N. Jordan 1979:8). The current birth rate is 47.8/1000, while the death rate stands at 7.9/1000 (Population... No. 4: 11). Subsequently the current growth rate of 4.0 percent puts Jordan, with Syria, in the category of high growth countries.

Despite its high growth, Jordan, relative to other Arab states, is considered a modern country. Amman, the capital, is regarded as a metropolitan city which has replaced Beirut as the major financial center of the Middle East. Most of Jordan's economic development has been led by petroleum dollars, though Jordan has no wells of its own. Money sent home by those who take skilled jobs in other countries accounts for the nations's largest source of income (National Geographic, February 1984:240). Education is Jordan's most important asset. One in every three Jordanians is a student (National Geographic, February 1984:248).

Over 90 percent of the population is Sunni Moslem, while the Christians form about 8 percent. The largest group of Christians are Greek Orthodox (Jordan...1983:23). Relations between the two religions have generally been cordial and close. Social visiting is quite common, as is participation in each other's religious ceremonies. However, differences and minor strains do exist. Like many minorities with relatively high levels of education, the Christians at times feel superior to the Moslem majority.

The Jordanians, like most Arabs, reckon kinship through the male line. A man's immediate kinship network is a primary source of identity. The kin unit is further marked by the marriage preference for one's parallel cousin. This marriage pattern often creates a web of kin and conjugal ties that binds its members together. Such a traditional pattern of marriage, however, is fading away.

Lineages are also marked by a commonality of region of residence. This is buttressed by the fact that many of the traditional occupations, especially within agriculture, tie individuals and families to a given area. But recently, in light of the increase in employment related migration, a new pattern is emerging. Lineages have changed from geographically close-nit units to functionally extended families. The traditional strength of family ties still exists, but extends over a larger area (Gubser 1983:22-23).

Syria

The Syrian Arab Republic is bordered by Lebanon to the west, Jordan to the south, Israel to the southwest, and Turkey to the north. Relative to its neighbors Syria is quite large. It covers 185000 km2 of which about half is arable land (U.N. Syria 1980:2). Most of the population is concentrated in the western sector of the country since most of the center and east is essentially desert.

The latest official estimate, based on the 1981 Census, puts Syria's population at 10.3 million, a considerable increase over the 6.1 million enumerated in 1970 (Population... No. 4:10, Demographic Yearbook 1972:88). There is little question that Syria belongs to those countries with very high fertility. The current birth rate is 46.5/1000, while the death rate is considerably lower at 8.7/1000 (Population... No. 4:11). This puts the natural rate of growth at 3.8 percent, clearly one of the highest values in the world (Immerwahr and Maier 1986:71). It can also be characterized as a young population; 47.0 percent of the population is under 15 years of age (Demographic Yearbook 1984:208).

The physical distribution of the population has changed over the last several decades. In 1960 about one third of the population lived in urban areas, while in 1982 this proportion has risen to nearly one half(Demographic Yearbook 1984:242). Considerable rural to urban migration has resulted in the main concentration of people in Damascus and Aleppo, Syria's two largest cities.

Syria is primarily a Moslem society. Approximately 87 percent of its people are Moslem, the vast majority of whom belong to the Sunni Sect (The Middle East 1981:160). Islam has been the dominant religious, cultural, and political force for thirteen centuries. Since that time, the country has been ruled by families from that religious mainstream. Since 1963, however, Syria has been ruled by men professing a secular philosophy of government. This philosophy aims not at eliminating religion but at separating it in most respects from the functions of government. This has found support among some Moslems and most non-

Moslems, but it lacks appeal from those whose traditional dominance is no longer assured.

President Hafez al-Assad is from the Alawite sect of Islam. The origin of this religious sect is obscure. The name 'Alawi' indicates a devotion to Mohammad's son-in-law, Ali. The disproportionate presence of Alawis in high positions is a source of tension in the interrelations among the Syria's various religious groups.

There are approximately 10 Christian groups, accounting for about 12 percent of the population (The Middle East 1981:160). Educated in larger numbers than Moslems, due to schools run by coreligionists from the West, Christians served in the bureaucracy and business. Because of their exposure to Western ideas, they were the principal medium through which western concepts were introduced to Syrian society.

In addition to sect, an individual's identity is also dependant upon gender and family. Tasks for men and women were delineated by centuries of tradition. And a man's family was a source of identification that marked him, and his sons, for certain roles in society. However, entry into the upper echelons of one's community was possible through hard work or favorable marriage.

Syria's influence and image in the Arab world has changed over the last several years. Since the departure of Egypt from the Arab fold, due to its treaty with Israel, Syria has become the dominant Arab force in the region. Though not an Opec nation, it has had a very stable economy in

recent years. A steadily expanding infrastructure of communication, health, education, and other government services ensures that Syria is firmly on the road to modernization (Isham et al. 1985). Up to this point the government has yet to announce a population policy, though family planning services are readily available through government and non-government centers (Immerwahr and Maier 1986:72).

Chapter 3

Theoretical Background and Methodology

As outlined earlier, there have been several inquiries into the differentials of fertility with respect to a variety of demographic, economic, and social factors in the Arab world. Unfortunately, many of these studies were conducted in what could be viewed as a theoretical vacuum, guided primarily by previously established empirical findings. The emphasis in this inquiry is on a contribution to an overall theory of fertility rather than simply an addition to a loose association of statistical relationships. The guiding conceptual framework used here is grounded in the Davis- Blake theory of intermediate variables.

To briefly recall the framework, Davis and Blake (1956) identified a series of variables that regulate fertility (see the Appendix). These 'intermediate variables', as they are often labeled, are intermediate to the overall process of social factors impinging upon fertility. The important element in the Davis-Blake framework is the mechanism by which the social factors determine fertility. The effect of social factors, which are often regressed directly on fertility, are in fact mediated by several regulatory variables.

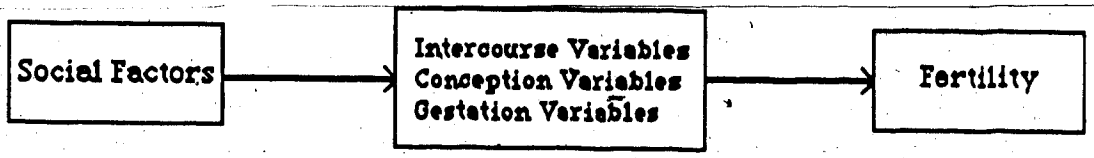
Sultan Ahmad (1985) conducted a multivariate analysis of factors affecting fertility in four Moslem populations (including Jordan). Some of the factors regressed against fertility, were the education of the husband, education of the wife, age at marriage, and experience of childloss (Population Index No.51:506) For the most part, Ahmad's method is a battery approach whereby a series of independent variables are included in the analysis and only what is statistically significant is of interest.

What is made clear by the Davis-Blake framework is that the several variables used by Ahmad are in separate conceptual categories. For example, education is a social variable that effects fertility indirectly through a variety of intermediate variables such as age at marriage. As a case in point, one can speak of a direct effect of education on age at marriage. Such is the case with the woman who delays marriage because of current educational commitments. Accordingly, one can also consider a direct effect of age at marriage and subsequent fertility. The reduction in exposure to intercourse has an inhibiting effect on fertility. Thus, the effect of education on fertility is composed of two direct effects.

The methodological implication of this is clear; To explore the relationship between education and fertility, one must first consider the effect of the social factors (eg. education) on the intermediate variables, (eg. age at marriage). Subsequently, the intermediate variables must then be considered in terms of their effect on fertility. These are two essential prerequisites in the exploration of the social determinants of fertility.

Hadi (1984), in methodological terms, takes a similar approach. The statistical analysis involved a direct effect between socioeconomic factors and fertility. Shown in diagrammatical form in the original article, this approach represents a misunderstanding of intermediate variables, even though frequent reference was made to the Davis-Blake framework (Hadi 1984:70,72).

A path analysis, as distinct from simple correlational analysis, implies direction. It is, therefore, important to first consider time order, or an implied causal relationship among the variables, in order to be consistent with the methodology employed.



The category of intermediate variables, shown above, break down into three general categories that coincide with the three phases of fertility; intercourse, conception, and gestation. While it is established that social factors are mediated by intermediate variables, it is not often clear how this specifically occurs. This inquiry seeks to ascertain whether specific social factors (eg. religion) are mediated through all intermediate variables, or only a few - and more importantly which few. In broader terms it is asked: how is fertility regulated in the context of a differing demographic, cultural, and socioeconomic factors?

Social Factors	Intermediate Variables	Fertility
Age	Age at first marriage	Number of
Son ratio	Abortion	live births
Knowledge of birth control	Contraceptive use	
Education	Lactational infecundity	
Current residence		
Childhood residence		
Religion		

Shown above is a list of the variables that will be considered. It is not intended that any of the categories be exhaustive. In any case, the social factors cannot, by definition, be exhaustive since they are exogenous.

As for the intermediate variables, Davis and Blake identify a total of 11. While there is little doubt that each plays a role in determining fertility, the relative importance of each varies considerably from society to society. John Bongaarts (1982) suggests that differences in fertility are largely accounted for by only four of those variables. He found that the transition from high to low fertility is accomplished with a combination of declines in breastfeeding , later marriage, increased use of contraception, and increased incidence of abortion (Weeks 1986:101).

The Data

The data set utilized in this thesis is the World Fertility Survey (WFS), a large scale research programme whose purpose is to assess human fertility, in the Developing World and selected countries in the Developed World. It represents one of the largest social scientific projects even under taken and was conducted under the auspices of the International Statistical Institute in the Netherlands, and the International Union for the Scientific Study of Population in Belgium. Between 1972 and 1982, a total of 350,000 women of child bearing age, encompassing 62 nations, were interviewed (Regional Workshop...1980; Weeks 1986:21). The actual sample size in each survey was determined on an individual country basis. Generally, they ranged from a lower limit of 2,000 to an upper limit of 10,000 women (Basic Doc. No. 2:21).

In methodological terms the WFS was basically an effort to achieve a degree of standardization in the collection and reporting of data by different countries (Basic Doc. No.7:6). In order for comparability between each country's survey to be possible, standardization of concepts, the questions, and reporting units was emphasized. However, the WFS organization did not press for any one uniform design but rather allowed the individual countries to choose whatever design was optimal for their particular situation (Basic Doc No.3:7).

For several reasons, the WFS is particularly suitable for this analysis. It contains reliable data for Jordan and Syria, that can withstand the rigors of a detailed comparative analysis. Also, the availability of the

WFS data allow for not only a comprehensive fertility inquiry into each country, but also present the opportunity for a comparative analysis that is of high statistical and methodological integrity.

During the initial formation of conceptual guidelines for the WFS, the need for the inclusion of the Davis-Blake intermediate variables was recognized. Consequently, most country's surveys made an attempt to collect at least some information that falls within the Davis-Blake categories, though in no single survey was there an exhaustive list (Basic Doc No.9:10).

The Jordan Fertility Survey

In 1976 the Jordanian Department of Statistics carried out the Jordan Fertility Survey (JFS). The survey was executed in two stages. The first stage, a household survey, involved the selection of a five percent sample of the population of the East Bank, yielding a total of 14,068 households. Subsequently, a one in four subsample of the household survey was drawn, and detailed individual questionnaires administered to ever-married women aged 15-49 (Aziz 1983:7).

Of most relevance to this analysis is the individual interview questionnaire which elicited detailed information from 3612 women (Nur 1984: 130). The information gathered included marriage histories, birth histories, breast feeding during closed and open intervals, family

planning, and socioeconomic characteristics of respondents and their husbands (U.N. Syrian... 1982:2).

The sample for the JFS was designed as an equal probability sample. However, the procedure actually followed during selection deviated from the self-weighting design. To compensate for departures from self-weighting during sample selection and also for differential non-response, all data in the file have been marginally weighted (Jordan... 1981:2). The response rate was 90.0%.

The individual questionnaire was written in Arabic and was based on the World Fertility Survey core questionnaire. Field work was conducted during July - September 1976.

The Syrian Fertility Survey

The Syrian Fertility Survey (SFS) was carried out in 1978 by the Syrian Central Bureau of Statistics. Similar to the JFS it contained both a household and an individual questionnaire. The individual level questionnaires, of which there were 4487 completions, were obtained by selecting every third respondent who was initially selected for the household interview (WFS Summary No.35:2). The characteristics of the sample and the questionnaire are similar to those of the JFS (SFS Data Dictionary 1981); not a surprising revelation considering the raison d'etre of the WFS was to ensure uniformity and comparability among surveys.

The sample was a nationally representative self-weighting probability sample based on a one-stage design for most of the rural areas, aa two-stage design for larger village and small urban areas, and a three-stage design for the large urban areas. The questionnaires were also written in Arabic and based upon the World Fertility Survey core questionnaire. The response rate was 96.1%.

Chidambaram et al. (1980), in a preliminary assessment of the quality of the WFS data, concluded that the data are of sufficient quality to permit a detailed analysis. Comparatively speaking, however, the individual survey (utilized here) is seen as having a greater potential for detailed analysis due to the presence of more elaborate data.

A more recent assessment came to the same conclusion but cautioned for several things; the data on foetal losses are poor; in some cases there is evidence of substantial age heaping; data that refers to time periods far removed from the date of the survey must be interpreted with caution due to event misplacement (Goldman et al. 1985:80).

Generally speaking, however, the WFS data are considered to be of high quality from the point of view of both internal and external consistency.

Selected Variables

The following is a brief discussion of some of the variables used in this analysis, and the conceptual or methodological justification for their inclusion.

Age: Age is included in the analysis primarily to serve two basic functions. The first, is to ascertain any cohort differences with respect to some of the intermediate variables. To this end, it is also vital to check for any period effects that may also exist.

Age at first marriage (AAFM) is frequently at the focal point of a cohort analysis. AAFM is a one time event. As such, any differentials with respect to AAFM are reflective of cohort differences. After all, one cannot change their AAFM as they would, for example. a perception of ideal family size. But the primary issue here is not a conceptual distinction but rather a statistical problem. This arises out of the problem of censoring and truncation of the data as a result of working with young age groups, none of whose AAFM is higher than their current age.

The other function chronological age serves is that of a control variable. This is needed in order to control for effects that arise due to the passage of time.

Education: Education has been shown to have a variety of effects on the intermediate variables. Krishnan, Islam and Shihadeh (1986) found that education had a negative relationship with respect to

breastfeeding interval using WFS data for Nepal, Pakistan and Sri Lanka. That study rejected the hypothesis that education is an awareness indicator of the beneficial effects of breastfeeding. These three countries are similar to Jordan and Syria in that they are at a similar level of development , favour relatively large families, and have long breastfeeding intervals. Therefore, these findings are considered useful for this analysis.

Education is commonly seen to be associated with a particular orientation reflected in the urban, possibly working, women. This analysis will remain open to the contingency that such an orientation may be antithetical to high fertility, and by association, long breastfeeding intervals.

Literacy: Literacy is included as a social factor in order to buttress any findings elicited from the more refined education variable. In a sense, literacy can be viewed as a dichotomous education variable. The two variables are linked both conceptually and methodologically. The former link is fairly obvious: illiteracy is the absence of education, and,conversely, education produces literacy. In methodological terms, literacy is simply a broader, more encompassing, variable.

Current and childhood place of residence: As the Arab countries continue toward increased development, it becomes important to consider the question of urban vs rural differentials with respect to fertility. Residence, similar to education, imbues an orientation that predisposes one to behave in specific ways relative to fertility. For

example, an urban resident is more likely to have an education . They are also more likely to marry at an older age.

Does this relationship hold for both Jordan and Syria? Also, through which intermediate variables is this process mediated? The latter question is crucial not only because it addresses the mechanism of fertility, but by its very nature it forces a reconsideration of the developmentalist position vis a vis Arab fertility.

Religion: Clearly, religion is a key cultural determinant in the middle east. It is an identity and an allegiance that is acquired at birth and is carried throughout ones life. With it, comes a unique set of norms and values whose impact upon age at first marriage, abortion, contraception and breastfeeding behavior may be affiliation specific.

This study also seeks to go beyond a purely descriptive function and attempts to explain the role that religion plays in our proposed fertility model. An important by product of this effort would be the illumination of the process by which religion affects the intermediate variables- via the other social factors. Obviously, such a determination is subsidiary, and by necessity, analytically superficial in nature due to the fact that religion is treated as an exogenous variable However it is hoped that any findings would serve as a launching point for further analysis directed toward a variable that plays a culturally pivotal role in the region

Son ratio: Sex preference has been amply documented in the literature. The work by Gadalla et al (1986) referred to earlier discussed the marked son preference of a sample in rural Egypt. Specifically 41 percent of the women with four sons or more were regular users of the pill compared with only 11 percent of those women who had five or more children but no sons.

WFS data from Korea have shown the effects of son preference on sex ratios and fertility at the family level. Korean parents appear to take into consideration the sex distribution of their children when planning future fertility (Park 1983:333). Using the same data, another study found that contraceptive use among Korean woman would rise from 46 percent to a level of 55 percent in the absence of son preference (Arnold 1985:280). Sex preference has also been shown to occur in developed countries as well. Data from the 1970 and 1975 National Fertility Studies in the United States, indicate that if sex preselection technology were available, there would be a significant increase in sons as first born children (Pebley and Westoff 1982:177)

Methodologically, this study addresses sex preference in several stages. First, the desire for future fertility among respondents will be analyzed for any bias due to son preference. Second, similar to the Gadella study noted above, it will be determined whether son preference is altering contraceptive behavior. The fact that it was detected in Egypt makes the possibility of its presence in other Arab countries very likely. The third step, seeks to ascertain whether male infants are receiving

preferential post partum care. This dimension will focus on sex differentials with respect to breastfeeding.

Related to the issue of preferential care is the question of an overall social selectivity favoring male children. Here one can go a step further than simply determining the presence of a desire for male offspring. If social selectivity is present there is a possibility that this may translate into differential mortality between male and female children.

New Variables

Several of the variables require special methodological consideration since they are not readily available in the two data sets. These compound variables are so named since they are created out of a series of already available variables.

Two problems associated with this type of empirical treatment are recognized. First, in combining several variables in an SPSSX listwise regime, any missing cases in one of the variables will be treated as missing cases for the entire compound variable. Hence, if a new variable 'D' is created from variable 'A', 'B' and 'C', and one finds that 'A' has 100 missing cases, then 'D' will subsequently have 100 missing cases regardless of the fact that 'B' and 'C' may very well be complete. However, such a development is not considered potentially serious considering the large size of the samples.

The second problem, a solution to which is somewhat elusive, is that of creating compound error. Given that 'A', 'B' and 'C' have a certain level of error, then variable 'D' must contain all the error of the first three variables. Considering that the errors could be additive or multiplicative, the total level of disturbance cannot be easily ascertained. Furthermore, certain compound variables are created simply to serve as stepping stones in the creation of other compound variables. The recognition of the problem must serve as a cautionary flag in any interpretation of the findings.

Child deaths (Chdths): The number of child deaths is simply the difference between two already existing variables; number of children born (v208) and number of children living (v213);

$$\mathbf{Chdths = v208 - v213} \qquad \text{Eq. (1)}$$

Daughters born (Dtbrn): Daughters born is equal to children born (v208) minus the number of sons born (v212);

$$\mathbf{Dtbrn = v208 - v212} \qquad \text{Eq. (2)}$$

Son deaths (Sndths): Son deaths equals sons born (v212) minus sons living (v220);

Sndths = v212 - v220 Eq. (3)

Daughter deaths (Dtdths): Daughter deaths is equal to child deaths (eq.1) minus Sndths (eq.3);

Dtdths = Chdths(eq.1) **- Sndths** (eq. 3) Eq. (4)

The need for these variables becomes clearer upon the creation of the final two variables; excess male births (EMB) and excess male deaths (EMD).

If social selectivity favoring males tends to create a differential mortality, then such a differential will appear in EMD. EMB will serve as a comparative baseline on which to evaluate EMD.

Excess male births (EMB):

Excess male births = ((Sons born - Daughters born) / Children born) * 100

EMB = ((v212 - Dtbrn(eq.2) **) / v208) * 100** Eq. (5)

Excess male deaths (EMD):

Excess male deaths = ((Son deaths - Daughter deaths) /Total deaths) *100

$$\mathbf{EMD} = ((\mathbf{Sndths}_{(eq.3)} - \mathbf{Dtdths}_{(eq.4)}) / \mathbf{Chdths}_{(eq.1)} * \mathbf{100} \quad \text{Eq.(6)}$$

EMB and EMD will be calculated twice for each country; once for all respondents and once again for only those respondents who are below the age of 36. Such an exercise is useful in order to have some relative control over the age of the children. Presumably, the offspring of those below the age of 36 could confidently be considered infants or children.

Son ratio[1] : Son ratio refers to the ratio of the number of sons to total children within a single family. It was created in order to have a variable that indicated the sex composition of the respondent's family:

Son ratio = number of living sons / number of living children

$$\mathbf{Son\ ratio} = \mathbf{v220} / \mathbf{v213} \quad \text{Eq. (7)}$$

As an alternative to using 'number of living children' in the denominator of son ratio, one might consider the more intuitive choice of 'number of living daughters'. Doing so, however, introduces a host of other problems. First and foremost is the problem of division by zero in the event of a family having only sons; a mathematical exercise that results in an undefined equation.

The second problem with the son/daughter ratio is that there is no definite upper limit in this measure. Consider, for example, the family with only sons. The ratio would be defined by the family size and not by the sex ratio of the children. The point of studying sex preference is to introduce an alternative to 'number of children' as an explanation of desired family size. Therefore, to use a measure of sex preference that is determined by the number of children is clearly a step backward. The son/total children ratio (son ratio) is more concise in that it contains a constant lower limit of 0.0 (only daughters), as well as a constant upper limit of 1.0 (only sons).

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[1] The choice of nomenclature is based upon a phonetic criteria. Son ratio could more aptly be labeled sons-to-total-children ratio. However, repeated reference to the latter would prove rather cumbersome.

Chapter 4

General Characteristics of Jordanian and Syrian Females

Introduction

As pointed out in the previous chapter, the Syrian sample contains 4487 cases while the Jordanian contains 3612. In relative terms, the extra 875 Syrian cases represents a 24 percent larger sample over Jordan.

The large samples also imbue another advantage in that they facilitate the analyses of subsets. Frequently one is faced with a problem of comparability and generalizability when dealing with progressively smaller subsets of the original sample . For example, the analysis of ethnic subgroups can lead to this problem due to the numerous categories required (Shihadeh 1986). For the most part, the size of the subgroups in this analysis, whether by age, residence, education, religion etc., do not fall below several hundred (unless otherwise stated).

The general characteristics of the samples, in terms of age distribution, contain some differences (Table 1). The 25-29 age category for Jordan contains the highest percentages of respondents at 19.6 percent. The 30-34 age group comes next at 17.4 percent. The largest Syrian age category is the 20-24 age group (18.4 percent) with the 25-29 category close behind (18.1 percent). The situation can be summarized by

TABLE 1: FREQUENCY AND PERCENTAGE BY FIVE YEAR AGE INTERVALS FOR JORDAN 1976 AND SYRIA 1978.

		AGE INTERVAL								
		<20	20-24	25-29	30-34	34-39	40-44	45-49	Total	Mean
JORDAN	% of Sample	9.1%	16.5%	19.6%	17.4%	15.0%	12.0%	10.3%	100.0%	31.9
	Frequency	329	596	709	628	543	435	372	3612	
SYRIA	% of Sample	9.9	18.4	18.1	15.6	14.2	12.3	11.6	100.0%	26.4
	Frequency	442	824	810	700	639	552	520	4487	

Source: 1976 Jordan Fertility Survey (1976 JFS)
and 1978 Syrian Fertility Survey (1978 SFS).

Source: 1976 JFS and 1978 SFS.

considering the mean ages of the two samples. The Jordanian sample reported an average age of 31.9 years, whereas the Syrian sample, 5.5 years younger, reported an average age of 26.4 years.

Region of residence (Table 2) is important in terms of establishing the general distribution of the population. Most of the Jordanian population is concentrated in the Northwest sector of the country, paralleling the Jordan River Valley. The capital city of Amman and the next two largest cites, Zarka and Irbid, are also located in this region and contain about 56 percent of the total sample. Syria's two main cities, Damascus and Aleppo, make up approximately 27 percent of the sample. The Northeast, center and parts of the South, are primarily rural and account for approximately 60 percent of the sample.

In terms of current residence, its is clearly evident that the Jordanian sample is considerably more urban. Table 3 indicates that less than a third of those in Jordan are currently residing in rural areas (29.9%). The comparative proportion in the Syrian sample indicates that almost half the total respondents currently live in urban areas (49.1%). For childhood residence one still sees a greater urban population for Jordan but the difference is much smaller. Jordanian respondents are split about evenly with regard to urban vs rural childhood residence. The Syrian results indicate a rather small change form childhood to current residence. Ths allows us to entertain the possibility of a greater rural-urban migration for Jordan.

TABLE 2: DISTRIBUTION OF RESPONDENTS BY REGION OF RESIDENCE: JORDAN 1976 AND SYRIA 1978.

JORDAN	PERCENT DISTRIBUTION		SYRIA
AMMAN 1 AND 2	35.6%	16.7%	DAMASCUS
ZARKA-IRBID	20.3	10.4	ALEPPO
TOWNS	14.2	24.3	NORTH EAST
LARGE VILLAGES	6.3	11	WEST
MEDIUM VILLAGES	16.7	21.6	CENTRE
SMALL VILLAGES	6.9	16.1	SOUTH
TOTAL	100%	100%	TOTAL

Source: 1976 JFS and 1978 SFS.

TABLE 3: PERCENTAGE DISTRIBUTION BY TYPE OF CURRENT AND CHILDHOOD RESIDENCE: JORDAN 1976 AND SYRIA 1978.

		REGION OF RESIDENCE		
		URBAN	RURAL	TOTAL
CURRENT	JORDAN	70.1%	29.9%	100.0%
	SYRIA	50.9	49.1	100.0
CHILDHOOD	JORDAN	53.7	46.3	100.0
	SYRIA	44.4	55.6	100.0

Source: 1976 JFS and 1978 SFS

Along with being more urban, the Jordanian sample is also more educated. Table 4 indicates that the respondent's completed years of education in Jordan is considerably higher than found for the Syrian respondents; In fact, practically all the non-zero categories contain twice the percentage of respondents when compared to those of Syria. Table 4 also provides the average number of years of education for each sample. This summary figure confirms that Jordanians have , on average, obtained a higher level of education. The mean Jordanian value of 3.3 years is over one year higher than the comparable figure of 2.2 years for Syrians.

Nevertheless, despite the comparatively higher levels of education in Jordan, the absolute levels of education, in both samples, is very low. The majority of respondents have no education. Furthermore, only a fraction of either sample have, by western standards, a complete grade school education. Most of the respondents who have had some education seem to be concentrated in the 4-6 year category; most likely a transition point to higher level of grade school.

In relative terms, husbands education tells a similar story (Table 5). The husbands of Jordanian respondents are substantially more educated than their Syrian counterparts. As well, both sets of husbands are substantially more educated than their wives. The majority in both samples have had at least some education. Only one fifth of Jordanian husbands, as opposed to 1/3 of Syrian husbands, have had no education. In comparative terms, the first to the sixth year of education show a high

TABLE 4: DISTRIBUTION OF RESPONDENTS BY LEVEL OF EDUCATION: JORDAN 1976 AND SYRIA 1978.

	YEARS OF EDUCATION							
	0.0	1-3	4-6	7-9	10-	13+	TOTAL	Mean
JORDAN	50.1%	6.4%	21.0%	13.2%	6.9%	2.4%	100.0%	3.3 Years
SYRIA	66.5	3.7	17.6	7.5	3.6	1.1	100.0	2.2 Years

Source: 1976 JFS and 1978 SFS.

TABLE 5: DISTRIBUTION OF RESPONDENT'S HUSBANDS BY LEVEL OF EDUCATION: JORDAN 1976 AND SYRIA 1978.

	YEARS OF EDUCATION							
	0	1-3	4-6	7-9	10-12	13+	TOTAL	Mean
JORDAN	21.7%	6.6%	30.4%	19.3%	12.9%	9.1%	100.0%	6.1 years
SYRIA	38.0	7.0	30.5	11.1	6.9	6.5	100.0	4.5 years

Source: 1976 JFS and 1978 SFS.

correspondence between the two samples. But quite clearly, Jordanian husbands are more educated; they average 6.1 years of education and about 9 percent have gone further than grade school. This is comparable to the Syrian's average of 4.5 years of school and 6.5 percent who have gone beyond grade school.

Both the Jordanian and the Syrian samples include only those who are ever married. Table 6 shows an interesting similarity in that approximately 96 percent of both samples are currently married. Also noteworthy is the similar and the very low level of marital dissolution. In an entire sample of 20-49 year old ever married women, less than 1 percent have been divorced. Marriage in these two countries is undeniably a permanent union.

Only the Jordan Fertility Survey ascertained the respondent's religious affiliation. Despite the fact that this precludes a comparative analysis, the Jordanian results are noteworthy. This variable produces some interesting results. Table 7 revealed an unexpectedly high number of Christians. Accounting for 56 percent of all respondents, they comprise the majority of the sample. This contrast sharply with an actual level of only 8 percent for the entire population (Jordan.. 1983:23). Furthermore, there are no non-Catholic Christians in the sample. This is a somewhat less surprizing revelation since it more closely represents demographic reality.

TABLE 6: DISTRIBUTION OF RESPONDENTS BY CURRENT MARITAL STATUS: JORDAN 1976 AND SYRIA 1978.

	MARITAL STATUS				
	MARRIED	WIDOWED	DIVORCED	SEPARATED	TOTAL
IDAN	95.7%	2.9%	0.7%	0.7%	100.0%
'RIA	96.1	2.7	0.8	0.4	100.0

Source: 1976 JFS and 1978 SFS.

TABLE 7: DISTRIBUTION OF RESPONDENTS BY RELIGION: JORDAN 1976.

RELIGION		
MOSLEM	CHRISTIAN*	TOTAL
43.6%	56.4%	100%

*All Christians in Jordan sample are coded as Catholic

Source: 1976 JFS

Age at First Marriage

Age at first marriage (AAFM) is an important variable from the point of view of exposure to intercourse. Marriage is the legal sanction of a union, and of intercourse and thus one would expect that a lower age at marriage would be associated with higher fertility. But in dealing with AAFM their are several important issues to consider.

Although this is first and foremost a comparative analysis, it would nevertheless be beneficial to establish cohort trends in the data. By measuring the mean AAFM for successive cohorts one could presumably establish a pattern of change overtime with respect to this variable. If one observes different values one hopes to be able to attribute this to a genuine change in nuptial behavior. However, one is faced with a problem of truncation, or censoring, of the data. Such an imposition, if not dealt with, makes interpretation tenuous at best.

Suppose the mean AAFM is calculated separately for each five year age group from 15-19 to 45-49. Further suppose that a positive relationship between AAFM and chronological age is obtained. The resulting low values for those toward the 15-19 age interval could be due to a genuine change in behavior favouring earlier marriage. Alternatively, the finding of a low AAFM could also be due to the problem that this age interval is, by necessity, truncated at an early age. This bias, for all intensive purposes exists across all the age intervals but manifests itself in progressively more subtle terms.

Table 8 and 9 represent attempts at attenuating this bias by presenting the data in finer detail. By looking at the cumulative percentages of respondents marrying at successive ages, one may observe general trends in AAFM across age intervals, as well as observe the changes within each interval.

Table 8 looks at AAFM patterns for respondents form Jordan. An initial perusal will reveal that very few of the respondents married above the age of 30. In fact 99.7 percent of the sample over 30 years of age were married by the age of 29. If the 25-29 age interval is included, 77 percent of the sample were married by the age of 19 (both these percentages are readily calculated from the table).

In terms of the overall trend, despite the influence of truncation and censoring in forcing th AAFM down for younger groups, the older respondents clearly favoured earlier marriage (disregarding the 15-19 age group which unfortunately is rendered almost uninterpretable). Consider that almost half (45.1%) of those in the 45-49 group were married by the age of 15, compared to less than one third for those in the 20-24 age interval (31.6%). The indications are that among the younger respondents there are fewer women marrying during their early or mid teens. Beyond this age range, however, into the early twenties, the differences begin to blur.

TABLE 8: CUMULATIVE PERCENTAGES OF WOMAN FIRST MARRYING AT SUCCESSIVE AGES BY AGE INTERVAL AT THE TIME OF THE SURVEY: JORDAN 1976.

	AGE GROUP AT TIME OF SURVEY						
AAFM	15-19	20-24	25-29	30-34	35-39	40-44	45-49
15	49.0	31.6	29.4	34.4	34.8	39.3	45.1
16	72.2	44.1	41.1	47.2	46.9	49.7	53.8
17	89.9	62.5	53.6	57.6	56.1	58.1	64.7
18	99.3	74.7	64.5	66.4	67.2	67.6	74.0
19	100.0	84.6	72.9	74.5	77.2	76.1	80.7
20		91.4	80.2	80.0	83.2	84.2	83.2
21		95.8	85.4	84.0	86.9	87.3	88.1
22		98.6	89.1	87.3	90.4	90.4	90.1
23		99.6	93.2	90.8	93.6	93.5	93.1
24		100.0	95.6	93.5	94.8	95.3	94.7
25			97.3	94.5	95.7	96.4	95.6
26			98.5	95.9	97.1	97.1	97.0
27			99.3	96.8	98.4	97.5	98.5
28			99.8	98.1	98.5	97.8	98.6
29			100.0	98.9	98.7	98.4	99.0
30				99.5	99.2	98.4	99.5
31				99.5	99.3	98.4	99.5
32				100.0	99.3	99.3	99.5
33					99.8	99.5	99.5
34					99.9	99.5	100.0
35					99.9	99.7	
36					100.0	100.0	
Total cases	329	596	709	628	543	435	372

Source: 1976 JFS.

A possible exception to this trend toward later marriages is found in the 30-34 age interval. Compared to the adjacent age group, the 30-34 group has a greater percentage of respondents in the 16 and 17 exact age category. This seemingly minor exception in the Jordanian data would normally deserve little notice. However, the prominence of this effect in the Syrian data forces a consideration of it.

An initial examination of the Table 9 reveals a comparatively higher AAFM. Recalling that for Jordan, 99.7 percent were married by the age of 29, whereas the comparable Syrian percentage is slightly lower at 98.4 percent. The difference is almost negligible. But the disparity at age 22 is somewhat greater. Over 89 percent of the Jordanian sample were married at this age. The Syrian respondent's cumulative total is about seven percent lower (82.4). This difference is larger still at age 19. Here, a cumulative total of 77 percent is found for the Jordanian sample , in contrast to the corresponding value of 57 percent for the Syrian sample.

The cohort trend found in Table 8 is not repeated in Table 9. The high cumulative percentages for the 45-49 age interval indicate a low AAFM. The percentage in the next category 40-44 indicate a high AAFM. But moving across the next three categories (35-39, 30-34,25-29) the cumulative percentages indicate a declining AAFM.

The mean ages at first marriage, found in the extreme right of Table 10, confirm the trends already outlined. The mean AAFM for all of the

TABLE 9: CUMULATIVE PERCENTAGES OF WOMAN FIRST MARRYING AT SUCCESSIVE AGES BY AGE INTERVAL AT THE TIME OF THE SURVEY: SYRIA 1978.

	AGE GROUP AT TIME OF SURVEY						
AAFM	15-19	20-24	25-29	30-34	35-39	40-44	45-49
15	55.7	29.0	26.2	28.1	22.0	21.1	28.9
16	75.6	43.6	36.1	39.2	31.1	31.6	36.2
17	92.3	58.2	47.5	50.3	41.9	40.8	45.8
18	98.4	71.2	57.2	59.7	52.4	49.9	53.3
19	100.0	82.7	67.1	69.4	62.6	58.2	60.6
20		90.0	74.6	75.4	68.9	69.4	65.8
21		95.9	80.3	79.3	75.3	74.3	73.3
22		98.9	86.7	84.6	80.6	80.1	78.1
23		99.8	90.7	88.9	83.6	84.1	82.7
24		100.0	95.1	90.9	85.9	86.6	86.0
25			97.6	92.2	89.5	90.2	88.9
26			99.2	94.9	91.4	92.7	89.7
27			99.4	96.2	93.0	93.1	91.8
28			99.6	98.1	96.0	94.2	93.5
29			100.0	99.0	97.7	95.3	95.0
30				99.9	99.0	95.7	96.5
31				99.9	99.8	96.2	96.7
32				99.9	99.8	96.7	97.9
33				100.0	99.8	97.6	98.3
34					99.9	98.3	98.3
35					100.0	98.5	98.5
36						98.5	98.9
Total cases	442	824	810	700	639	552	520

Source: 1978 SFS.

respondents in the Jordanian sample (17.1) is almost one year lower than the corresponding value for the Syrian sample (18.0).

The purpose for the inclusion of Table 10 is for the examination of the relationship between education and AAFM. It is evident that the two variables exhibit a strong positive relationship. But the variance in the Jordanian sample, on the variable of education, is somewhat greater. For those with no education, the mean AAFM is in the mid teens (16.5 years). The mean AAFM for those with more than 12 years of education is in the early twenties (23.2 years).

Literacy is undeniably related to years of education. For all intensive purposes literacy can be seen roughly as a dichotomous education variable, where literacy is synonymous with some years of education and illiteracy is an aggregate of those with no education. Notice, in both samples, those who are illiterate have an AAFM exactly that found for the 'zero years'category of education.

In general terms, average AAFM is higher for those who are literate. The literate Jordanian respondents, those who have had at least some education, marry on average 1.4 years later than their illiterate counterparts. A similar difference is found in the Syrian data, though at 0.4 years, the gap is noticeably smaller. Thus the relationship, though evidently positive in both samples, seems to have greater strength in Jordan.

TABLE 10: MEAN AGE AT FIRST MARRIAGE BY LEVEL OF EDUCATION AND LITERACY: JORDAN 1976 AND SYRIA 1978.

		YEARS OF EDUCATION						
		0 yrs	1-3yrs	4-6yrs	7-9yrs	10-12yrs	13+ yrs	ALL
Mean Age at First Marriage	JORDAN	16.5	16.7	17.2	17.3	19.9	23.2	17.1
	SYRIA	17.9	17.7	17.6	18.0	21.5	23.3	18.0

		LITERACY		
		LITERATE	ILLITERATE	ALL
Mean Age at First Marriage	JORDAN	17.9	16.5	17.1
	SYRIA	18.3	17.9	18.0

Source: 1976 JFS and 1978 SFS

As there are no data on religious background for the Syrian respondents, Table 11 summarizes AAFM for those of Moslem and Christian background in Jordan. Those reporting a Moslem religious affiliation indicated a mean AAFM almost one year higher (17.9) than the mean for the total sample (17.1). The Christians report an AAFM of only 16.5, which is almost a full 1.5 years lower than reported by Moslems. Quite clearly, the Christians (Catholics) are an identifiable subgroup whose nuptiality behavior emphasizes early marriage.

Table 12 presents the mean AAFM by type of residence. As might be expected those reporting on urban residence have a higher AAFM than those who report a rural residence. For Jordan an urban-rural differential of 1.2 years is found for current residence, and a slightly smaller differential of 0.8 years for childhood residence. On the other hand, a Syrian differential barely exists. In the case of current and childhood residence, the difference is but 0.2 years.

A point worth noting in the Jordanian results is the discrepancy between the mean AAFM for respondents reporting rural residence in childhood. Those reporting a rural childhood have a higher AAFM (16.7) than those reporting current rural residence (16.3). This seems to apparently contradict the finding of an increase in AAFM among the more recent cohorts. Possible reasons for this will be explored in the last chapter.

TABLE 11: MEAN AGE AT FIRST MARRIAGE BY RELIGION: JORDAN 1976

	AGE AT MARRIAGE
MOSLEM	17.9
CHRISTIAN	16.5
ALL	17.1

Source: 1976 JFS and 1978 SFS.

ABLE 12: MEAN AGE AT FIRST MARRIAGE BY TYPE OF CURRENT AND CHILDHOOD RESIDENCE: JORDAN 1976 AND SYRIA 1978.

	TYPE OF RESIDENCE				
	CURRENT		CHILDHOOD		
	URBAN	RURAL	URBAN	RURAL	All
JORDAN	17.5	16.3	17.5	16.7	17.1
SYRIA†	18.1	17.9	18.1	17.9	18.0

†Data not significant at the 0.05 level

Source: 1976 JFS and 1978 SFS.

Contraception

Broadly speaking, a positive relationship between contraceptive use and education emerges. However, before determining the relationship of current birth control use with other variables, it may be useful to examine a breakdown of the samples. Table 13 is the percentage distribution of each sample in terms of the type of current birth control used. Use is basically defined as some device or effort to inhibit conception. However, this definition necessitates a distinction between modern and inefficient forms of birth control. The modern form being the generally accepted and medically approved methods such as the oral contraceptive, IUD, condom, and male or female sterilization, These are technologically intensive methods that are distinct from the more traditional forms such as withdrawal.

Table 13 indicates that relatively few of the respondents use an inefficient form of birth control. Only 11.6 percent of the Jordanian sample and 7.1 percent of the Syrian sample report using an inefficient form of birth control. Also note the low overall use of modern birth control. Approximately one quarter of either sample is using a modern form of birth control- a rather low figure considering current use is defined only for currently married fecund women.[1]

Current type of contraceptive use is crosstabulated with education in Table 14. The results indicate that most of those who reported not using birth control generally have no education. Such is not the case for the

TABLE 13: DISTRIBUTION OF RESPONDENTS BY KNOWLEDGE, USE, TYPE OF EVER USE, TYPE OF CURRENT USE OF CONTRACEPTION: JORDAN 1976 AND SYRIA 1978.

		JORDAN	SYRIA
KNOWLEDGE OF CONTRACEPTION	NONE	2.6%	22.3%
	INEFFICIENT	0.1	0.9
	MODERN	97.3	76.8
	Total	100.0%	100.0%
TYPE OF EVER USE OF CONTRACEPTION	NONE	50.8	67.9
	INEFFICIENT	7.4	4
	MODERN	41.8	29.1
	Total	100.0%	100.0%
TYPE OF CURRENT USE OF CONTRACEPTION	NONE	40	45.6
	INEFFICIENT	8	4.6
	MODERN	17.8	14.5
	Total	65.7%*	64.7%*
CURRENT USE CONTRACEPTION	NO	39.9	40.4
	YES	25.9	18.8
	Total	65.7%*	59.2%*

* Does not equal 100.0% due to a number of missing cases.

Source: 1976 JFS and 1978 SFS.

TABLE 14: DISTRIBUTION OF RESPONDENTS BY CURRENT USE OF CONTRACEPTION CONTROLLING FOR LEVEL OF EDUCATION: JORDAN 1976 AND SYRIA 1978.

		YEARS OF EDUCATION						
		0 yrs	1-3yrs	4-6yrs	7-9yrs	10-12yrs	13+ yrs	Total
JORDAN	NOT USING	57.2%	6.2%	20.1%	11.7%	3.4%	1.3%†	100.0%
	USE INEFFICIENT	28.9	9.1	26.2	16.5	15.3	3.6†	100.0
	USE MODERN	27.4	6.3	26.3	19.7	14.7	5.6	100.0
SYRIA	NOT USING	75.7	2.8	13.7	5.2	1.9	0.7†	100.0%
	USE INEFFICIENT	31.2	5.4†	35.6	13.7	10.7	3.4†	100.0
	USE MODERN	36.1	7.2	30.2	16.0	7.9	2.6†	100.0

†Cells contain less than 20 cases.

Source: 1976 JFS and 1978 SFS

other two response categories of contraception. While there is a concentration of those who are not educated but using some form of birth control, what cannot be ignored is the healthy distribution of users across the other education categories. For example, only one third of the Syrian respondents using modern birth control have no edu[illegible] The rest generally have four or more years of education. C[illegible]ely, three quarters of those not using birth control in Syria are illiterate.

The relationship crystalizes further when one views Table 15. Again, literacy, being basically a dummy variable of eduction, dichotomizes the results parsimoniously . The Jordanian results indicate that those who are not using birth control are almost twice as likely to be illiterate than literate. For Syria, the illiterate- literate ratio increases from two to one, in the case of Jordan, to three to one. Barely one quarter of those not using birth control are literate; the rest have no education. As may be expected the reverse holds true for those who reported using birth control. In both samples the users are approximately twice as likely to be educated.

In Table 16, respondents by type of current use is broken down by type of current residence and type of childhood residence. Those who do not use birth control tend to be fairly closely split between urban and rural current residence in Jordan; a marginally higher number is found for those who live in an urban residence. The Syrian sample reports the opposite; a slight numerical advantage of non-users for those currently living in rural areas.

TABLE 15: DISTRIBUTION OF RESPONDENTS BY CURRENT USE OF CONTRACEPTION CONTROLLING FOR LITERACY: JORDAN 1976 AND SYRIA 1978.

		LITERACY		
		LITERATE	ILLITERATE	Total
JORDAN	NOT USING	37.8%	62.2%	100.0%
	USE INEFFICIENT	65.9	34.1	100.0
	USE MODERN	67.9	32.1	100.0
SYRIA	NOT USING	23.8	76.2	100.0%
	USE INEFFICIENT	69.3	30.7	100.0
	USE MODERN	61.9	38.1	100.0

Source: 1976 JFS and 1978 SFS.

TABLE 16: DISTRIBUTION OF RESPONDENTS BY CURRENT USE OF CONTRACEPTION CONTROLLING FOR TYPE OF CURRENT AND CHILDHOOD RESIDENCE: JORDAN 1976 AND SYRIA 1978.

		TYPE OF RESIDENCE					
		CURRENT			CHILDHOOD		
		URBAN	RURAL	Total	URBAN	RURAL	Total
JORDAN	USE MODERN	59.4%	40.6%	100.0%	44.0%	56.0%	100.0%
	USE INEFFICIENT	90.1	9.9	100.0	73.2	26.8	100.0
	NOT USING	90.5	9.5	100.0	74.9	25.1	100.0
SYRIA	USE MODERN	39.2	60.8	100.0%	33.3	66.7	100.0%
	USE INEFFICIENT	83.9	16.1	100.0	74.1	25.9	100.0
	NOT USING	88.1	11.9	100.0	80.9	19.1	100.0

Source: 1976 JFS and 1978 SFS.

The situation for those reporting contraceptive use, especially with regard to modern contraception, is markedly different. Generally, the probability the users being currently urban is around 10 times higher than the comparative probability of having a rural current residence. Clearly, birth control use is within the urban domain; a fact evident in both samples. The same differential holds true in terms of childhood residence, though not nearly to the same extent. Instead of the rural respondents making up 1/8th or 1/10th of the sample of birth control users, here they make up a larger proportion, closer to 1/4th to 1/5th of the category.

An interesting question in the area of birth control use is the extent of its relation to background knowledge. The relationship forms an important component in the debate over whether fertility decline is facilitated by economic development or by the dissemination of contraceptive technology and distribution of supplies.

The results of Table 17 indicate that a comparative analysis may not be likely with respect to this variable. The attenuation of variance in the variable 'method of contraception known', for Jordanian respondents, limits the scope of interpretation. Only a small percentage of the sample claim to not know of any birth control method. The Syrian case is somewhat different. Nearly 1/3 of those not using birth control are not aware of any type of birth control method. The data are partitioned in either extreme of the response set, suggesting that women in this region either don't know any method or know a modern form of birth control;

TABLE 17: TYPE OF CURRENT BIRTH CONTROL BY TYPE OF CONTRACEPTIVE KNOWN: JORDAN 1976 AND SYRIA 1978.

			TYPE OF CONTRACEPTIVE KNOWN			
			NONE	INEFFICIENT	MODERN	TOTAL
JORDAN	TYPE OF CURRENT USE OF CONTRACEPTION	NONE	4.2%	0.4%†	95.4%	100.0%
		INEFFICIENT	–	–	100.0	100.0%
		MODERN	–	–	100.0	100.0%
SYRIA	TYPE OF CURRENT USE OF CONTRACEPTION	NONE	28.8	1.1	70.1	100.0%
		INEFFICIENT	–	1.0†	99.0	100.0%
		MODERN	–	–	100.0	100.0%

† Cells contain less than 20 cases.

Source: 1976 JFS and 1978 SFS.

few fall in the middle category - knowledge of an inefficient form of birth control.

The data do suggest a relationship between knowledge and use of contraception. This relationship is evident to the extent that only in the category of 'none' can a substantial percentage of those who do not know of an form of birth control be found. But in a sense this is a self evident relationship since it is unlikely that one would find users of birth control who claim to not have heard of it.

The findings beg the question: does increased awareness of birth control lead to further use? The Jordanian sample can be viewed as a sample with an increased awareness and education regarding birth control. Does this lead to increased use of contraception? The overall levels of modern birth control use in Jordan , recalling from Table 13, is only three percent higher than that for Syria. Given this less than dramatic result, it is likely that other social factors may be more powerful determinants of birth control use.

Table 18, contraceptive use by religious affiliation, suggests a pattern in the data. The Christians make up the majority of those not using birth control (62.2 percent). Only about one third of non-users are Moslems (37.8 percent).

TABLE 18: DISTRIBUTION OF RESPONDENTS CURRENT USE OF CONTRACEPTION FOR RELIGION: JORDAN 1976.

	RELIGION		
	MUSLIM	CHRISTIAN*	Total
NOT USING	37.8%	62.2%	100.0%
USE INEFFICIENT	65.9	34.1	100.0
USE MODERN	67.9	32.1	100.0

* All Christians in Jordan sample are coded as Catholic

Source: 1976 JFS and 1978 SFS.

Breastfeeding Intervals

In the following section the interaction of the last closed breastfeeding interval with respect to a variety of social factors is examined. This interval is an indicator of the period of post partum lactational infecundity.

When breastfeeding intervals by age in 5 year categories is examined, a positive relationship emerges in both sets of data (Table 19). In both cases breastfeeding differentials of almost one half year between those in the younger age intervals, <20, and 20-24 and those in the oldest group 45-49. The youngest age group in the Jordanian sample averages 9.4 months of breast feeding, while the similar group in Syria breastfeeds for 11.4 months.

This two month differential holds fairly consistently throughout the range of age groups. The means for the total samples also reflect this difference; the Jordanian breastfeeding interval is about one year (12.2 months) while the Syrian value averages to 14.3 months.

According to Table 20, those with no education in Jordan average 14 months of breastfeeding . The corresponding value obtained for Syria is one and one half months higher at 15.5 months. At that point the intervals in both sample drop sharply for those with 1-3 years of education. While generally higher intervals for the Syrian respondents across the range of

TABLE 19: MEAN BREASTFEEDING INTERVAL IN MONTHS BY AGE IN 5 YEAR INTERVALS: JORDAN 1976 AND SYRIA 1978.

		AGE INTERVAL							
		< 20	20-24	25-29	30-34	35-39	40-44	45+	ALL
Mean Breastfeeding Interval in Months	JORDAN	9.4	9.7	10.9	12.4	13.4	14.1	14.8	12.2
	SYRIA	11.4	12.0	13.0	13.7	15.1	16.8	17.2	14.3

Source: 1976 JFS and 1978 JFS.

TABLE 20: MEAN BREASTFEEDING INTERVAL BY LEVEL OF EDUCATION: JORDAN 1976 AND SYRIA 1978.

		EDUCATION IN YEARS						
		0	1-3	4-6	7-9	10-12	13+	ALL
Mean Breastfeeding Interval in Months	JORDAN	14.0	11.5	11.0	9.7	7.6	4.5	12.2
	SYRIA	15.5	13.1	12.3	9.3	9.4	6.4	14.3

Source: 1976 JFS and 1978 SFS.

TABLE 21: MEAN BREASTFEEDING INTERVAL BY LITERACY: JORDAN 1976 AND SYRIA 1978.

		LITERATE	ILLITERATE	ALL
Mean Breastfeeding Interval in Months	JORDAN	10	13.8	12.2
	SYRIA	11.3	15.5	14.3

Source: 1976 JFS and 1978 SFS.

education are observed, those with 7-9 years of schooling in Syria report lower intervals compared with the same interval in Jordan.

Education has a considerable influence in the determination of breastfeeding intervals. The range of intervals found for those respondents who are not educated to those who are highly educated, produces a difference of approximately one year of breastfeeding. This is a differential of substantial weight considering the respective means for the total in both sample is approximately one year.

The difference in intervals between those who are literate and those who are illiterate is about 4 months (Table 21). Those literate tend to breastfeed for a period that is 2.2 months shorter in Jordan, and 3.0 months shorter in Syria.

Table 22 indicates that the differences by type of residence are not as large as those found in terms of education or literacy. The urban respondents show slightly shorter breastfeeding intervals. The current urban residents in Jordan report a breastfeeding interval of 11.5 months. But their rural counter parts breastfeed for 13.8 months - 2.3 months longer. Similar results are found for the Jordanian respondents broken down by childhood residence. The higher Syrian values found in the earlier crosstabulation persist in this table as well. While the difference in values between types of current residence is nearly the same as in the Jordanian data (2.2 months), the absolute values are typically about 1.5 months higher.

TABLE 22: MEAN BREASTFEEDING INTERVAL BY CURRENT AND CHILDHOOD RESIDENCE: JORDAN 1976 AND SYRIA 1978.

		CURRENT RESIDENCE		CHILDHOOD RESIDENCE		
		URBAN	RURAL	URBAN	RURAL	ALL
Mean Breastfeeding Interval in Months	JORDAN	11.5	13.8	11.2	13.4	12.2
	SYRIA	13.1	15.3	12.8	15.3	14.3

Source: 1976 JFS and 1978 SFS.

A final, incidental, point is the result obtained when respondents are compared across period of residence. The results obtained in the childhood residence category indicate lower breastfeeding intervals as compared to the corresponding values for current residence. This is likely due to the resident history of the respondents.

Breastfeeding , in producing subsequent lactational amenorrhoea, can be viewed as a form of contraception. Table 23 addresses the question of how breastfeeding intervals vary in terms of actual contraceptive behavioral patterns.

What is initially evident from the table is the considerably lower intervals for respondents who report a knowledge and use, or have used, modern contraception. Those who have no knowledge of contraception have the longest breast feeding intervals within their respective samples. The Jordanians average 14.4 months, while the Syrian average 17.0 months. Caution, however, should be exercised when interpreting the Jordanian result as very few women in Jordan have a no 'background knowledge' of contraception. On the other hand, there are many Syrian respondents who lack a background knowledge of contraception. They report an interval of 17 months; rather high and likely due to the characteristic of the subgroup who, in all probability, are older, less educated and rural.

Women by their type of contraception ever used, and currently used, have similar patterns in both samples. Those who have ever used a modern contraceptive average a breastfeeding interval of 3.4 months

TABLE 23: MEAN BREASTFEEDING INTERVAL BY TYPE OF CONTRACEPTIVE USE: JORDAN 1976 AND SYRIA 1978.

		TYPE KNOWN			TYPE EVER USED			TYPE CURRENTLY USE		
		NONE	INEFFICIENT	MODERN	NONE	INEFFICIENT	MODERN	NONE	INEFFICIENT	MODERN
Mean Breastfeeding Interval in Months	JORDAN	14.4†	_	12.2	13.8	11.5†	10.4	13.3	10.6†	9.7
	SYRIA	17.0	14.8†	13.5	15.4	12.3†	12.0	15.2	12.6†	12.0

† Cells contain less than 20 cases.

Source: 1976 JFS and 1978 SFS.

TABLE 24: MEAN LENGTH OF BREASTFEEDING INTERVAL BY RELIGIOUS AFFILIATION: JORDAN 1976.

	RELIGION		
	MOSLEM	CHRISTIAN*	ALL
Mean Breastfeeding Interval in Months	10	13.8	12.2

*All Christians are coded as Catholic.

Source: 1976 JFS and 1978 SFS.

shorter than those who have never used a contraceptive. The lowest value found is that which is reported for the Jordanian respondents who currently use modern birth control (9.7 months). If put in perspective, this value is approximately half of the value reported for Syrian women who have no experience with, nor any knowledge of contraception (17.0 months). This differential in periods of lactational amenorrhoea likely forms an important element in the determination of fertility.

In Table 24 the mean length of breast feeding is broken down by religious affiliation. Moslem women report a substantially lower interval than the Christian women who, as pointed out in the table, are all Catholic (10 months vs 14 months).

This is an unexpected result in light of the more intuitive assumption that Moslems in the Arab world have traditionally been of comparatively lower socioeconomic status. One would expect that this relative economic position, if a reality, would translate into longer breastfeeding intervals. It is possible that the socioeconomic characteristics of Moslems, relative to those of Christians, may differ from generally accepted beliefs. Such an analysis is undoubtedly useful from the point of view of the determinants of fertility and in terms of effective public policy. However, in keeping within the scope of this analysis, religious affiliation will continue to be treated as an exogenous variable.

Abortion

In this next subsection, abortion, as an intermediate variable, is broken down in terms of several social factors. As mentioned earlier a comparative analysis will not be possible owing to the fact that only the Jordanian Fertility Survey gathered information on this variable.

Table 25 presents the mean number of abortions broken down by education, as well as the mean number of abortions for the total sample. In general, the mean indicates that one out of every four women in this sample have undergone an abortion. The results, however, vary somewhat in terms of the social factors.

As a group, those with no education reported a mean of 0.21 abortions; slightly lower than the total sample mean. The highest value, 0.37, is found in the adjacent category which includes women with only 1-3 years of education. The high values persist in the 4-6 years category then drop suddenly for the 7-9 group. The same occurs in the 13+ category where values are quite evidently lower than the other non-zero categories.

There are indications of a strong urban rural differential with respect to abortion. Table 26 presents mean number of abortions by current and childhood residence. Respondents who report an urban current residence have nearly twice the level of abortions (0.29) than their rural counterparts (0.15). The same differential exists for

TABLE 25: MEAN NUMBER OF ABORTIONS BY LEVEL OF EDUCATION: JORDAN 1976.

	YEARS OF EDUCATION						
	0	1-3	4-6	7-9	10-12	13+	ALL
Mean Number of Abortions	0.21	0.37	0.31	0.22	0.35	0.22	0.25

Table not significant at the 0.05 level.

Source: 1976 JFS.

TABLE 26: MEAN NUMBER OF ABORTIONS BY TYPE OF CHILDHOOD AND CURRENT RESIDENCE: JORDAN 1976.

	CURRENT RESIDENCE		CHILDHOOD RESIDENCE		
	URBAN	RURAL	URBAN	RURAL	ALL
MEAN NUMBER OF ABORTIONS	0.29	0.15	0.3	0.19	0.25

Source: 1976 JFS.

childhood residence though not quite to the same extent as observed for current residence.

Similar to lactational amenorrhoea, abortion can be viewed as a form of birth control (albeit crude). At a very minimum it is a behavioral response to a desired level of family size. Its use represents a means to a desired family size. Thus, it is clearly associated with contraceptive use. The findings support the view that, in motivational terms, abortion is on a continuum with other forms of contraception. It must be made clear, however, that the two differ in that contraception is a method used to avoid conception, whereas abortion is strictly a practice of family limitation after conception has taken place.

On the other hand, it is arguable that abortion, rather than being an extension or a next step in the family limitation process, is an unrelated behavior practised by those who do not know or have access to contraceptive technology. Table 27 presents mean number of abortions by background knowledge of contraception. The results seem to refute the idea that abortion is basically a crude response to an unplanned fertility regime. Rather, the results of the table indicate that is is exactly those who have an adequate knowledge of birth control may , at time, resort to abortion. However, these results are by no means definitive considering that there are very few respondents in Jordan who do not have a knowledge of modern contraception.

TABLE 27: MEAN NUMBER OF ABORTIONS BY KNOWLEDGE OF BIRTH CONTROL AND BY RELIGIOUS AFFILIATION: JORDAN 1976.

	MEAN NUMBER OF ABORTIONS
NONE	0.07
KNOW INEFFICIENT	0.00†
KNOW MODERN	0.26
MOSLEMS	0.29
CHRISTIANS*	0.22
ALL	0.25

*All Christians coded as Catholic.

†This cell contains less than 20 respondents

Source: 1976 JFS.

Relative to the overall sample mean is 0.25 abortions, an average of only 0.07 abortions was obtained for those who have background knowledge.

Son Preference

To briefly recall, the desire for sons has several elements. One of these elements manifests itself in a measurable differential mortality between sons and daughters. As a base line, or referent, the collective sex ratio at birth of the respondent's children within each respective sample is used. This value is then matched to a mortality sex ratio calculated for all children who were reported as not surviving. The difference, assuming equal probability of mortality, represents a social selectivity in favour of one of the two sexes. Specifically, sex ratios are calculated using the excess male birth formula. In this case the formula is also utilized in the analysis of excess male deaths.

Table 28 indicates, for both Jordan and Syria, the well established male advantage in sex ratios at birth. Comparatively speaking, the value of 102 / 100 for the entire Jordanian sample is slightly less than the sex ratio of 104 / 100, calculated for the Syrians. The slightly higher Syrian values persist even in the subgroup of respondents below 36 years of age.

The salient feature of Table 28 is the noticeably lower mortality sex ratios in relation to the sex ratios at birth. In the case of the total Jordanian sample, the mortality ratio is over two percent lower than the sex ratio at birth (1.021 vs 0.999). Thus, females are experiencing a higher mortality after birth. The Syrian sample experiences a differential almost twice that of Jordan. The mortality sex ratio of Syrian respondents is shifted in favour of the females by almost four percent (1.040 vs 1.001).

TABLE 28: EXCESS MALE BIRTHS AND EXCESS MALE DEATHS FOR ALL RESPONDENTS, AND FOR RESPONDENTS BELOW THE AGE OF 36: JORDAN 1976 AND SYRIA 1978.

		ALL RESPONDENTS	RESPONDENTS < 36
JORDAN	SEX RATIO	2.1%	0.1%
	MORT. SEX RAT.	0.0	-1.5
SYRIA	SEX RATIO	4.0%	4.0%
	MORT. SEX RAT.	-1.2	-1.6

Source: 1976 JFS and 1978 SFS.

This disparity between sex ratios was repeated for respondents below the age of 36. The reasoning behind this modification in the analysis stems from the effort to isolate, or more closely define, the age distribution of differentials in mortality.

If all respondents are considered, without regard to age, it is possible that children who, by chronological definition, are adults would be included. Consider the 45 year old respondent who had her first child by the age of 20. At the time of the Survey, her 'child' could be married and have children of her own. By including only those below the age of 36 one can be reasonably assured that our subgroup of children would not have reached the age of adulthood. On the other hand, enough time is allowed for any alleged differential mortality occur.

The results obtained from the analysis of this subset mimic those obtained from the entire sample. Again, one observes a differential mortality whereby females not surviving at a rate expected, based on the assumption of equal probability of mortality from birth.

The next four tables address the issue of desire for sons from a slightly different point of view. Table 29 presents the mean breastfeeding interval by sex of the breastfed child. The data gleaned in this form are only available from the Syrian Fertility Survey. Blatant evidence of son preference is found. The average breastfeeding interval for a male infant is 14.8 months. The corresponding interval for a female infant is 13.7 months. This represents a difference of over one month in favour of male

TABLE 29: MEAN BREASTFEEDING INTERVAL BY SEX OF BREASTFED CHILD: SYRIA 1978.

	SEX OF BREASTFED CHILD		
	Male	Female	ALL
Mean Breastfeeding Interval in Months	14.8	13.7	14.3

Source: 1978 SFS.

TABLE 30: MEAN BREASTFEEDING INTERVAL IN MONTHS BY SON RATIO CONTROLLING FOR NUMBER OF CHILDREN: JORDAN 1976 AND SYRIA 1978.

		< 4 CHILDREN		4+ CHILDREN		
		Son ratio		Son ratio		
		0 -0.49	0.50-1.00	0 -0.49	0.50-1.00	ALL
Mean Breastfeeding Interval in Months	JORDAN	9.0		10.8	13.7	12.2
	SYRIA	12.5	14.3	13.2	16.3	14.3

Table not significant at the 0.05 level.

Source: 1976 JFS and 1978 SFS.

infants. This is a fertility related behavioral component that is, to some extent, determined by sex preference.

Table 30 presents the mean breastfeeding interval in terms of the existing son ratio of the family , while controlling for family size. This is an indirect approach to the question since the actual breastfeeding interval may refer to either a male or a female infant. What is of interest is the breastfeeding habit of respondents in the context of differing ratios of sons to children.

Table 30 suggests that women who have more daughters than sons tend to breastfeed for markedly shorter intervals. For example, the Jordanian respondents with fewer than four children, and who have more daughters than sons, breastfeed for 9.9 months on average. Conversely, the group with more sons than daughters, also with fewer than four children, breastfeed for 13.1 months; over 3 months longer. This disparity also holds for those Jordanian respondents with four or more children, although their average rates are slightly higher overall.

The Syrian group has much the same story. Those with a lower son ratio breastfed substantially less than those with more sons to daughters. The margin of difference in the group that reports fewer than four children is under two months. The respondents with four or more children show a difference of over 3 months. Notice the mothers in Syria who have more than 5 children, of whom most are sons. They breastfeed for 16.3 months; this group has, by far, the largest breastfeeding interval

Table 31 details patterns of contraceptive [redacted] as a function of the existing sex structure of the family. The table presents this relationship for all respondents, for those with fewer than four children, as well as for those with four or more children.

What can generally be concluded from the table is that women with a higher son ratio are more likely to use birth control. However, by looking only at those women who are not using birth control one observes that the majority of non-users are also those with a greater ratio of sons; a finding that tends to refute the presence of son preference. But when compared to the corresponding values for those women who use modern contraceptives, support is in fact gained for the existence of sex preference.

A case in point is found in the category of all Syrian respondents. Note that the proportion of respondents not using birth control is about evenly divided between the low and high ratio groups; perhaps slightly in favor of the high son ratio group. Moving to the category of those who use modern birth control, the disparity is found to be much greater. Nearly two thirds of respondents (63.8%) , with more sons to daughters, use contraception. The remaining one third (36.2%) make up the group with fewer sons to daughters. The Jordanian respondents show a similar disparity.

The findings for those respondents with fewer than four children and four or more children are much the same. However, a very important pattern emerges upon close examination of the table. If the size of the

TABLE 31: PERCENTAGE OF RESPONDENTS BY CURRENT USE OF CONTRACEPTION CONTROLLING FOR SON RATIO AND NUMBER OF CHILDREN: JORDAN 1976 AND SYRIA 1978.

	ALL RESPONDENTS			LESS THAN 4 CHILDREN			4 OR MORE CHILDREN		
	Son ratio		TOTAL	Son ratio		TOTAL	Son ratio		TOTAL
	0-0.49	0.50-1.00		0-0.49	0.50-1.00		0-0.49	0.50-1.00	
JORDAN NOT USING	41.2%	59.9%	100.0%	38.7%	61.3%	100.0%	43.5%	56.5%	100.0%
JORDAN USE INEFFICIENT	40.6	59.4	100.0	41.4	58.6	100.0	39.9	60.1	100.0
JORDAN USE MODERN	34.6	65.4	100.0	32.2	67.8	100.0	36.0	64.0	100.0
SYRIA NOT USING	47.7	52.3	100.0	37.7	62.3	100.0	43.8	56.2	100.0
SYRIA USE INEFFICIENT	43.9	56.1	100.0	33.7	66.3	100.0	50.0	50.0	100.0
SYRIA USE MODERN	36.2	63.8	100.0	29.9	70.1	100.0	41.1	58.9	100.0

Table not significant at the 0.05 level.

Source: 1976 JFS and 1978 SFS.

percentage disparity, in the category of users of modern contraceptives, can be viewed as a measure of the strength of son preference, then son preference manifests itself more profoundly in the earlier stages of fertility. For example, the Syrian respondents with fewer than four children, and who use birth control, distribute themselves in the percentages of 29.9 and 70.1 in favour of the those respondents with a higher ratio of sons. The corresponding Syrian percentages for those respondents with four or more children are 41.1 and 58.9 in favour of a higher son ratio. The disparity is not as pronounced for those with more children. The same holds true for the Jordanian sample, though to a lesser extent.

Finally, as a further demonstration of the strength of son preference, Table 32 presents the future fertility preferences of respondents in terms of the existing son ratio of their families. Simply, women with a lower ratio of sons are much more likely to want more children. For example, 64.4 percent of Jordanian respondents, with a low son ratio want more children. In comparison, only 32.8 percent were satisfied with their current family size. The Jordanian group, with a higher son ratio, is more evenly distributed with 46.4 percent wanting more children and 48.8 percent indicating that they are currently at a maximal level of desired fertility.

In similar fashion to the Jordanians, almost two thirds of the Syrian sample, with a low son ratio, wanted more children. Also in line with the Jordanian results, the Syrian group, with higher son ratio, exhibits a minimal disparity in terms of future fertility preferences.

TABLE 32: PERCENTAGE DISTRIBUTION ACCORDING TO FUTURE FERTILITY PREFERENCES CONTROLLING FOR SON RATIO; JORDAN 1976 AND SYRIA 1978.

		FUTURE FERTILITY PREFERENCES			
	SON RATIO	WANT MORE	NO MORE	UNDECIDED	TOTAL
JORDAN	0 - 0.49	64.6%	32.8%	2.6%	100.0%
	0.50 - 1.00	46.4	48.8	4.8	100.0
SYRIA	0 - 0.49	64.8	29.8	5.4	100.0%
	0.50 - 1.00	50.8	42.3	6.9	100.0

Source: 1976 JFS and 1978 SFS.

Fertility

Table 33 presents the age specific fertility rates (ASFRs) and the total fertility rates (TFRs) for both Jordan and Syria. ASFRs are taken from the household questionnaire and, accordingly, apply to women between 15-49, regardless of marital status.[2]

What is immediately evident is the high total fertility rates (TFR). Both countries definitely belong to the category of high fertility countries. The Jordanian TFR is marginally higher at 7.66, while the Syrian is close behind at 7.48.

An important difference emerges with respect to the pattern of age specific fertility. Note that in the younger ages, Jordanian fertility is substantially higher. For the 15-19 year age interval, the Jordanian rate is 133/1000, as compared to 112/1000 for Syria. The rates for the next three age intervals are also in Jordan's favour. This is a significant development that unfolds during the most formidable child bearing years.

The Syrian rates are lower than Jordan's over a substantial portion of the childbearing years. Only in the last three categories do Syrian rates exceed those of Jordan. In the 40-44 age category the Syrian rate of 156/1000 represents a 50 percent increase over the Jordanian rates of 104/1000. In the last category the Jordanian rates are almost negligible, while Syrian fertility persists at 37/1000.

TABLE 33: AGE SPECIFIC FERTILITY RATES AND TOTAL FERTILITY RATES: JORDAN 1976 AND SYRIA 1978.

	AGE SPECIFIC FERTILITY RATES†							
	15-19	20-24	25-29	30-34	35-39	40-44	45-49	TFRs††
JORDAN	133	344	358	336	245	104	11	7.66
SYRIA	112	298	337	298	257	156	37	7.48

† ASFRs are taken from the household questionnaire and thereby include unmarried women. All ASFRs have a denominator of 1000.

†† TFRs are derived from the individual questionnaire and refer to ever married women only

Source: The Syrian fertility...1978:5
Abdel-Aziz 1983:19

Another approach to looking at fertility with respect to age is presented in Table 34. Here the average number of children born to mothers within specific age intervals is calculated (from the individual questionnaire - i.e. ever married). This represents cumulative fertility based upon the fertility rates specific to that age cohort.

The effects of higher fertility in the early stages of childbearing manifest themselves clearly. At the age of completed fertility, 45-49, the Jordanian sample reports over one child more (9.1 vs 8.0). However, this advantage starts early. In the 20-24 age interval the Jordanians already have a greater cumulative fertility. By the 30-34 age interval the lead is substantial. Though it was reported in earlier that Syrian fertility exceeds that of Jordan in later years, the Syrian respondents are unable to catch up. Clearly, the early years of child bearing have the greatest impact on completed fertility.

The results of Table 35 imply that high early fertility in Jordan is a more profound phenomenon for more recent cohorts. It presents the mean number of children born during the first five years of marriage. But the greatest difference between the two countries was obtained in the younger cohorts. Jordanian respondents in the age category 25-29 report an average of 2.4 children in the first five years of marriage. This can be compared to a corresponding Syrian value of 2.1 children for the same time period.

Overall, the Jordanian females were older, more likely to live in urban centers, and tended to have a higher education than the Syrian

TABLE 34: AVERAGE NUMBER OF CHILDREN EVER BORN BY AGE OF MOTHER: JORDAN 1976 AND SYRIA 1978

	AGE INTERVAL							
	<20	20-24	25-29	30-34	35-39	40-44	45-49	ALL
JORDAN	0.88	2.50	4.30	5.90	7.40	8.72	9.10	5.40
SYRIA	0.88	2.17	3.72	5.23	6.69	7.56	8.03	4.70

Source: 1976 JFS and 1978 SFS.

TABLE 35: MEAN NUMBER OF CHILDREN BORN IN THE FIRST FIVE YEARS OF MARRIAGE BY AGE OF MOTHER: JORDAN 1976 AND SYRIA 1978.

	AGE INTERVAL							
	<20	20-24	25-29	30-34	35-39	40-44	45-49	ALL
JORDAN	1.9	2.4	2.4	2.3	2.0	2.1	1.9	2.2
SYRIA	2.0	2.1	2.1	2.0	2.1	1.9	1.8	2.0

Source: 1976 JFS and 1978 SFS.

TABLE 36: MEAN NUMBER OF CHILDREN BORN IN THE PAST FIVE YEARS BY AGE OF MOTHER: JORDAN 1976 AND SYRIA 1978.

	AGE INTERVAL							
	<20	20-24	25-29	30-34	35-39	40-44	45+	ALL
JORDAN	0.9	2.0	2.2	1.9	1.6	1.0	0.4	2.2
SYRIA	0.9	1.8	2.0	1.7	1.6	1.0	0.4	1.5

Source: 1976 JFS and 1978 SFS.

females. In both countries, marriage is practically universal and occurs at a very young age. Contraceptive use is low, especially in Syria. Syrian women also indicated longer breastfeeding intervals. Education, generally low in both countries, was found to be associated with increased contraceptive use and reduced breastfeeding intervals. Substantial evidence of son preference, in both Jordan and Syria, was found. Finally, Jordanian females had a higher completed fertility as well as higher fertility rates in the younger age groups.

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[1] This excludes all sterilized females, as well as all those who are currently pregnant.

[2] Computer software for calculation of ASFRs were not available at the University of Alberta at the time of this writing. Determination of ASFRs involve a computer program of relative complexity due to the structure and format of the data sets.

Chapter 5

Correlates of Fertility

In the following section, the results that serve as a prelude to the eventual construction of the fertility model are considered. For ease of interpretation, and for the sake of consistency, Table 37 and 38 present all regression results in their standardized form (i.e. Beta coefficients).

AAFM: The level of explained variance (r2) obtained for AAFM is found to be higher for the Jordanian data (0.14) than that obtained for the Syria data (0.06).

What is immediately obvious in both samples is the relatively powerful effect of education on age at first marriage. The Jordanian regression produced a beta of 0.41. The Syrian value is within the same range at 0.33. Interestingly, the effect of husbands education was relatively minor in comparison; 0.08 and 0.06 for the Jordanian and Syrian samples respectively.

Age was included in the analysis in order to ascertain any possible cohort effects. Recalling from the cumulative frequencies in Tables 8 and 9, there was evidence of an increase in AAFM for younger cohorts. This was most pronounced for the Jordanians; Syrians showed some exceptions to this pattern in its middle range age categories. However, according to

TABLE 37: RESULTS OF THE REGRESSION ANALYSIS: BETA (B) COEFFICIENTS AND EXPLAINED VARIANCE: JORDAN 1976.

	AAFM†	ABORTION	BR FEED INT	CONTR USE	# OF CHILD††
r2	0.14	0.05	0.14	0.29	0.12
AGE	0.04	0.22	0.20	0.27	
EDUCATION (RESP.)	0.41	0.02*	-0.19	0.13	
EDUCATION (HUSB.)	0.08	0.03*	-0.014	0.15	
CURRENT RESIDENCE	-0.03*	-0.001*	0.08	-0.16	
CHILDHOOD RESIDENCE	0.05	-0.09	0.02*	-0.09	
RELIGION	0.10	0.01*	-0.04	-0.10	
BIRTH CONTROL KNOWL.		-0.02*	-0.01	0.08	
SON RATIO			0.03	0.11	
AAFM					-0.28 (-0.33)
ABORTION					0.07 (-0.33)
BREASTFEEDING INT.					0.16 (-0.05*)
CONTRACEPTIVE USE					0.11 (0.07*)

† Regression does not include 15-19 & 20-24 age intervals.

†† Beta outside brackets - phase I. Beta inside brackets - phase II. Phase II sample subset for AAFM, abortion and breastfeeding intervals contains only 45-49 year olds who have no education and currently live in a rural residence. The subset for contracetive use contains the same age groups but excludes both those without education and who currenly live in a rural residence. See text for more information.

* Not significant at the 0.05 level.

Source: 1976 JFS.

TABLE 38: RESULTS OF THE REGRESSION ANALYSIS: BETA (β) COEFFICIENTS AND EXPLAINED VARIANCE: SYRIA 1976.

	AAFM†	BR FEED INT	CONTR USE	# OF CHILD††
r2	0.06	0.15	0.39	0.12
AGE	0.15	0.23	0.21	
EDUCATION (RESP.)	0.33	-0.02	0.01*	
EDUCATION (HUSB.)	0.06	-0.01	0.01	
CURRENT RESIDENCE	0.05*	-0.01*	-0.02	
CHILDHOOD RESIDENCE	0.05*	0.07	-0.12	
BIRTH CONTROL KNOWL.		-0.01	0.18	
SON RATIO		0.07	0.06	
AAFM				-0.14 (-0.22)
BREASTFEEDING INT.				0.16 (-0.15*)
CONTRACEPTIVE USE				0.01 (-0.16*)

† Regression does not include 15-19 & 20-24 age intervals.

†† Beta outside brackets - phase I. Beta inside brackets - phase II. Phase II sample subset for AAFM, abortion and breastfeeding intervals contains only 45-49 year olds who have no education and currently live in a rural residence. The subset for contracetive use contains the same age groups but excludes both those without education and who currenly live in a rural residence. See text for more information.

* Not significant at the 0.05 level.

Source: 1978 SFS.

Table 37, the beta of 0.04 indicates a positive relationship between chronological age and age at first marriage. This result is obtained, despite efforts to attenuate any distortion of the data due to censoring the 15-19 age group.

With the exception of current residence in the Jordanian sample, residence was positively related to age at first marriage. In terms of the response set (urban=1 and rural =2) this is interpreted as rural residence being associated with increasing age at first marriage. This runs counter to the intuitive assumption of a higher age at marriage for urban residence. However, it should be noted that the results for both samples are not significant except for respondents of childhood residence in Jordan which produced a very low beta coefficient.

The extra variable of religious affiliation, used in the Jordanian questionnaire, produces a healthy beta of 0.10. In terms of the response set (Moslem=1 and Christians=2) this is taken to mean that Christians have a higher age at first marriage than Moslems. Religion, as an additional variable, with its substantial explanatory power, likely serves to increase the explained variance of the dependent variable to 0.14. This can be contrasted with the lower r2 value of 0.06 obtained from the Syrian survey.

Breastfeeding Interval: In both surveys, breastfeeding interval showed a positive relationship with age. The older respondents tended to breastfeed for longer periods of time. In fact, the beta coefficients are very similar, implying a similarity in the mechanism of this relationship.

The educational level of the respondents proved to be a worthy independent variable. In both samples a negative result was obtained, confirming previous findings that education has a negative influence on breastfeeding. The absolute value of the beta coefficient was only slightly higher in the Jordanian case (-0.19 vs -0.17). The educational level of the husband was also negatively related to the breastfeeding interval. However the beta coefficient in the Syrian case is comparatively low. A beta of only -0.07 was obtained in contrast to the value obtained from the Jordanian sample of -0.14.

Interestingly, current residence in the Jordanian sample had a stronger impact in breastfeeding intervals than childhood residence. The beta for the latter group (0.02) was quite low and not sig at the 0.05 level. However, the situation is reversed in the case of Syria. It is in fact the current residence variable that produced a low beta which was not significant at the 0.05 level. Nevertheless, the substantive result to be noted is the longer breastfeeding intervals reported for those in rural environments.

Background knowledge of contraception was largely ineffectual as an independent variable in the Jordanian sample. This is likely due to the fact that almost all Jordanians have a background knowledge of birth control. However, a beta coefficient of -0.11 in the Syrian case places background knowledge as an important predictor of breastfeeding intervals. Those with a lack of modern contraceptive knowledge tended to have the largest interval of breastfeeding.

Finally, as a confirmation of earlier findings, breastfeeding lengths were found to be longer for those women with a greater ratio of sons. In both cases, but more so for Syrian respondents, a positive and significant beta coefficient implies that either sons are receiving preferential treatment, or, that mothers are attempting to increase birth spacing, and thereby attenuate fertility, in light of a satisfactory sex ratio of children.

Contraception: Contraceptive use had the highest r2 of any dependent variable in the analysis. The Jordanian value is observed to be 0.29, while the Syrian result is 0.39. This healthy portion of explained variance is distributed across several factors, each of which has a substantial beta coefficient.

Age had a strong positive correlation with contraceptive use. It is suspected that much of the correlation between the two variables arises out of the association of 'number of living children' with contraception. Those who are older, are most likely to have a satisfactory number of children. Those with a satisfactory family size are most likely to use contraceptives.

Education of respondents played a substantial role in the Jordanian sample. The resulting beta coefficients of 0.13 and 0.15, for education of respondent and education of husband, indicate that users of birth control are likely to be more educated. The lack of strong results from the Syrian sample likely arises out of a lack of variance on this variable; much in the

same way a lack of variance in background knowledge of contraception produced insignificant results from the Jordanian survey.

The results obtained from current and childhood residence firmly establish that users of contraception tend to be urban rather than rural. The negative beta coefficients are to be interpreted in terms of the response set. (1=urban 2=rural). But the slope of the regression lines tend to be steeper in the Syrian case, leading to the possible assertion that differentials in contraception, with respect to residence, are greater in this sample.

In both cases, current residence has a larger coefficient relative to the coefficient resulting from the analysis of childhood residence. This stands to reason since current residence refers to a more recent time period.

Birth control knowledge, the next social variable considered, is positively associated with contraceptive use. The Syrian beta of 0.18, as compared to the Jordanian value of 0.08, leads to the possible conclusion that the effect is stronger in the former case. This result, however, is likely a statistical artifact arising out of the lack of variance in the Jordanian sample.

Mothers in both samples are more likely to use birth control when the existing sex ratio of their families favours males. This supports the earlier crosstabulations presenting clear evidence of sex preference.

Finally, the negative beta, resulting from the regression of religious affiliation, is seen as indicative of a higher contraceptive use among Moslems as compared to Christians. This is a less than surprizing result, owing to the fact that all Christians in the sample are Catholic, who, in any case, have a prohibition against birth control.

Abortion: In terms of its r^2, the results for the intermediate variable of abortion are somewhat unremarkable. Also, only two of the eight independent variables are significant.

Basically the results of this regression informs us that the older respondents tend to have more abortions than the younger respondents. An attempt at any causal connection, however, would be unadvised since the older respondents are also those with more children. It is more likely that parity rather than age is the source of the correlation.

The other variable worth noting is that of religious affiliation. The negative beta obtained indicates another somewhat expected result; Moslem respondents are more likely to consider abortion than the Catholic respondents. They, of course, are bound by religious proscription prohibiting such behavior.

Number of children (Phase I and Phase II regression): The final dependent variable, number of children born, was regressed on the four intermediate variables. In reality this was a two-stage regression. Phase I included all respondents in the surveys. Phase II included only a subset of all respondents. This latter distinction arises out of an effort to

control for effects that are viewed as possibly confounding. For example, when analyzing breastfeeding intervals in relation to fertility, one invariably obtains a strong association between long breastfeeding interval and high fertility. This is a result of the fact that is precisely those women who practise longer breastfeeding intervals, and as was perviously seen, avoid contraception, who prefer larger families. But this correlation masks the very important function of lactational amenorrhoea in inhibiting ovulation. It is the longer intervals that should be inhibiting fertility. But this result will only manifest itself in the data after an attempt is made to isolate this phenomenon from any perturbing effects.

From the crosstabulations and breakdowns a profile can be established that characterizes the kind of women the longer interval breastfeeders are likely to be. Broadly speaking, they are likely to be less (or not) educated, rural, and somewhat older. Therefore, to control for these influences, a (Phase II) subset of the sample was selected that basically met these requirements. The respondents that were chosen had no years of education (a sizable proportion of the total samples), lived in a currently rural residence, and were between the ages of 45 and 49. An added advantage in using only those in the 45-49 age group is that it represents a cohort that has completed fertility. Similar reasoning was applied to the other intermediate variables; abortion and age at first marriage. However, an exception was made in the analysis of the fourth intermediate variable, contraceptive use. The phase II subset chosen for this analysis reflected the previously established profile of contraceptive users; respondents with education, and who currently live in urban areas.

However, as with the other subset, only the 45-49 year olds were included.

Abortion, as postulated earlier, is similar to contraception in terms of its motivation for use. While abortion stops fertility, it may be primarily a response to perceived high fertility. Therefore, abortion and number of children will be associated with each other , once again masking the actual, and obvious, inhibiting effect of abortion.

AAFM is less of a problem since the factors associated with late marriage also tend to inhibit fertility. However, as with breastfeeding and abortion, it is desirable to view the phenomenon in relative isolation in order to ascertain the full extent of the effect. Hence, the inclusion of the phase II subset.

The results of the phase I regression are presented as the non-bracketed values in Table 37 and Table 38. Overall, the level of explained variance is somewhat higher in the Jordanian case (0.12 vs 0.05). This may have arisen due to the inclusion of an additional independent variable (abortion).

The results for AAFM produced a somewhat predictable result. The negative beta coefficient of -0.28, for the total Jordanian sample, shows the attenuating effect of late marriage on fertility. This slope is substantially steeper than that obtained in the Syrian survey which reports a beta value of about half the size (-0.14).

The slopes obtained in the subset analysis (phase II) are somewhat larger. The numerical value of beta for the Jordanians increased from -0.28 to -0.33, while the Syrian increase was greater, going from -0.14 to -0.22.

Contraceptive Use: A slightly different subset was used for the variable 'type of contraceptive use.' On the basis of earlier results, the users tended to be urban, educated, and younger. But from the point of view of consistency it was deemed necessary to use the older cohort, 45-49. The initial regressions of 'number of children' on 'contraception' produced a positive slope for both countries. This is unsurprising in light of the fact that those mothers who use contraception are most likely to have completed their fertility. However, the positive slopes are of little analytical and predictive value since they imply that contraceptive use is related to large families. The Phase II analysis produced more favorable results; especially in the case of Syria. the Jordanian beta has been reduced from 0.11 to 0.07. the Syrian value has undergone a dramatic shift, from 0.06 to -0.16.

When the total sample was incorporated into the analysis to regress fertility on breastfeeding intervals, the predicted result of a positive correlation was obtained. In fact, the phase one beta coefficient was exactly the same for both the Jordanian and Syrian samples. But when controlling for age, education and residence in phase II, the relationship became negative, exposing the true effect of breastfeeding on fertility. However, with an observed beta of -0.15, the effect is almost noticeable

for the Syrian respondents. The Jordanian results, though negative, were not significant at the 0.05 level.[1]

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[1] Significance in this case is somewhat harder to achieve due to the small number of cases such a narrow selection criteria creates; only 80 cases for Jordan and 49 cases for Syria.

Chapter 6

Dimensions of Fertility

Factor analysis, in determining the underlying dimensions, is a powerful technique. Contingent upon the orientation of the researcher, it serves both exploratory and confirmatory functions. Though computationally complex, it is used for the purpose of parsimony. It identifies any concepts or factors that underlie the set of variable used. In doing so, it provides a simple, more general, explanation than is possible using the original set of measures.

A theoretical model, by its very nature, describes and explains relationships within a phenomenon. The elements that form these relationships are preconceived, abstract, notions. One the other hand, the information contained in the data sets is real - it has been observed. The utility in identifying dimensions of fertility, lies in the successful crossing of the boundry between the observed and the conceptual.

As with any statistical technique, several apriori assumptions have to be made. The most important assumption is derived from the nature of our original model which in turn determines the type of rotation to be employed. The two general types of rotation in factor analysis are termed orthogonal and oblique. Basically, the orthogonal factors are arranged in space such that they are 90 degrees to one another. Thus, they

are assumed to be independent of one another's effects. The other rotation, oblique, arranges the factors on the assumption that they are correlated with one another.

Although the simplest technique often represents the wisest place to begin, the adoption of the former assumption leads to a basic contradiction in the analysis. If the assumption is made that the relevant factors are uncorrelated then, in a a sense, one preempts the justification for a fertility analysis. Determinants of fertility, a set of factors in themselves, must by definition be correlated with fertility (also a factor). Therefore, only the results of the oblique factor analysis will be considered.

Initially, only a single factor analysis was performed on each data set. The number of factors to emerge were defined by SPSSX default criteria.[1] This number was then used as a baseline , or starting point, in which to conduct a series of factor analyses each with a progressively narrower constraint as to the number of factor allowed. Thus, a separate analysis was performed each for 7, then 6, 5, 4 and final 3 factors. The variables used in the input stage were all those that were used, at one time or another, during the other phases of the data analyses.

For the time being, there will be a departure from the convention established in this thesis of looking at the Jordanian results first. Consider the factor analytical results for Syria, present in Table 39. It contains a list of the variables included in the analysis, as well as their associated factor loadings on each of the six factors. Note that not all factor loadings

TABLE 39: SELECTED FACTOR LOADINGS FROM STRUCTURE MATRIX OF THE SYRIAN FACTOR ANALYSIS: SYRIA 1978.

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4	FACTOR 5	FACTOR 6	FACTOR 7	TOTAL
Pct. of Var.	33.3%	13.3%	9.3%	7.4%	8.3%	6.6	5.4%	83.7%
Type of Contraception Ever Use	0.97							
Type of Contraception Currently Use	0.97							
Currently Use Contraception (Y/N)	0.91							
Education of Respondent		0.88						
Literacy of Respondent		-0.84						
Education of Husband		0.79						
Prefer Next Child to be Boy			0.82					
Son Ratio			-0.79					
Current Residence				0.93				
Childhood Residence				0.92				
Age at First Marriage					0.91			
Chronological Age					0.63			
Breastfeeding Interval						0.99		
Backgnd Knowl. of Contraception							0.99	

Source: 1978 SFS.

are shown. Since the loadings were generally high, any values below a 0.60 limit were not reported. Stated alternatively, any loadings under this limit did not qualify the variable to be included in that factor. The same criteria hold true for Table 40, the results of the Jordanian factor analysis. However, some reorganization was undertaken in order to facilitate a comparative analysis.

What emerged with relative consistency was the presence of several major factors as well as several minor factors.[2] The most conceptually reasonable output, in terms of the grouping of variables within their associated factor loadings, produced six factors for Jordan and seven factors for Syria. In the Jordanian case a level of explained variance of 71.8 percent was obtained. The Syrian analysis produced a similar level at 83.7 percent .

The first factor loads high on those variables that refer to contraception. Type of current use, type of ever use, and whether currently using contraception are all variables that access some parameter of the respondents contraceptive history. In both samples it can be considered a robust factor to the extent that it underlies three variables and accounts for a substantial portion of explained variance; 33.3 percent for Syria and 14.8 percent for Jordan.

The next major factor groups the three education variables together. In the Syrian analysis, the education of the respondents, the education of the husbands, and the literacy of the respondents are accessing the general level of education of the couple, or what could be called the fertility unit.

TABLE 40: SELECTED FACTOR LOADINGS FROM STRUCTURE MATRIX OFJORDANIAN FACTOR ANALYSIS: JORDAN 1976.

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4	FACTOR 5	FACTOR 6	TOTAL
Pct. of Var.	14.8%	29.3%	8.2%	7.1%	6.5%	6.0%	71.8%
Type of Contraception Ever Use	0.95						
Type of Contraception Currently Use	0.94						
Currently Use Contraception (Y/N)	0.87						
Education of Respondent		0.89					
Literacy of Respondent		-0.92					
Education of Husband		0.68					
Religious Affiliation		-0.92					
Prefer Next Child to be Boy			0.79				
Son Ratio			-0.79				
Current Residence				0.79			
Childhood Residence				0.75			
Age at First Marriage					0.84		
Number of Abortions						0.88	

Source: 1976 JFS.

Note that the negative loading obtained for literacy is an artifact of the response set whereby higher values indicate illiteracy. The loadings are interpreted as meaning that more education leads to a greater attribute on the underlying factor.

Religious affiliation, a variable unique to the Jordanian data set, also appears to have a high loading on this factor. This is an interesting development that aids in the identification of this major underlying concept.

The third factor contains high loadings for two variables that refer to the sex ratio of existing and future fertility within the family. The variable 'prefer son' seeks to ascertain whether currently fecund women, who are planning to have more children, desire that the next child be a boy. Son ratio, as already known, is the existing son/child ratio of the family. Both variables have similar loadings on both samples, and a similar level of explained variance.

The fourth factor is the last area of similarity between the two data sets. Current and childhood place of residence produced a nearly identical loading (0.93 vs 0.92) in the Syrian analysis, as well as very similar loadings of 0.79 and 0.75 in the Jordanian analysis.

At this point a factor is found in the Syrian analysis that underlies two variables that are closely linked with age or time. Age at first marriage and , to a lesser extent, age in completed years, seem to be associated with a single factor. The equivalent factor for the Jordanian sample contains

only age at first marriage and fails to include age in completed years; a variable that unfortunately found no place among the seven factors.

The last factors in Tables 39 and 40 are minor, only underlying one variable. Thus, the variable can be viewed as the factor. The last such factor in the Syrian analysis loads only on the breastfeeding interval. However, the same variable failed to load high on any of the minor Jordanian factors, the last two of which are number of abortions and background knowledge.

Tables 41 and 42 provide the factor correlation matrix for both analyses. However, such interactions are most appropriately described in terms of the meaning of the underlying concepts. These are addressed in the next section.

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[1] The number of factors is defined by the total number of eigenvalues greater than the minimum eigenvalue of 1.0

[2] A factor is deemed major by a) the percent of the total explained variance attributable, and b) the number of variables that have high loadings on that factor.

TABLE 41: FACTOR CORRELATION MATRIX OF THE SYRIAN FACTOR ANALYSIS: SYRIA 1978

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4	FACTOR 5	FACTOR 6	FACTOR 7
FACTOR 1	1.00						
FACTOR 2	0.18	1.00					
FACTOR 3	-0.09	0.02	1.00				
FACTOR 4	-0.46	-0.30	0.01	1.00			
FACTOR 5	0.12	-0.05	-0.03	-0.08	1.00		
FACTOR 6	-0.06	-0.17	-0.05	0.06	0.05	1.00	
FACTOR 7	0.36	0.19	-0.06	-0.33	0.02	-0.70	1.00

Source: 1978 SFS

TABLE 42: FACTOR CORRELATION MATRIX OF THE JORDANIAN FACTOR ANALYSIS: JORDAN 1976.

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4	FACTOR 5	FACTOR 6
FACTOR 1	1.00					
FACTOR 2	0.24	1.00				
FACTOR 3	-0.01	0.11	1.00			
FACTOR 4	-0.30	-0.17	0.00	1.00		
FACTOR 5	0.11	0.14	0.05	0.03	1.00	
FACTOR 6	0.08	-0.17	-0.06	-0.12	0.00	1.00

Source: 1976 JFS

Chapter 7

The Determinants of Fertility in Jordan and Syria

In accordance with the stated objective, the results of the analysis will serve as a guide in the formulation of a fertility model. Specifically, this section deals with the mapping of facilitating and inhibiting effects of social and intermediate variables in terms of the mechanism of fertility.

Awareness and Contraceptive Use

One of the major factors to emerge from the factor analysis seemed to underlie variables that are common to education and literacy. It is tempting therefore to label this factor as simply education attainment. But if the true function of factor analysis is to assist in identifying conceptual parameters, a hasty nomenclature would unfortunately miss the the role of education in the context of fertility.

Consider that education was strongly associated with contraceptive use and, by necessity, lower fertility . Those who choose to use contraceptives are making a conscious effort to not simply reduce, but *plan* their family size. A vital predisposition to such behavior is the belief that one can, and should, take control and determine life events. More

precisely, an individual must acquire a non-fatalistic orientation and must believe that they have a direct influence in the outcome of events.

One of the roles of education in the area of fertility is to facilitate this orientation to the extent that a mother believes contraceptive use will allow a deliberate planning of family size. As a subsidiary issue, education also serves to transport ones consciousness from the realm of superstition (frequently a powerful determinant of fertility behavior) to the realm of rational objective thought.

However, considering the all encompassing nature of education, it is vital that its meaning be clarified. For the purposes of this discussion, and to coincide with the information made available in the data sets, education is seen as any secular, long term program, whose purpose is to provide systematic training in the areas of literature and the natural and social sciences. It must be based on an academic curricula, and must promote independant thinking, as well as provide a diversity of knowledge in areas relating to the 'real' world (as apposed to a religious education whose purpose is to illuminate the spiritual world). The obvious function of education serves to broaden ones perspective. It illuminates alternative careers and pursuits separate from those related purely to domestic life. But to the extent that an individual's education may imbue an orientation away from the family , it serves an an antithetical force to fertility.

In the factor analysis of the Jordanian variables, religious affiliation emerged as a variable that also underlies this factor. This development is important as an aid in identifying the underlying construct. The inclusion

of the variable religion creates a requirement to go beyond a conceptually superficial label such as years of education. Therefore, the broader, more encompassing, concept of awareness is chosen to identify factor two.[1]

Granted, awareness can refer to many things, but the meaning must be narrowed in order to fit within the contours of the previous discussion. Awareness is the acquisition of a non-fatalistic orientation that predisposes an individual to assume certain behavior that affect the outcome of fertility; in this case contraception. Awareness also means the introduction of alternate orientations which, at times, compete with those of the family. But what role does religion play in awareness?

It can be justifiably argued that religion, much like education, creates its own type of awareness. But in this case religion is seen as a modifier to the process of awareness by intervening and selectively inhibiting the effect of awareness on fertility. Consider an educated young Arab Catholic woman who may desire a career but is advised against using contraception for religious reasons. On the one hand, she may be acquiring an orientation that competes with that of family duties. On the other hand religion is acting to inhibit this process. Stated another way, religion tends to focus ones perception, whereas the alternative, education, facilitates a broadening of perspectives.

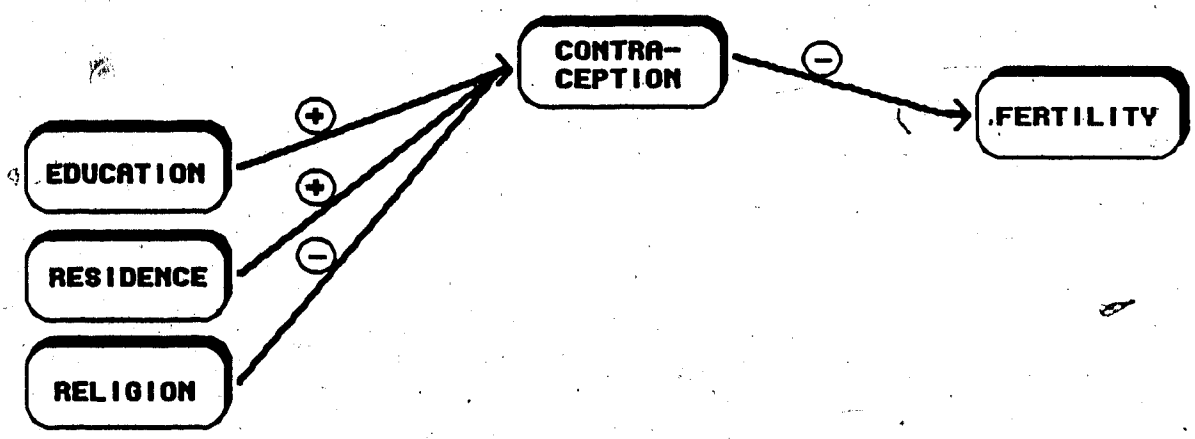
Factor one grouped together the contraceptive variables. As such there is little hidden meaning behind this factor which is broadly labelled as contraceptive behavior. However, the interaction of this factor with

the awareness concept allows the addition of the first component to our fertility model.

Figure 1 shows the facilitating effect of education on contraceptive use. The positive sign is meant to represent the process by which education introduces alternatives and diversity in one's life. Such alternatives are largely antithetical to family pursuits, thereby instilling the motivation to control fertility. An additional, but crucial, component in this process is the psychological reorientation that effectively eliminates a fatalistic predisposition.

This positive effect finds support in the crosstabulation result, the regression analysis, and the factor correlation matrices. Note that the correlation between the first two factors, in both matrices, is positive. The path from religion to contraception is meant to represent the the potentially inhibiting effect on contraceptive use. Strictly speaking, religion , as an intervening element, should be located ahead of education with an appropriate path connecting the two. This is justifiable in the narrower sense. But such an exercise would force the consideration of the relative position of religion vis a vis other social factors; an effort best suited for a future analysis. For now, it remains purely exogenous in order to keep within the previously established scope of this study.

FIGURE 1: THE EFFECT OF SOCIAL FACTORS ON FERTILITY VIA CONTRACEPTION.



Recall that almost 40% of the Syrian respondents had no education (Table 5). This can be compared to a corresponding level of approximately 20 percent for Jordan. If in fact Jordanians have placed more emphasis on their education, the manifestation of the effect of education on subsequent variables should also be greater. The results bear this out. The Jordanian beta coefficient, in Table 33, between education and contraception, is considerably stronger than the almost negligible Syrian result in Table 34.

Socialization and Contraceptive Use

The relationship between current type of residence and contraception, that this study has uncovered, are typical of those found in much of the literature; contraceptive use is much more prevalent in the urban environment. In fact it may not be inappropriate to advance that modern contraceptive use is hardly ever found in the rural areas (Table 16). However, what is of more relevance to this analysis is the social mechanisms underlying the urban / rural differentials.

Factor four emerged as a concept associated with type of residence. Specifically, childhood and current residence grouped together under one factor, undoubtedly due to the high correlation between them. Together they are seen as comprising the process of socialization. Childhood residence is associated with socialization during the early stages of the life cycle. Current residence refers to the process of continuous socialization

throughout ones life. To more precisely understand, the role of the urban / rural environment with in fertility must be considered.

Although education was said to directly alter perception and orientation, there is nothing about region of residence per se that directly impinges upon a person to produce the same changes. Rather, the environment is assumed to facilitate a process of change. In the urban setting one is changed through a process by the subtle acquisition of new norms and values. The source of new norms and values may be educational institutions (which are found primarily in urban areas), new peer networks, work settings etc. Whereas awareness, also a process of change, is specific to a change in orientation vis a vis the family, socialization is a more diffuse, all encompassing, process referring to the development of a new set of norms and values, within which awareness falls.

The young Arab woman who moves to a large city is faced with a different situation than she left behind in the small village. In the urban environment, the expectation of those around her may be somewhat different - certainly less traditional. The implication of this difference on fertility is clear. The young girl, left behind in the village, has few options but to devote herself to raising a family; thus ensuring high fertility. The urban setting, with its offering of relative diversity, initiates a powerful process of resocialization. The result of this is a reduction in fertility. In a short time this young girl will not be the same one who left the village, and certainly very different from the cohort whom she left behind.

Figure 1 presents the path of residence to contraception. The positive sign is interpreted as a change from rural to urban settings, the trend in most developing countries, produces a facilitating effect on contraceptive use. Specifically, the urban setting contains powerful forces that compete with those of the family. Those in rural areas are more likely to be agriculturally based, requiring the support of a large family. In the urban context, families are less likely to need many children to support a family-related business. Hence, there is a strong, and somewhat obvious, economic factor that inhibits family size.

To the extent that the family is the essential social support unit for the Arab individual, one assumes that there would be a reduced need for large families in urban environments that institutionalize such support elements. The interdependence between people, the inevitable result of what Durkheim called the organic society, reduces the need to rely exclusively on one's family.

A substantial part of human behavior is guided by non-utilitarian factors. An example of this is conformity. A considerable amount of psychological research indicates that the pressure to conform to the rest of society, or at least to a close network of family and friends, is exceptionally strong (Potts and Selman 1979:77). Given the psychological cost of being different from others, most individuals seek reassurance from an immediate peer group. Thus, for both the rural and urban residents, behaviors relative to the social factors and the

intermediate variables, as well as opinions regarding ideal family size, likely have a strong element of conformity.

There was an example in this subanalysis of where the results obtained within the different levels of statistical analysis must be interpreted carefully. The results, with regard to contraceptive use by type of residence, imply that similar proportions of respondents from Syria and Jordan, who use modern contraception,, live in urban areas (Table 16). The regression analysis provides beta coefficients that , by strict interpretation, tempt one toward the conclusion that the effect may be stronger in the Syrian data due to the steeper regression line. To reinforce this perception, the factor analysis of the Syrian sample reports a substantial correlation (-.45) between factor one, contraceptive behavior, and factor 4, socialization; socialization in the urban context is associated with greater contraceptive use.

But such a conclusion must be tempered by the reality of behavior regarding contraception in Syria. Recall that very few respondents in the Syrian sample use modern contraception (Table 13). The comparatively few cases in the category of modern contraception are likely responsible for holding up one end of the regression line, giving a steepness greater than that found for Jordan. While the existence of the important social process in either country cannot be denied, the caveat of attenuation of variance in the Syrian data precludes a comparative analysis of high integrity.

Background Knowledge

The question of background knowledge, in the area of birth control, and how it related to contraceptive use, falls neatly within the debate of whether fertility levels can drop in advance of socioeconomic development. There are a number of examples of concerted family planning efforts that have led to a drop in fertility rates. Thailand, through a concentrated and realistic effort, has managed to reduce rates substantially. China's one-child policy is basically a multiphasic attack involving many methods of family planning. Through a series of incentives and disincentives, both legal and social in nature, China has been successful in reducing fertility. But family planning successes in China are more readily found in urban areas; rural areas have not responded as favorably since they are at times beyond the grasp of government population policy implementation.

The data analysis indicates that background knowledge is related to use of contraceptives. However, at best, this finding is inconclusive, due to an important conceptual issue that this sub analysis elicits.

The finding that knowledge of birth control is associated with use is, to an extent, a self evident truth. Obviously, if a woman is using birth control she has to have some background knowledge. However, this does little to answer the more useful question of whether the acquisition of contraceptive knowledge leads to a modification of fertility behavior., To gain a clearer understanding of this process, within the context of human

fertility in the Arab world, one must rely on a qualitative analysis of population policy. This is addressed elsewhere in the discussion.

We have uncovered a higher level of background knowledge in Jordan. According to Table 13, the percentage of Jordanian respondents who claim to have no knowledge of birth control is almost non-existent. On the other hand, the Syrian survey reports a substantially higher level of respondents who have never heard of modern contraception.

While the overall level of contraceptive ignorance in Syria may be somewhat surprising, the fact that it is much higher than that of Jordan is less of a surprise. A consideration of the relative socieconomic levels of the two countries, the urban-rural distribution and the lower educational level of Syrians, leads to an almost intuitive acceptance of the findings.

The role of background knowledge with respect to another intermediate variable, abortion, is perhaps more straight forward. Abortion is a last resort in a personal family planning program gone wrong. The role of background knowledge is seen as an important mitigating variable in the process of family limitation.

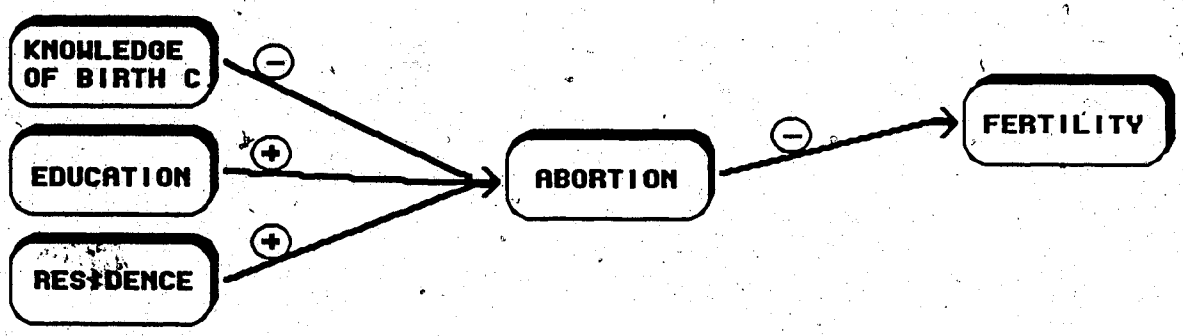
The World Fertility Survey questionnaire elicited the respondent's current level of contraceptive knowledge; 'none, inefficient method or efficient method'. Background knowledge can be seen as an education variable specific to contraception. The function of contraceptive education is to reduce abortion by producing more competent contraceptive users.

In building the model of path coefficients, caution must be exercised in order to avoid fatal trap. By strict interpretation of figure 2, the ultimate effect of increased background knowledge appears to be to increase fertility by attenuating abortion. In reality this is not the case. The attenuation of abortion, due to more background knowledge of birth control, exists only within the context of contraceptive use. It is the contraceptive use which in turn reduces fertility.

Once again, this analysis takes the position that abortion is on a continuum with other contraceptive methods to the extent that they fall within the category of family size limitation behaviors. Basically, abortion is a last resort in the effort to stop an unwanted pregnancy. It represents, therefore, a next and final step a mother will take in ensuring her family size will stay within a desired limit. The author makes no moral or value judgement regarding abortion, only to assert the position that, in behavioral terms, it is an extension of contraceptive practice. This perception stands in opposition to the belief that abortion is a crude form of birth control practised only by those who are too young, poor, or lack the sophistication to tenure an adequate contraceptive regime. Abortion is in association with, rather than in opposition to, birth control use.

To support such a position it would be necessary to prove that, statistically, abortion has a similar relation to the social factors as does contraception.

FIGURE 2 : THE EFFECT OF SOCIAL FACTORS ON FERTILITY VIA ABORTION.



Furthermore, and most important, is that the relationship between abortion and contraception should emerge as positive and complementary.

The findings referred to earlier indicate support for this position. A much higher rate of abortion was obtained for those women with higher education (Table 24). Furthermore, those in urban areas were twice as likely to have an abortion as those in rural areas. Also, the differential with respect to religious affiliation was also similar. Namely, when compared to Moslems, Christians tended to have fewer abortions (Table 26).

Referring back to figure 2, the path model, the previous discussion can be used to justify the addition of the path between several of the social factors and abortion.

Age at First Marriage

The third intermediate variable 'Age at First Marriage' (AAFM) is now considered. It is clear from the results that Jordanian and Syrian women marry at very young ages (Tables 8 and 9). While the majority are married before the age of 20, marriage is practically universal by the age of 29. From the point of view of a comparative analysis, one cannot help but notice the lower AAFM in Jordan. The difference, almost one year, runs counter to the more intuitive prediction of a higher Jordanian value, considering that country's higher level of modernization. This

finding stands as an important piece of the puzzle of higher Jordanian fertility.

From a cohort point of view, AAFM in Jordan has gradually been rising but still remains lower than Syria's. Despite the established tendency for older cohorts to push the dates of life events toward the date of the survey, a clear pattern of rising AAFM is seen. In the Syrian case, however, such a pattern is not so clear. While AAFM for the oldest category is low, the values seem to jump to a higher value in the 35-44 age range, then drop once again for the youngest group.

The results highlight the prominent role of education in creating variability in AAFM. Specifically, education and literacy indicate a very strong positive relationship with AAFM. Apparently the decision to acquire higher education may also mean a decision to delay marriage. But what are the implications for fertility?

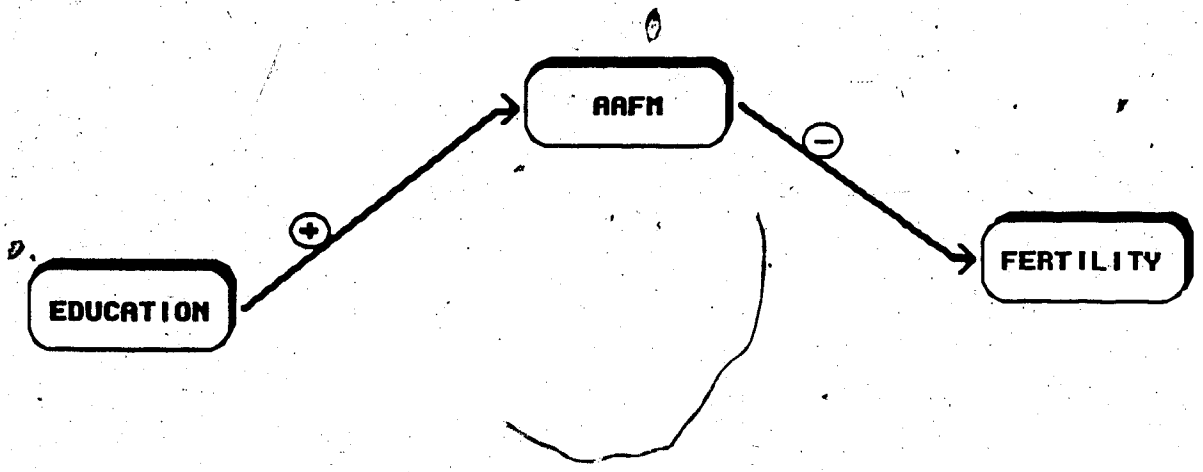
While education may produce a shift or variance in AAFM, the baseline AAFM in Jordan seems to be much lower to begin with. The effect of education may be to increase AAFM, but apparently in Jordan this does not occur to the extent that it results in values higher than Syria's. Consider as well that while the level of education in Jordan is higher, one finds very few women with more than 12 years of school. Since grade school education takes place at a relatively early age, there is little to get in the way of fertility during the childbearing years.

The effect of education on AAFM is well established. But at this stage, women's education in Jordan is not intensive nor pervasive enough to have a serious impact on fertility .

Recalling the results of Table 12, those respondents in an urban residence had a considerably higher AAFM than those living in rural areas. But when AAFM is regressed on type of residence, the effect is not seen and the Beta coefficients for the most part are insignificant. The fact that there is no repetition of the effect of residence on contraception is due to the fundamentally different nature of AAFM.

Notice that in the regression analysis includes, and by definition controls for, education. It is the inclusion of this variable that causes the attenuation of any observable effect of residence on AAFM. The reason for this lies primarily in the role residence plays in the determination of AAFM. In the case of contraception, residence, as a socializing agent, orients an individual to behave and perceive things in a particular way. Contraception is a consciously deliberate process. One decides to 'use' contraception, and thereby plan, to control fertility. But age at marriage is, to a lesser degree, a consciously planned decision. One may think of a general time by which they hope to be married, but the planning of an exact age of marriage is rarely done. The indirect process of socialization plays a less direct role. On the other hand, education acts as a physical barrier to marriage. It is quite conceivable that a girl should wait tell the end of a term, year or program before getting married. It was advanced earlier that education is the underlying variable of the concept of awareness. This is an important element of socialization. However, it is

FIGURE 3 : THE EFFECT OF SOCIAL FACTORS ON FERTILITY VIA AGE AT FIRST MARRIAGE.



not to be confused with the function of education put forward here. Specifically, (urban) residence is seen as a vehicle for the more direct process of education, in turn creating a barrier to early marriage.

In the Syrian factor analysis an interesting development occurs. Factor five emerges as a concept underlying AAFM and age in completed years. The two are obviously correlated, linked by the common thread of time. But a broader concept is seen as the uniting force between them. AAFM and age in completed years, in terms of fertility, are basically exposure variables. It is to the rhythm of advancing chronological years, from childhood to adolescence, that the onset of puberty occurs. Age, therefore, creates a physiological disposition for fertility. AAFM, on the other hand, signals the time of societal sanctioning of fertility; a crucial issue in the Arab world. After all, marriage is almost universal and fertility takes place almost exclusively within marriage.

There is one note worthy difference between the two exposure variables that should be illuminated. AAFM signals the abrupt onset of childbearing. It is, in a sense, the sudden opening of the gate in the race of fertility; the finish line being desired family size. Age in completed years creates a somewhat less sudden onset of fertility due to the common incidence of subfecundity in very young women.

Breastfeeding Interval

The fourth and final intermediate variable to be considered is the breastfeeding interval. The process of breastfeeding causes the release of prolactin, a hormone that is vital to the process of ovulation inhibition. By measuring the breastfeeding interval of a respondent, one is in fact measuring the period of lactational amenorrhoea; the period of ovulatory suppression.

Breastfeeding is a process that involves far more than simply the transference of nutrition from the mother to the newborn infant. It is a behavior that may be instrumental in creating a bond between mother and child. There are indications that this bond must develop early. For example, battered children are more likely to be nursed in the incubator (Potts and Selman 1979:23). If so, then presumable it plays a functional role that adds to the overall strength of the family.

In traditional rural societies the breastfeeding intervals are normally quite long relative to western standards. In this lesser developed environment prolonged lactation is largely responsible for the spacing between births. Consider that the breastfeeding intervals in these two samples are typically over one year, and almost one year and a half for some selected subgroups. Also, once breasfeeding is terminated, it may take several cycles to conceive another pregnancy. Consider as well that the gestation period of the next pregnancy will take nine months. Thus, childspacing of several years is possible.

From the point of view of fertility and childspacing, breastfeeding in lesser developed societies takes the place, more or less, of modern contraceptives. This analysis supports that view.

The results obtained point to a clear delineation of behavior. The educated, urban respondents breastfeed for comparatively modest intervals. Recall that contraceptive use exhibited the opposite pattern of behavior for this same group.

The mother in the urban environment may consider modern forms of contraception for regulating family size to a desired level. In doing so, the need to extended periods of breastfeeding becomes less acute. No longer is there a need to prolong breastfeeding in order to prolong the period of lactational amenorrhoea. The issue of child spacing is resolved by the use of contraceptives.

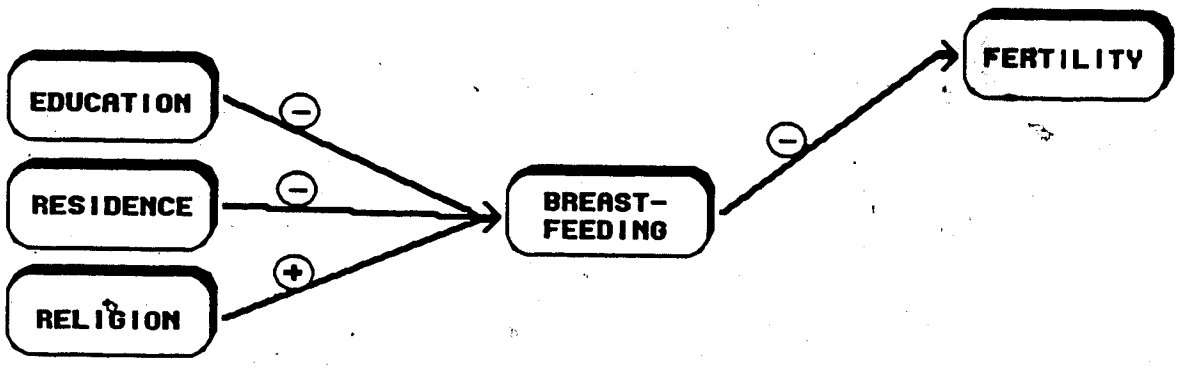
Within the modern urban culture, the issue of childspacing itself is different. The Arab mother who chooses to stay home and devote her life to raising children has no need for childspacing beyond its effect of lowering fertility. However, the modern Arab mother may choose a career in addition to family responsibilities. In the contemporary urban setting, the need to adequately time births is as important as the overall level of fertility. The mother may wish to postpone fertility until certain career objectives have been achieved. Or, conversely, she may wish to have children within the first several years of marriage, then later stop childbearing in order to devote more time to career responsibilities. Lactation, in extending birth intervals, has the primary effect of reducing

family size. Contraception, however, not only has a greater effect in reducing family size, but allows the accommodation of responsibilities beyond those of the family by giving the mother complete and subtle control over childspacing.

It was reported that Catholics, on average, have breastfeeding intervals longer than those of Moslems. But it is generally assumed that Christians have a higher socioeconomic status within the Arab world in relation to Moslems. Thus, one would expect a lower breastfeeding interval for Catholics. But as is well known, in some countries Catholics have a clear and unequivocal prohibition against the use of contraception. It is believed that the longer breastfeeding intervals are a response to the desire to reduce family size in the face of strong religious proscriptions regarding birth control.

Figure 4 presents the path coefficient of the social factors on breastfeeding. The positive line between religion and breastfeeding represents the facilitating influence of religion on breastfeeding practices. However, the ambiguity of the concept of religion, and its even more complex role as a determinant of fertility must be recognized. A religious predisposition incorporates not only affiliation, but religiosity as well. Unfortunately, the latter concept is somewhat elusive and was not elicited by either survey. Nevertheless, the influence of religion on breastfeeding, due to its emphasis in the family, is recognized. The results for the Catholic respondents noted above provide a good example of this.

FIGURE 4 : THE EFFECT OF SOCIAL FACTORS ON FERTILITY VIA BREASTFEEDING.



The Syrian sample reported longer breastfeeding intervals overall. This is expected to the extent that Syria is a lesser developed society in relation to Jordan. Across comparable categories of education, residence etc., the Syrian respondents tended to breastfeed between approximately one to three months longer.

This takes us a considerable distance in explaining the higher fertility in Jordan. Note that in Table 19, the breastfeeding intervals for the Syrian respondents between the ages of 20-29 is over two months longer. This additional period of lactational amenorrhoea attenuates fertility in the most formidable child bearing years. The headstart that Jordanian respondents receive, in terms of a lower AAFM, and shorter periods of lactational amenorrhoea, contributes, among other things, to the higher Jordan TFR.

So far, each intermediate variable has been examined separately, in relation to the social factors and its ultimate implication on fertility. The treatment of son preference represents a departure from this approach.

The quantitative analysis of son preference breaksdown the phenomenon into two facilitating effects and one inhibiting effect on fertility.

As the results indicated, mothers with a higher ratio of sons to total children were much more likely to use birth control. Conversely, the women with an unsatisfactory number of sons use contraception to a

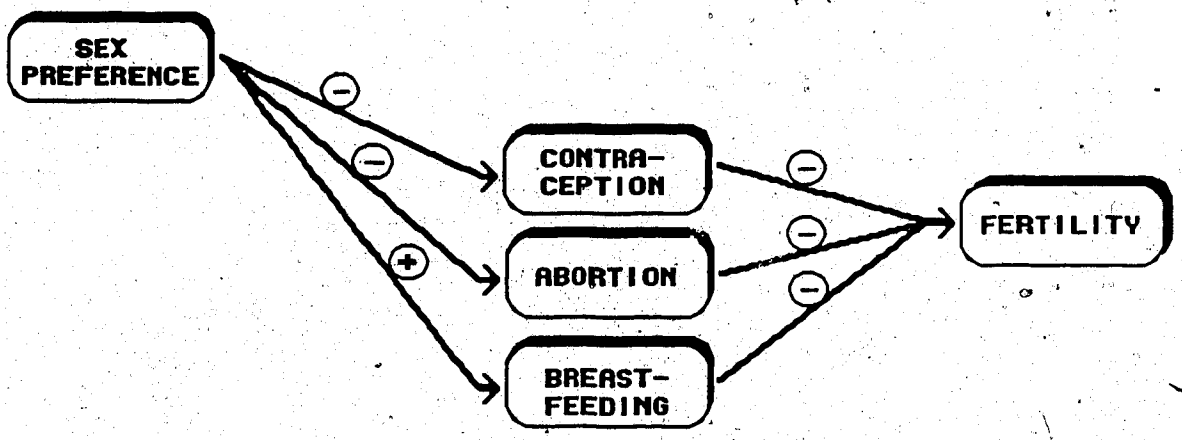
lesser degree. This inhibiting effect on contraception in turn creates a facilitating effect on fertility (Figure 5).

In the stages prior to completing the family size, before a satisfactory number of sons are born, son preference is manifested as increased fertility. However, the desire for sons fades away as a function of increased family size. A number of studies referred to earlier underscore this pattern. A possible explanation for this, put forward here, is that as family size increases, the likelihood of having an adequate number of sons also increases. The results bear this out.

A very similar process should occur in the effect of son preference on abortions. One would expect mothers to behave in a similar way with regard to abortion, as they would in regard to contraception. Unfortunately, the result of the data analysis was inconclusive. The fact that no such data were available for Syria, coupled with the reality of abortion being a comparatively rare occurrence in relation to other fertility related phenomena, results in data that cannot withstand a rigorous analysis.

Nevertheless, this study holds to the claim that abortion should produce results similar to those of contraceptive use, relative to son preference. It is inconceivable that a woman who desires more children, in order to alter the sex ratio of her offspring in favour of males, should resort to an abortion. It is a behavior that is inconsistent with a motivation for increased family size. Therefore, son desire has an inhibiting effect on abortion, the net result of which is a facilitating effect on fertility.

FIGURE 5 : THE EFFECT OF SEX PREFERENCE ON FERTILITY VIA THE INTERMEDIATE VARIABLES.



Although son preference translates into increased fertility, there is evidence from the Syrian survey that suggests an inhibiting effect as well. Table 29 has clearly indicated longer breastfeeding intervals for male infants. It directly elicited this information by asking the length of the last closed breastfeeding interval in terms of the sex of the infant. It appears that males receive, on average, the benefit of approximately one month more of breastfeeding. This additional period of lactational amenorrhoea produces an undeniable inhibiting influence on fertility. Although the effect is admittedly subtle, it nevertheless stands as an additional component to consider in the equation of sex preferences and fertility.

Research, using data from the Malaysian Family Life Survey, suggests that breastfeeding appears to be an even more effective contraceptive than was previously thought. Through a more thorough consideration of the neurohormonal mediating mechanisms that link breastfeeding to post partum anovulation, the authors of the research point out that long and intensive breastfeeding may well delay or prevent more births than do all the contraceptives supplied by family planning programs (Habicht et al. 1985:213). Specifically, the results suggest that an extra month of breastfeeding prolongs anovulation on average for more than a month. Such results bear great significance on the findings of this analysis.

Given the presence of son preference, its effect on contraceptive behavior and its manifestation in breastfeeding practices, it would be reasonable to assume that this favoritism toward males would extend

beyond infancy into the childhood years. The analysis of differential mortality, with respect to the gender of the child, seems to confirm this last point. A comparison of excess male births to excess male deaths indicated that female children have a greater mortality given an equal probability of survivorship from birth.

In travels to the middle east, the author has observed, first hand, Arab parent's treatment of their children. It is not uncommon to see female children playing outside, relatively unattended, while male children are much more carefully monitored. It is also more common to see female children in situations of risk. Consider, for example, a typical Arab family at a beach outing. Should the father take his male child out into the waves, a typical cry from the mother may be " Wait! - not your son. Take the girl instead." Furthermore, it is perfectly acceptable to blatantly express pity for a man should an unfortunate series of females births befall him in the absence of sons. This is not to say that Arab society considers the female expendable, for the daughter - mother does eventually play the pivotal role within her family. But sons are highly valued in terms of their future worth for the economic security of the family; the most important institution within the Arab world. With a family, one has a belonging, one has a lineage. With a lineage, comes the security of an extensive kinship network. Males are the vehicle for family lineage. Therefore, to have sons, is to ensure security.

Fertility

The comparative analysis between Jordan and Syria reveals a seemingly atypical state of affairs. On the one hand Syria has more attributes of what might be considered a lesser developed country. The population is younger, for the most part less educated, and has a comparatively large segment distributed in rural areas.

On the other hand Jordan consists of a more educated population that has favoured urban current residence. It is, by Western standards, an increasingly modern society.

Beyond the social determinants, differences that extend to the intermediate variables are found. The Syrian respondents tended to favour larger breastfeeding intervals, while Jordanians reported higher [illegible]ceptive knowledge and use; a contrast typically found between [illegible]loping Countries and more modern societies - though attenuated to a [illegible]gree.

Given this difference between Jordan and Syria, it would stand to reason that higher fertility rates would emerge from the latter country. Such is not the case. While low education and rural environments, have generally exerted an upward pressure on fertility, it is in fact Jordan that exhibits the markedly higher age specific and cumulative fertility rates.

The first reason for this seeming contention lies in the Jordanian tradition of a lower AAFM. Despite the upward force exerted by

education and urban residence on AAFM, Jordanians nevertheless marry at a younger age relative to Syrians. This extra exposure provides the Jordanian mothers with a head start in childbearing, and contributes to the higher TFR.

Breastfeeding intervals in Syria are measurably longer than the intervals in Jordan. These additional periods of lactational amenorrhoea, by necessity, produce longer birth intervals. Conversely, the compression of child spacing in Jordan leads to a greater family size. The most noticeable result of this compression is the greater number of children in the first few years of marriage. Comparatively speaking, the Jordan ASFRs are higher in the early and middle age range, but then drop below the Syrian values in the latter stages of the child bearing years. Given that fertility rates are at there greatest during the younger ages, the early Jordanian ASFRs are responsible for that country's higher completed fertility (TFR).

Population Policy

Bernard Berelson, one time president of the Population Council defines population policy as "**governmental actions that are designated to alter population events or that actually so alter them.**" (Population Bulletin, 1974:133) The United Nations Ad Hoc Consultive Group of Experts on Population Policy set the following definition: "**Population policy may be defined as measures and programmes designed to contribute to the achievement of**

economic, social, demographic, political and other collective goals through affecting criteria demographic variables namely, the size and growth of the population, its geographic distribution (national and international) and its demographic characteristics, (such as sex and age distribution)." (Population Bulletin, 1974:134)

Despite these all encompassing definitions, the discussion of population policy invariably polarizes around two issues. On the one hand, there are those who are of the conviction that family planning is the primary component of population policy. They advocate direct fertility control, by the dissemination of information of, and access to, contraceptives. On the other hand this position is in disfavor with those who believe that the concept of population policy is concomitant with national development plans. From this vantage point, development and modernization create the motivation to reduce family size. In reality, as one may expect, the situation is a hybrid of both perspectives. Reality, after all, is a mixture of extremes.

In choosing an approach to population policy one must accept the contradictions that exist within both points of view. The high level of contraceptive knowledge in Jordan, coupled with a relatively low overall use, tends to weaken the position of those advocating the family planning perspective. But the developmentalists are faced with the reality of unabated fertility in the Persian Gulf countries, despite a high intensity of development and modernization led by petroleum dollars. An informed and effective population policy must address the fundamental reasons as to

why high fertility exists within the Arab countries. It must recognize the primary function that high fertility serves, and must take steps to offer alternatives.

Recall that during the discussion of son preference, a key component of the fertility equation was the primary role males played in the perpetuation of family lineage. It is clear, upon an examination of the region, that the family unit is the focal point of Arab society. It is the one institution that pervades almost every facet of an individual's life. A family name can be the most important credential one carries . It identifies an individual's lineage, his social position, and possibly his financial status.

Along with an identify, the family provides security for its members. It is the one network that provides support under almost any conditions. Whether an individual may need capital to start a business, or need immediate financial aid to support an already existing one, the family is there to provide help. Should an individual experience trouble within the immediate family, as a subunit of the larger one, adequate support network exists to ensure the resolution of most crises. The family also takes care of the older members, who may be to old or sick to work.

However, along with the security one receives from the family, there comes a heavy responsibility. Allegiance must be unequivocal. Should the family find itself in a dispute, the issues are largely irrelevant. One is expected to side with the family, and buttress any position it might take. Furthermore, any actions an individual might take, relative to a dispute,

must be in coordination with the entire family rather than on a personal initiative.

The family is the fundamental social security of Arab society. From this perspective, both the advocates of family planning, and the developmentalists miss the fundamental role the family plays within Arab society. The dissemination of family planning would be fruitless without first directly addressing the reason for high fertility within the Arab world. On the other hand, to prescribe a formula of economic development as a cure-all is also misguided. Development is often a buzz word for modernization, which in turn is synonymous with 'westernization'. Developmentalism, stripped to its basic form, is a commonly found sociological ethnocentrism that is frequently devoid of social relativity.

Friedlander, Eisenback and Goldsheider (1979) studied the relationship between socioeconomic development and fertility changes among Palestinians in Israel and the occupied territories. The authors found that despite considerable changes in levels of economic development over the last 40 years, there is little evidence of a fertility decline, especially among the Moslem majority. The analysis clearly exposes an ethnocentric predisposition by presupposing that development within Israel will produce a fertility decline among Arabs. The fact that fertility decline has not yet occurred is viewed by the authors as a result of insufficient development.

The authors of this research leave themselves in a weak position. They presuppose that Arab fertility will decline; if not now, then some time in the future. They assume that the passage of time will initiate a process that the last 40 years have failed to do.

The position taken in this thesis is that instead of using a predisposition to predict *when* Arab fertility will decline, it is more appropriate to ask *why* it hasn't already occurred. To address the latter, the Arab family must be viewed as a source of one's identity and security, and not, as the authors point out, simply an avenue to power and prestige. This reconsideration of the role of the Arab family illuminates some possible motivations behind Arab fertility.

From this point of view of the family, it unlikely that the Arab family member would identity with, or have allegiance to, Jewish society. It is further unlikely that the Arab family would perceive any sense of security from the State of Israel - modern or otherwise. Thus, the lack of fertility decline among most Palestinians in the last 40 is fully understandable. Furthermore, the possibility of future decline, given current political realities, is very dim indeed.

Consider the first three verses of the following poem, entitled "Investigation", by Mahmoud Darwich, the most famous of all Palestinian poets. It was reproduced in a book by Jonathan Dimbleby in which he states: "[*The poem*]... was written in 1964, in anguished protest at the condition of the Palestinians under Israeli rule. It is directed at an Israeli interrogator in jail, but it speaks to the outside world." The poem

passionately bears witness to the significance of both the family and lineage within Arab society.

The material omitted from pages 147 and 148 has been removed because of the unavailability of copyright permission. The content of the missing information is explained in the above paragraph, and was taken from Jonathan Dimbleby (1980:211).

Apart from political considerations, a truly effective population policy has the formidable task of addressing the key role that the family plays within Arab society, and, more importantly, must provide a surrogate to that function. A population policy, as well as any other government initiative designed to curb fertility will be effective to the extent that it provides alternative support networks to those of the family. The exact form of such a policy is left to an analysis that devotes itself exclusively to this problem.

However, a few necessary elements of this policy can advanced with some degree of specificity . Such an initiative must contain support elements, such as old age security, which would take much of the burden off the family in providing security for its older members. Secure and monitored retirement savings plans also address the same issue and in turn alleviate the financial burden of the government. Subsidies for certain

types of businesses, and a provision for government supplied venture capital will aid in economic growth and further reduce the economic burden on the family. It will also serve to make an individual less dependent upon the family. Subsidies for single mothers or poverty stricken families and a broad spectrum of insurance coverage must also be considered.

In addition, a comprehensive population policy must go beyond the question of financial security. For example, support networks, such as marriage counselling are worthy of consideration. The institutionalization of adequate dispute settlement agencies would lessen the need for one to seek security from the family in the event of conflict.

This discussion is advocating a major reconsideration of the role of government within Arab society. It is a very specific form of development whose focus is not simply economic development for the sake of it, but rather the establishment of legal institutions that provide or promote all aspects of social security. However, in return for this, citizenry has a reciprocal obligation. To provide such an extensive support network, and to facilitate a more direct role of government in Arab society, there arises the need for public funds above and beyond what is available from petroleum revenues. The need for taxation, non-existent in the Arab world, would arise. Thus, the obligation of citizens to their governments would complete the cycle of a new interaction that would elicit a national or societal allegiance as an alternative to sectarian and kinship loyalties.

[1] Factor numbers do not necessarily carry any conceptual significance. The factors were numbered automatically in the SPSSX output. It reflects, in descending order, the level of explained variance of each factor.

Chapter 8

Summary

The various stages of quantitative analysis in this thesis have illuminated different components of the fertility equation. Through the use of frequency breakdowns, crosstabulations, and factor analysis, a model was created that isolates the various processes in the determination of fertility. It has been shown that there are considerable facilitating effects of education on contraception. In addition, education is also identified as an inhibiting factor of breastfeeding intervals. This analysis has also drawn together a conceptual bridge between education and religious affiliation. The concept of awareness is seen as the process by which an individual attains a certain orientation relative to the family. Education initiates and maintains this process. Religion, however, acts as an important intermediary element. The process of awareness is one element within the broader concept of socialization. A respondent's residence is seen as containing all the contextual or environmental elements that imbue the process of socialization. Contraceptive use, motivated by the desire to reduce family size, is largely contingent upon the acquisition of a specific orientation. Thus, it was observed that contraceptive use is most prevalent in the urban environment, among the more educated respondents. Overall, the Jordanians have a greater level of contraceptive use than Syrians. Background knowledge of

contraception, though practically universal in Jordan, was not seen as a determinant of contraception. Rather, it was considered to be linked to more efficient contraceptive use, thereby reducing the need for abortions. By western standards, Jordanians and Syrians marry at very young ages. Jordanians reported the lowest AAFM. This is a crucial element in the explanation of higher Jordan birth rates. In terms of behavior, breastfeeding is placed in a converse position relative to contraception; low breastfeeding intervals are associated with high levels of contraceptive use, and vice versa. But in terms of fertility, long breastfeeding intervals, have a similar function to that of contraception. Prolonged lactational amenorrhoea is natures avenue of childspacing. Generally, breastfeeding intervals were observed to be lengthy, especially in the case of Syrian women: another piece in the puzzle of higher Jordanian fertility. This thesis has illuminated that there exists a substantial level of sex preference in Jordan and Syria. Women were less likely to use contraceptives, given a perceived dissatisfaction with their number of sons, addresses the stage of conception in fertility. Gender contingient post partum care was determined through the identification of sex differentials in breastfeeding intervals. This lead to the examination of favoritism in overall childcare which uncovered sex differentials in infant and child mortality rates. In addition, the perception of an ideal family size was found to be influenced by the existing son ratio of the family. In terms of the model, desire for sons has two facilitating effects, and one inhibiting effect on fertility. The two facilitating effects operate through contraceptive use and abortion; both are unlikely behaviors in the context of an unsatisfactory sex ratio of children. The inhibiting effect translates through the longer breastfeeding of male infants. This

additional period of lactational amenorrhoea reduces fertility by increasing child spacing. The policy implication of this study forces a reconsideration of the traditional debate between family planning advocates and economic developmentalists. An informed and effective population policy must recognize the function that increased fe[illegible] serves, and must endeavor to offer support networks that set[illegible] surrogates to the primary functions of the family.

Limitations of the Data Sets

At this point it is appropriate to advance some cautionary notes regarding limitations of the two data sets. The key limitation in the data lies in the selective omission of various questions in the surveys; a situation that impedes a comparative analysis. Specifically, the absence of any information on voluntary abortions and religious affiliation in the Syrian Fertility Survey weakens a researchers ability to make generalizations of the sort required by a model of fertility. A similar situation arises in the Jordanian Fertility Survey due to the omission of any questions with regard to ethnicity and breastfeeding intervals by sex of child.

Confronted with this problem, future research has several options. The first is to observe the variables that are similar in nature to the missing information. By considering their behavior relative to fertility, some generalizations, on the basis of similarity can be made. For example, several variables were analysed with regard to the issue of son

preference. In the Syrian Fertility Survey, contraceptive use, infant and child mortality, future fertility, and breastfeeding intervals were to a degree dependent on either the sex of the child or the existing sex composition of the family. In the Jordanian data, all the information except the breastfeeding interval by sex of child was available. For the information that was available, the Jordanian analysis produced results similar to those of the Syrian data. Thus, it would not be reasonable to assume that the last measure of sex preference in question would likely behave in a similar way.

With regards to the absence of variables that are global or or more ambiguious in nature, one is forced to rely on qualitative assumptions to fill in certain gaps in the data. Such is the case with the Syrian data that, for political reasons, lacked information on religion. In this analysis, the Jordanian results formed the basis for conclusions with respect to religion as a fertility determinant. This was deemed appropriate due to the cultural similarity between Syria and Jordan.

A final, incidental, point is that the analysis of contraceptive use would be better served by the exclusion of the category of those using an inefficient form of contraception. Presumably, this category includes birth control methods such as withdrawal, abstinence and folk methods. The negligible number of cases falling into this particular category suggest that respondents either choose not to control their fertility, or use modern forms of contraceptives. There is little empirical evidence to indicate that the analysis of inefficient forms of contraception would be profitable.

Directions For the Future

There are several points of departure for future research. The social factors, though considered exogenous for the sake of this analysis, obviously exist within their own set of causal relationships. Future research must endeavor to further breakdown the social factors and ascertain any specific relationship between them, and as they relate to the intermediate variables. For example, the study of the interaction between education and religion, in terms of contraceptive use, would certainly be a worthy analysis. Both the educational and religious aspirations of Arabs are increasing. The former is led by the process of modernization. The latter is fueled by a wave of fundamentalism. While both constitute powerful determinants of fertility, they are antithetical in terms of their final effect.

The following is a list of other issues that future research might address:

a) Why the Jordanian AAFM was initially lower than Syria's.

b) The possibility of quantifying the individual effects within the fertility model. In a sense this has already been done, but to the extent that this analysis has been a dissection of the social forces impinging upon fertility, there also exists a need for a reassembly of the process in order to view it in its entirety. Specifically, several social factors operate on fertility via several intermediate

variables. The ultimate effect of the social factors on fertility can only be ascertained through a more intensive application of structural equation modeling. However, prior to such an effort, several considerations such as non-linearity, must be addressed.

c) The introduction of a mortality component. Specifically, this component may address the experience of childloss and its subsequent effects on fertility. It is somewhat self evident to assume that should a family desire a large family size, then infant or child mortality will be perceived as an obstacle to that goal. To that end, a compensatory response is likely to be one of high fertility.

Worthy of further inquiry is the effect of this response in terms of the intermediate variables. consider that if the mother's response to high mortality is to reduce contraceptive use, then fertility will obviously rise. However, should this action be accompanied by increased breastfeeding, to nurture and provide the infant with an increased chance of survival, the extended periods of anovulation could counter balance any gains in fertility brought about by reduced contraceptive use.

d) The targeting and development of specific areas within population policy. Specifically, if one's goal were exclusively devoted to adjusting fertility, rather than embarking on an explanatory analysis of the subject, one could presumably exclude the intermediate variables and simply regress fertility on the

various social factors. Though possible, the consideration of several points must precede such an effort. First, any effects on fertility resulting from the direct manipulation of the intermediate variables, must either be ignored or presumed not to exist. Second, any effects on fertility resulting from the interaction between the social factors and the intermediate variables will fail to be recognized. Finally, the issue of son preference cannot fully profit from such an approach since the intermediate framework is crucial to its understanding, which in turn is a necessary prerequisite to the formulation of public policy.

e) the analysis of specific subgroups within the Arab world. For example, there may be specific issues related to fertility among the Bedouin. Adequate childspacing may be an essential requirement for such a highly mobile people. Furthermore, they may reveal surprisingly high levels of contraceptive knowledge, gained from the observation of the animals they migrate with. The control of fertility among their animals may be very important; an unexpected birth in the desert, or at key points of their migration, could jeopardize the safety of the family.

It is hoped that this analysis will stimulate further work in this area. But future efforts are urged to recognize an essential lesson from this analysis. Social factors and intermediate variables must be clearly specified in terms of their effect on fertility. It is this approach that will allow a determination of the specific components of fertility in the Arab

world. A justification for such research is firmly based in academic merit and practical value.

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Appendix

Davis-Blake Intermediate Variables

I. Factors affecting exposure to intercourse ("intercourse variables").

A. Those governing the formation and dissolution of unions in the reproductive period.

1. Age of entry into sexual unions (legitimate and illegitimate).

2. Permanent celibacy: proportion of women never entering sexual unions.

3. Amount of reproductive period spent after or between unions.

a. When unions are broken by divorce, separation, or desertion.

b. When unions are broken by death of husband.

B. Those governing the exposure to intercourse within unions.

4. Voluntary abstinence.

5. Involuntary abstinence (from impotence, illness, unavoidable but temporaty separations).

6. Coital frequency (excluding periods of abstinence).

II. Factors affecting exposure to conception ("conception variables").

7. Fecundity or infecundity, as affected by involuntary causes.

8. Use or nonuse of contraception.

a. By mechanical and chemical means.

b. By other means.

9. Fecundity or infecundity, as affected by voluntary causes (sterilization, medical treatment, and so on).

III. Factors affecting gestation and successful parturition ("gestation variables").

10. Fetal mortality from involuntary causes.

11. Fetal mortality from voluntary causes.

Source: Weeks (1986: 86)