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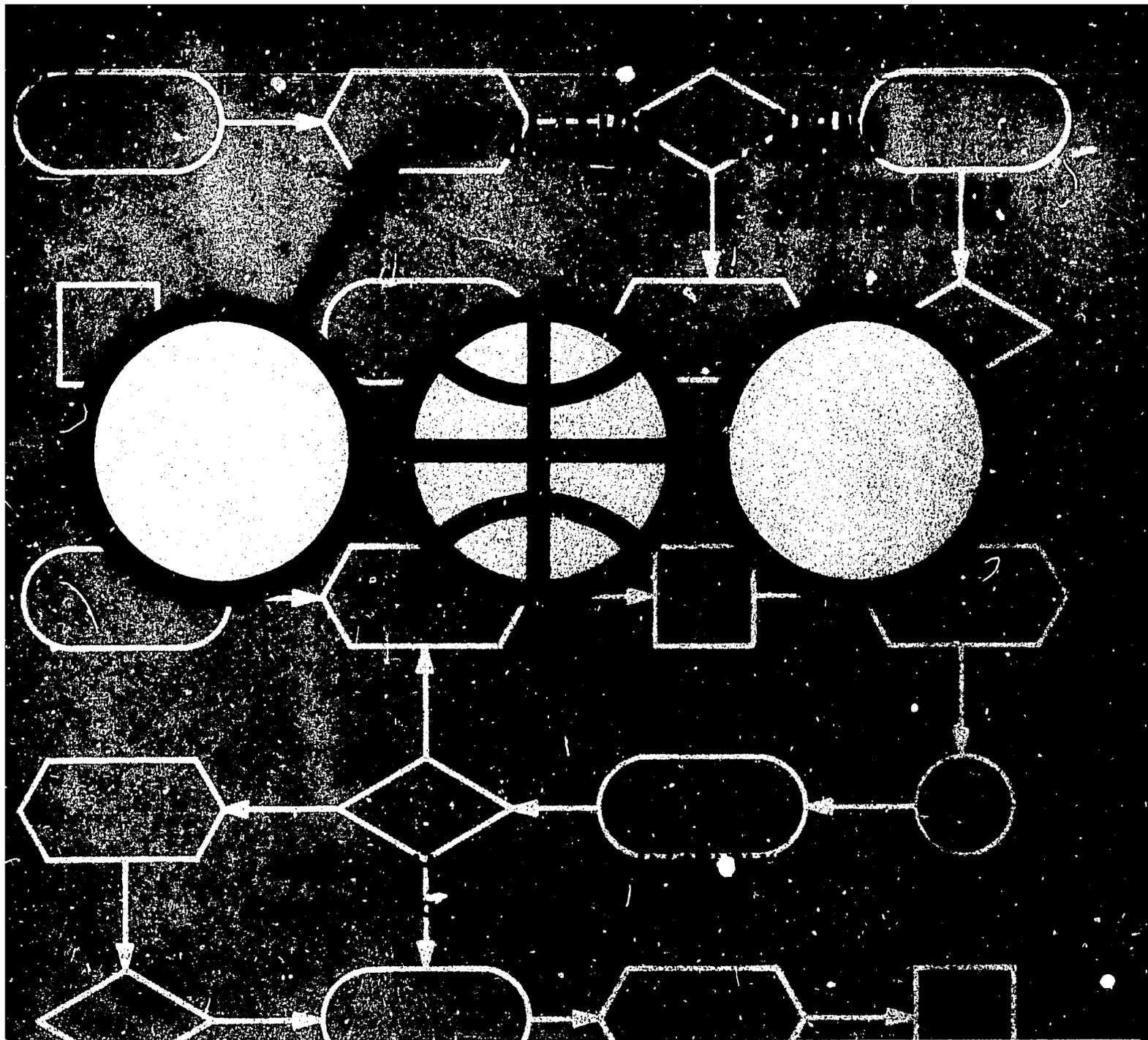
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# SOCIAL AND ECONOMIC CORRELATES OF FAMILY FERTILITY: A SURVEY OF THE EVIDENCE

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CONTRACT NESA/460

SOCIAL AND ECONOMIC CORRELATES OF FAMILY FERTILITY:  
A SURVEY OF THE EVIDENCE

by

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## PREFACE

The report that follows is one in a series of studies done by the Research Triangle Institute for the Office of Population Programs, Near East/South Asia Bureau, Agency for International Development. Previous studies by RTI for AID were aimed at providing specific answers to questions posed by NESAs decisionmakers, and were thus highly focused.<sup>1</sup> The present report is somewhat different. While also a short-term, intensive research effort, its aim has been to acquaint decisionmakers at the NESAs Bureau with the research literature on individual-level determinants of fertility behavior; its focus is thus rather broad. It is expected that this review of the literature will eventually serve as input to decisions at NESAs/OPP, both about needed research and about AID population programs, but its immediate purpose is to provide a concise summary of an extensive and growing field of research.

Because of the wide scope of the investigation and the constraints of time imposed on this review endeavor (See Appendix B), a team approach has been utilized by RTI. Four professionals with training in economics, population and sociology organized the literature search, directed the labors of the research assistants, contacted the professional consultants, and did a major portion of the reading and drafting of the original report. Of these four, Drs. David and Rulison concentrated their search

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<sup>1</sup>See Gould, 1970; Kennedy, 1970; Mason, 1970; Rulison, 1970; and Sweeny, 1970.

on the economics and demographic literature, while Mrs. Gerstel and Dr. Mason concentrated on the sociological, anthropological and social-psychological literature. Both groups, of course, often dealt with the same variables, since research into fertility has rarely followed strict disciplinary lines, economists often dealing with social or cultural variables in their analyses, or sociologists with economic variables. Integration of the efforts of these subteams was done through discussions and an exchange of notes, Dr. Lindsey serving as catalyst and critic for this process. Finally, Dr. Judith Fortney of Duke as a consultant to the project synthesized the comments and suggestions made mainly by Drs. Ronald Freedman, Larry Bumpass and Krishnan Namboodiri.

Throughout the early and middle stages of the study, Dr. David served as project leader, concentrating his efforts on the administrative organization of the research team, and in later stages Dr. Mason joined him as co-project leader, concentrating her efforts on the revision of the final report. Both project leaders would like to thank Dr. Fortney and their professional colleagues at RTI whose names appear on this report. The work would not have been possible without their cooperation and invaluable contributions to the project. All of us are also deeply grateful to Miss Constance Branch, Mrs. Diane Godfrey, Mrs. Dale Palmer, and Mrs. Patricia Parks who served as our research assistants throughout the project; to the project consultants: Dr. Kurt Back of Duke University for his comments and suggestions during the early stages of the search; Dr. Krishnan Namboodiri of the University of North Carolina for his

advice in the early phases of the work and for reading and commenting on an earlier version of this draft; to Drs. Ronald Freedman of the University of Michigan and Larry Bumpass of the University of Wisconsin for their valuable comments on an earlier version of this report; to Messrs. James Brown, Morrie Blumberg, Robert Muscat and John Alden of the NESAs Bureau for their many helpful suggestions and criticisms; and to Mrs. Charmayne Ange, Mrs. Donna Emmons, Mrs. Ruby Monk, and Mrs. Hanna Varner for their expert typing of this report and its earlier versions.

## SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

### Summary and Conclusions

The main objectives of this work order are to identify social and economic factors affecting family-size decisions, to describe the nature of these relationships, and to ascertain the current state of knowledge about the empirical validity of each relationship. These objectives were fulfilled through the development of a causal model of family fertility decisions, delineation of hypotheses suggested by the model and then search of the literature for evidence to support or refute the hypotheses. The search was conducted during a three month period with a total of about twelve months of professional level of input.

The model developed for this study makes fertility a function of the utility of children, the ability to control fertility, plus residual factors as the biological ability of a couple to bear children. The utility of children, both economic and social, is primarily a function of seven variables: family wealth or income, the education of family members, family social status, the functional inclusiveness of the family, the religion and religiosity of the family, and the family's access to family planning programs, plus some unexplainable (residual) factors.

Similarly, the ability to control fertility is believed to be a combined function of education, the status of women, and access to family planning programs, plus some residual factors such as the biological ability of a couple to bear children.

The parameters of the model were not estimated nor was the total applicability of the model to any one or more of the countries of NESA tested. The model does, however, enable the analyst and decisionmaker to sort out the host of individually studied and reported factors that influence fertility at the household level. Thus, the hypotheses developed are not tested directly but rather through a literature search, i.e., secondary data sources. The main hypotheses and sub-hypotheses developed and the conclusions reached are outlined in Table 1 (repeated here for ready reference).

In considering the findings of Table 1, one must note that in only three cases did we separate the findings according to the development status of the country under investigation, i.e., developed, transitional or developing. The first of these was in our examination of studies relating family wealth or income to fertility where for the least developed nations the tendency of the relationship was inverse; for transitional societies the tendency of the relationship was one of inconsistency; while for developing nations the tendency is for a direct relationship. The second case was in the relationship between general socio-economic status (SES), and occupation in particular, and fertility where it was found that only in very few instances was occupation consistently related to fertility in developed countries (although important exceptions exist, e.g., for women who married at relatively young ages in the U.S.), but in developing nations the prestige or SES of occupations tended to be inversely related to fertility. The third case was

TABLE 1

SUMMARY OF FINDINGS WITH REGARD TO MAJOR HYPOTHESES ABOUT THE INDIVIDUAL-LEVEL DETERMINANTS OF FERTILITY

INDEPENDENT VARIABLE	NATURE OF RELATIONSHIP <sup>a/</sup> WITH:		STRENGTH <sup>b/</sup>	ADEQUACY OF RESEARCH <sup>c/</sup>	PAGE REFERENCE TO THIS REPORT
	FERTILITY	CONTRACEPTION			
<b>A. STRATIFICATION</b>					
Wealth (income)					
(a) Developed Countries	+ or 0		L	F-G	37
(b) Transitional Countries	0 or -		L	F	37
(c) Developing Countries	- or 0		H	F	36
Reliance on Child Labor					
Direct Measures	?		?	P	40
Agriculture vs. other Occupations <sup>d/</sup>	+	-	M	F-G	40
Urban vs. Rural	-		L	F-G	41
Status					
SES and Occupation					
(a) Developed	0		L	P--F	43
(b) Developing	- or 0		L	P	43
Social Mobility	0 or -		L	P	44
Geographic Mobility	0		L	P	46
Education/Literacy	-	+	H	G	48
<b>B. FAMILY</b>					
Extended vs. Nuclear Family	?		?	P	53
Agricultural vs. other Occupations <sup>d/</sup>	+	-	M	F-G	40
Family Support of the Aged	+		L-M	P	55
Infant Mortality, Level and Perception of Change	?			F	12
Legal Marriage vs. Common-Law	+	-	L-M	P-F	56

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TABLE 1 (Continued)

SUMMARY OF FINDINGS WITH REGARD TO MAJOR HYPOTHESES ABOUT  
THE INDIVIDUAL-LEVEL DETERMINANTS OF FERTILITY

INDEPENDENT	NATURE OF RELATIONSHIP <sup>a/</sup> WITH:		STRENGTH <sup>b/</sup>	ADEQUACY OF RESEARCH <sup>c/</sup>	PAGE REFERENCE TO THIS REPORT
	FERTILITY	CONTRACEPTION			
<b>C. SEX ROLES</b>					
Female Labor Force Participation					
(a) Developed	-		H	G	58
(b) Developing	0 or -		L	F-G	59
Female Wage Rates	-		M	F-G	62
Other Extra-Familial Activities of Women	?		?	P	63
Egalitarian Marital Relationship	?	+ or ?	?	F-P	63
<b>D. RELIGION AND VALUES</b>					
Religion					
(a) Catholics vs. other Christians	+		M	F-G	68
(b) Moslems vs. Christians	+		L	P-F	69
(c) Moslems vs. Other	?		?	P-F	69
Religiosity	+ or ?		L	P-F	70
Modern Values	-		?	P-F	71
<b>E. FAMILY PLANNING</b>					
Government Support	-	+			72

<sup>a/</sup>We use (+) symbol if the relationship to fertility is direct, (-) symbol if the relationship to fertility is indirect, (0) symbol if there is no relationship to fertility and (?) symbol if the relationship to fertility is indeterminant.

<sup>b/</sup>Our assessment of the strength of the relationship is reflected in use of following symbols: "H" for high, "M" for medium and "L" for low with "?" for indeterminant.

<sup>c/</sup>We use the symbols "G", "F" and "P" to denote good, fair and poor coverage of the hypothesis.

<sup>d/</sup>Refers to the same studies, but listed twice.

in the area of women's participation in the nonfamilial labor force where a consistent inverse relationship between nonfamilial labor force participation and fertility is found for highly developed countries, but inconsistent or no relationships are found in a number of developing country studies. It is suggested that the kind of labor force activity and the degree to which it conflicts with childbearing functions probably explains some of this variation.

The remaining relationships of social variables to fertility were studied without regard to development status. The conclusions here are:

1. Although there are many reasons to believe that both upward social (or occupational) mobility and geographic movement of families would tend to depress fertility, most studies reviewed in fact fail to find such relationships. Definitive work in the United States suggests that mobility effects are either highly attenuated or are contrary to expectations (downward mobility depressing fertility fully as much as upward mobility), and the few studies available for less developed settings for the most part find no consistent relationship here.

2. Educational attainment (measured as a literate-nonliterate dichotomy in some cases) has a consistently inverse relationship to fertility in almost all instances, and is moreover one of the strongest relationships between a stratification variable and fertility. The reasons why educational attainment is related to fertility, however, are much in need of further exploration.

3. The relationship between family structure and fertility (Section B of Table 1) was inconsistent and many of the reported studies' findings contradictory. This might be due to the fact that structural inclusiveness of families is only weakly related to their functional inclusiveness--the latter being of primary concern here. To the extent that agricultural occupations versus others are a proxy for functional inclusiveness of families (most farm families may tend to be self-supporting economic producers but a number of nonfarm families may also be), studies of occupation tend to confirm the general hypothesis that greater functional inclusiveness of families increases the value of numerous children--hence, fertility. The few studies, for the most part of relatively low methodological rigor, which consider the role of children in support of the aged also suggest that this particular family function is important for fertility behavior. Finally, there is some evidence that family units brought together by more legitimized practices tend to have higher fertility than those existing on a quasi- or non-legitimate basis (e.g., consensual unions). The quality of research exploring these last two areas, however, leaves much to be desired.

4. Nonfamilial roles of women, other than labor force participation and the quality of the husband-wife relationship, have been studied in relationship to fertility, but in both instances have yielded contradictory findings. We suggest that studies of the husband-wife relationship are probably of relatively low policy importance at the present time, but that further studies of women's role alternatives, especially in rural settings, are extremely important.

5. Our survey of studies relating religions and religiosity to fertility suggests that value orientations associated with various religious groups may indeed affect fertility. In developed country settings, Catholics tend to have higher aggregate fertility than all other Christians combined (although particular sects in some instances far exceed the fertility of Catholics), and Moslems in less developed settings tend to have higher fertility than Christian adherents, although not higher fertility than Buddhist and Hindu adherents in many instances. Although direct measures of modernity of values tends to correlate with fertility in the expected, inverse fashion in the few studies to examine this relationship, more investigation is needed in this area if it is to be well understood, especially in relationship to the gross social and economic variables considered in the earlier portions of Table 1.

6. Finally, although we did not review the family planning literature very extensively, we did garner some evidence that the extent to which family planning programs are legitimized by government support may indeed increase their efficacy for the families exposed to them, thus tending to lower fertility.

In general, then, we have found confirmation for more hypotheses than not, but in most cases the certainty with which hypotheses can be accepted is low. Two general conclusions strike us quite forcefully. First, there is a tendency in the literature to concentrate on too small a focus, both geographically and in terms of the number of variables considered in the analysis. Secondly, just as the less developed countries are relatively

impoverished economically, so too is the research into fertility dynamics in these countries impoverished relative to the more developed countries, especially the United States. Large-scale and more sophisticated studies into fertility dynamics of the type done in the United States should be seriously considered for the countries of the NESAs region.

### Recommendations

We have two primary recommendations based on this brief survey of the literature. First, we recommend that further research be encouraged in a number of the topical areas considered in Table 1, but especially in:

1. The relationship of stratification variables to fertility.

Further work is needed to relate all stratification and economic factors simultaneously to fertility behavior in order to develop a cogent multivariate model.

2. Studies of social mobility which, unlike most past studies, focus on parental aspirations for mobility in relationship to fertility rather than on the family history of mobility.

3. Studies which investigate the activities and functions encompassed by the household unit in relationship to fertility in much greater detail than has been done in past studies. Of especial importance here for certain NESAs countries are studies of the role of sons in providing old-age support for parents.

4. Further investigation of how variations in women's economic and nonfamilial social activities affect their fertility. Of especial impor-

tance are studies of women in rural areas where most of the NESAs country populations are to be found.

5. In general, to encourage further work on all these topics within the less developed countries. Just as the economies of these countries are relatively undeveloped, so too are the empirical investigations of fertility determinants relatively unexplored.

Secondly, we also recommend that in addition to further studies of the existing fertility process in NESAs countries that studies in the feasibility of bringing about social change also be undertaken. We note that identifying the social and economic factors affecting fertility is in a sense identifying the "buttons" which if pushed by social engineers would in turn change the fertility outputs of the society. Some "buttons," however, are more easily pushed than others in terms of existing country political relationships, and some cost more to push than others. We suggest that it is therefore important not only to systematize our knowledge of which variables in fact affect fertility, but also how feasible it is to manipulate certain of these variables. We suggest, therefore, that research into the political studies of social change be initiated.

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## I. INTRODUCTION

The main objectives of this study are to identify social and economic factors affecting family size decisions, to describe the nature of these relationships, and to ascertain the current state of knowledge about the empirical validity of each relationship. To fulfill these objectives, three specific tasks were to be performed by RTI prior to its reporting of the results. These were:

1. Identify an individual-level, causal model or models of the factors thought to affect family fertility decisions or completed fertility in NESA countries. This model will be formulated, using suggestions in the literature (e.g., Schultz's economic model), extant reviews of the literature, and consultation with specialists.
2. List the hypotheses about factors affecting fertility decisions implied by this model or models.
3. Using this list of hypotheses, search the empirical literature, including extant review articles, and consult with specialists to ascertain as best as can be done with no additional data analysis or extensive methodological critiques:
  - a. The extent to which a given hypothesis has been previously researched,
  - b. evidence for the validity of this hypothesis (if any),
  - c. evidence for the nature of quantitative parameters involved in this hypothesis (e.g., size of correlations, or of slopes),
  - d. evidence on benefit-cost measures associated with this hypothesis (if any),
  - e. suggestions on the extent to which independent variables in this hypothesis can be manipulated by policymakers.

In the present chapter, we outline a model of factors affecting fertility, providing the underlying hypotheses where appropriate. In Chapter II, we present the empirical evidence for each hypothesis, beginning with a summary overview and then discussing each hypothesis in greater detail. In a third and final chapter, we outline some policy implications of our review and suggest areas for further research. In addition, two bibliographic sections are included; one a list of references cited in the body of the report, and the other a list of additional articles and books which served as background materials.

### The Model

The model we outline is an integration of prevailing assumptions and ideas about the individual-level determinants of fertility behavior, especially that aspect of fertility behavior which is more or less consciously controlled by families through a decisionmaking process.<sup>1</sup> We make two basic assumptions about fertility decisions in this model. The first is that decisions about fertility are governed by consideration of "cost" and

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<sup>1</sup>A question of some importance that we have been unable to fully explore is the extent to which fertility behavior is indeed a product of such more-or-less conscious decisionmaking, especially in the NESAC countries. Because of our inability to deal effectively with this question we have, throughout this report, chosen to talk either about "fertility" or about the "utility of children" for families, rather than refer to terms such as "desired family size" which carry with them strong implications for the nature of decisionmaking in the family fertility process. We assume that fertility behavior of families is in some sense rational, but are unable to specify how consciously rational couples are in the process of producing or avoiding babies. Sagi and Westoff (1963) suggest that even in a contracepting society such as our own as much as fifty percent of the variation in fertility is due to non-motivational factors--fecundity, fetal death, variation in chance occurrence of conception, and contraceptive failure. We also consider some evidence about the existence of "desired family size" in Appendix A.

"benefit," and that in terms of some calculus of values parents operate to maximize benefits and minimize costs.<sup>1</sup> We do not, however, assume that either costs or benefits of children are primarily economic, although in some instances they may be. Indeed, especially on the benefit side of the picture, the utility associated with children may be primarily social; that is children (in certain numbers) may give parents access to power or prestige, may give them direct psychic benefits, or may simply help them to fulfill values and social expectations they would find painful not to fulfill. Thus, our model assumes that there can be economic costs and benefits associated with the birth of children, but that there are also social customs, institutions, and norms which can define social costs and benefits associated with the birth of children.

The second key assumption we make is that actual fertility is a reflection of two things: (1) the potential net utility of children to the couple,<sup>2</sup> and (2) their ability to control their fertility behavior. The ability to control fertility behavior is not purely technological, although for peoples of the NESAs region the absence of simple contraceptive or abortifacient techniques may be a stumbling block to control

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<sup>1</sup>In part, our discussion here is based on Becker, 1960; Cain, 1971; Easterlin, 1969; and others.

<sup>2</sup>For want of a better term, we use "net utility" here to refer to the total balance of costs and benefits associated with children. Thus, we implicitly assume that such costs and benefits can be treated in terms of a single calculus by parents and such a net figure thus "calculated." This assumption may, of course, be incorrect.

over the fertility process.<sup>1</sup> That is, we assume that fertility control represents a combination of technical expertise and decisionmaking ability, and thus encompasses a couple's ability to perceive the utility or disutility of children and to act rationally, deferring gratification, for example, in order to achieve desired ends in their lives. Thus, in the discussion that follows we attempt to answer two questions. First, what aspects of a family's social and economic circumstances produce variations in the social and economic benefits and costs associated with bearing children?<sup>2</sup> And second, what aspects of a family's social and economic circumstances produce variations in their ability to control their fertility behavior?

In most discussions of fertility, four aspects of social organization are suggested as key respects in which the position of families can vary and that in turn affect family fertility behavior. These are: (1) the position of the family in the stratification system of the society,

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<sup>1</sup>Indeed, there is good evidence that the decline of birth rates signalling the demographic transition in Western Europe occurred largely without the benefit of so-called modern contraceptive techniques. Ryder and Westoff in their 1965 National Fertility Study also found that the use-effectiveness of certain "traditional" contraceptive techniques (withdrawal) were identical to that of some "modern" methods (condoms) (Personal communication from Ryder, 1970).

<sup>2</sup>We recognize that it is probably important to distinguish the costs and benefits of bearing any children from the costs and benefits of bearing the nth child in a family, but have not attempted to systematically distinguish between the two. To some extent our decision to do so rests on the observation that the costs of bearing no children must be very high in most societies, since voluntary childlessness is thought to be extremely rare, especially in countries of the NESR region. Most of our discussion, therefore, implicitly refers to costs and benefits of bearing children beyond some unspecified parity, that parity being in most cases greater than zero.

(2) the division of labor between the family and other subsystems of the society, (3) the division of labor between the sexes, and (4) the religious system and the values that it supports. In addition, social organizations deliberately oriented toward fertility control--mainly family planning programs--can also affect family fertility behavior, and are therefore considered as a fifth area of social organization potentially of relevance to fertility.

A. Stratification

A family's position in the stratification system is a powerful constraint on its values and behavior in a number of areas of social life, and this position is likewise believed to affect the schedule of utilities associated with children. The manner in which it does so, however, is complex. All stratification systems are multidimensional, and although in all societies the position of families on one dimension tends to be correlated with their position on other dimensions, the correlation need not be perfect. Nor need the effects of each dimension on some aspects of behavior be identical. In determining the effects of stratification on fertility, three dimensions appear to be important: economic status (or command of income and wealth), social status (or command of prestige), and "knowledge." Although probably an oversimplification, our model posits that economic status is directly related to the net utility of children; that social status is unrelated or complexly related to the net utility of children; and that "knowledge" is inversely related to the net utility of children.

The influence of economic status varies with the situation but, in general, in those circumstances in which an additional child may be

perceived by parents as resulting in a net gain to income or wealth, economic status will exert a positive effect upon fertility. If an additional child is perceived to result in a net loss in income or wealth, the effect upon fertility will be negative. In other words, the form in which a family obtains its income and the manner in which it exercises its control over wealth are both relevant to the marginal utility of children. Families that derive the necessities of life directly through their own labor, and especially those that can employ their children in such production, may find the marginal utility of children to be similar whether they are rich or poor, although this will undoubtedly also depend on how readily expandable their productive activities are.<sup>1</sup> Thus, for example, families primarily dependent on agricultural production may find the short-run costs of another child more than adequately off-set by the longer-run gains in labor or income that a child potentially represents--although this will be less true for families with limited and fixed land resources than for those who can expand land use according to available labor.<sup>2</sup> Hence, while economic status, in general, may be

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<sup>1</sup>Some of these points are elaborated in a paper prepared by Dr. N. Krishnan Namboodiri for this project.

<sup>2</sup>Since unintensified, slash-and-burn agricultural practices are uncommon in the NESR region--in part because of a record of high population growth--this lack of a relationship between wealth and the utility of children may be less marked than in, say, sub-Saharan Africa where tribal organization is still dominant. However, the economic utility of children for families in this region may still produce less marked effects of wealth on fertility in agricultural areas than in the cities--and may produce a differential in fertility between urban and rural areas as well.

positively associated with the net utility of children, this relationship is qualified by the source of family income (agricultural vs. industrial in particular), by the land tenure system for those deriving their wealth from agricultural practices, and by the extent to which children can be utilized as family labor. Note that each of these qualifications in turn implies further hypotheses about the utility of children; that the net utility will be higher for agricultural families than for wage-earning families; that the net utility will be higher the more available is land; that the net utility will be higher the more children are employed in family production; that the net utility will generally be higher in rural than in urban areas.

While higher economic status may under many circumstances encourage fertility, especially in the agriculturally-oriented sectors of society, social status (representing command of deference and influence) does not necessarily. Social status is largely symbolic in nature and thus unlike wealth, in some forms at least, cannot be acquired and readily stored away. While social status may be dependent in part on income and wealth (or economic status), it differs from economic status insofar as it depends on the ranking of persons in relation to other persons rather than in relation to control over material goods. For this reason, social status tends to require continual maintenance (except for those at the very bottom of the status hierarchy) and such maintenance is especially crucial in the transferrance from one generation to the next. Since higher social status often requires greater material resources for its maintenance, the demands on family resources in rearing a child will be greater the higher the social status of the family. Just what these demands are will vary

according to the family's source of status and wealth, as well as according to the sex of the child; but in virtually all cases they will nonetheless vary according to the status level. Thus, in some societies variations in status may produce variations in the education that must be provided for children. And in others, variations in status may produce variations in the dowry or brideprice that must be accumulated for children, in the clothing and accoutrements symbolic of status that must be provided for children, and in the ceremonies and feasts marking rites de passage of children that must be given. While a high status family will normally command more income on which to rear children than will a low status family, it will also face far higher costs in childrearing. In still other instances, as for example in societies in which a "barren woman" is construed as of distinctly inferior quality and results in distinct downgrading of status when proven, maintenance of status may be enhanced by clear evidence of high fertility. These illustrations suggest, then, that as with economic status, social status may be positively related, unrelated or even inversely related to the utilities associated with children.<sup>1</sup>

These considerations, however, do suggest one rather clear-cut hypothesis. In a social system where it is possible for families to change their status over time, those families that desire or anticipate

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<sup>1</sup>This depends, of course, on the exact ratio of status-maintaining costs to income, which in some cultures may be less than unity for most status levels.

upward social mobility will be most restrictive in their fertility.

Constrained by the economic resources of one social class but desirous of the symbols and training of a higher class, such families should find the costs associated with children extremely high (although the symbolic benefits should one of their offspring "make it" are presumably great). Because sheer geographic movement of a family can also be costly, especially when associated with an attempt for upward social mobility, geographic as well as social movement may also be associated with lower fertility.

The final dimension of stratification, which we term "knowledge" but which is normally measured by educational attainment,<sup>1</sup> has by far the most wide-reaching implications for a family's fertility behavior, in part because it affects both the potential utility of children and the family's ability to control their fertility. Both educational attainment and knowledge tend to be sources of social status and in this way tend to affect both a family's ability to pay for children and the expenditures they must pay out. Educational attainment, moreover, especially when the content of the education is "modern" rather than religious or traditional, communicates values and ideas to individuals which are believed to be highly productive of types of status consciousness associated with low fertility--e.g., the desire for upward mobility, the desire to accumulate

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<sup>1</sup>We implicitly refer here to education styled in the Western manner; i.e., technical-rational education rather than the moral-religious education found in a number of traditional societies. We also distinguish education from socialization, the latter referring to the general upbringing of children that occurs in all societies and that often encompasses traditional forms of knowledge but is largely moral in nature.

greater wealth and so on--all of which are likely to make numerous children a more costly proposition. Education also tends to affect family relationships and in some social settings at least has a distinct effect on the division of labor between the sexes--both in ways which tend to reduce the utility of children. Finally, education tends to provide individuals with the technical knowhow which makes fertility control possible, and with the sense of control over fate and the rational outlook which make utilization of control techniques likely. In several alternative ways, then, educational attainment or knowledge tends to be inversely associated with the potential net utility of children and directly associated with the ability to control fertility; hence, inversely associated with total fertility level.<sup>1</sup>

B. Division of Labor Between the Family and Society

We have already implicitly described one of the ways in which the division of labor between the family and other parts of the society can affect the potential utility of children. Families which are self-sustaining units of economic production as well as consumption, we noted, are more likely to find children valuable as labor and less likely to find short-run housing and feeding costs burdensome than are families dependent on the wage earning of adults. The principle can be extended to include other functions than economic production alone. Although families everywhere appear to be the unit primarily responsible for the sexual

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<sup>1</sup>Note that we have not considered all possible aspects of stratification systems here, but only those of obvious relevance to fertility. Family differentials in power is one dimension we have ignored, for example, but not out of any denial that this dimension exists. It does. But its relevance to fertility behavior is not immediately clear.

gratification of adults and for the socialization of children, they vary in time and place in their responsibility for economic production, for political action, for judicial and religious responsibilities and for care of both preceding and ensuing generations (i.e., for the aged and young adults). In most of these areas, it is likely that the greater the number of functions performed by the family, the greater the benefits which accrue to high fertility. Where families are the effective unit of political, judicial, and religious life, there are usually advantages to greater numbers commensurate with the labor advantages of large numbers for economic production. Extensive offspring, for example, may be important for maintaining influence within the village or community, for protection in times of quasi-or outright warfare, for needed votes in an election, for housing and food when travel is required, or for practice of religious rituals.

To the extent that police forces and armies arise, that hotels are developed, and that further social organizations specializing in functions otherwise fulfilled by families arise, the need for a large social base-- i.e., numerous children--will tend to decline. Thus, the more functionally inclusive is the family, the higher the utility of children. Because functional inclusiveness of families is to some extent correlated with the structural inclusiveness of household organization, this hypothesis is often phrased in terms of extended vs. nuclear family organization.<sup>1</sup>

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<sup>1</sup>Extended family organization refers to a household encompassing at least three generations or at least two adult siblings with their spouses and children. The nuclear or conjugal family refers to the husband-wife-and-children household common in the United States.

One possible family function of especial relevance to the utility of children is that of caring for the aged. Because parents everywhere are capable of foreseeing the day when they, too, will become aged, the concern to insure support for old age is a near universal phenomenon. Thus, especially when infant and child mortality rates are high,<sup>1</sup> dependence on the family rather than on other organs of the society for old-age support will increase the potential utility of children. Presumably, when this function is diverted from the family by the creation of monetary economies with reliable savings systems, pension plans or social security programs, the potential value of children for supporting their aged parents declines.

Also of potential relevance for fertility is the extent to which sexual gratification is an exclusive function of the family for some particular group. Sociologists are fond of arguing that the rules which restrict sexual gratification to particular outlets, in particular to marriage, are instituted by societies precisely in order to insure that people will marry, stay married and bear children, sex being a particularly potent "glue" with which to solidify social relationships. While many societies allow sexual gratification of particular sorts outside of the marital relationship, in no society are these relationships normatively allowed to supplant marital

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<sup>1</sup> Infant and child mortality is, of course, itself a factor that affects levels of fertility a couple perceives as necessary. Whether mortality further affects the costs and benefits associated with children in a manner that results in higher or lower net production of children than under differing conditions of mortality is a topic of some controversy. It will not be explored in detail here since it has been thoroughly covered in an earlier report for NESAs/OPP by Dr. Rulison (1970), and a subsequent proceedings of a conference on the subject (David, ed., 1971).

sexuality. Deviate individuals, however, are found in many societies, and in some, rates of substituting casual or semi-legal sexual unions for legal marriages are quite high (e.g., certain Caribbean societies). It is in these latter circumstances where the utility of children may be weakened. Because the status of children is ambiguous in casual or common-law unions, children do not represent a source of political power for parents or an extension of ties between families to the same extent as in legal marriages. For this reason, then, it is hypothesized that the more strongly institutionalized the sexual union, the higher the utility of children.<sup>1</sup>

C. Sex Division of Labor

The division of labor between men and women varies greatly between and within societies, but it is virtually universal that women are primarily responsible for the care of young children. What varies, then, is the extent to which they are also responsible for other activities as well, especially, for economically productive activities. Because seldom do men share equally in the rearing of young children with women, these additional responsibilities for women in some societies, or some subgroups

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<sup>1</sup>This is not to deny that children can be valued in even the most casual of sexual unions. Women in such relationships may desire children as a way of obligating the father; or they may anticipate that such children will be especially important for old-age support because their expectations of gaining such support from a husband is low (see, e.g., Blake, 1961). Stycos and Back (1964) speculate that in a society in which a series of common law relationships is common, opposing pressures are exerted on fertility. Although exposure to the risk of pregnancy is reduced because of time lost between unions (thus reducing fertility), there may be a desire to have a child by each partner (thus increasing fertility). In a new union a woman may think that pregnancy would obligate the father to remain with her (increasing fertility), or she may perceive that he wishes to avoid such responsibility and would not feel obligated (reducing fertility).

of society, represent activities which may conflict with childbearing. Thus, especially when these other activities are highly valued--either for economic productivity or because they increase the status of power of the family--the birth of a child is likely to produce indirect costs in the form of income, prestige or power foregone. Unless children can be cared for by persons other than the mother, or unless their care can be totally incorporated with the mother's other activities, the birth will imply time lost from the other activities. The range of activities that women legitimately engage in, then, should in general be inversely related to the potential net utility of additional children (i.e., directly related to the opportunity costs associated with additional children). Because women's status tends to be higher the greater their range of activities, this can be phrased as: The higher the status of women, the lower the utility of children.

There are, of course, numerous qualifications to this relationship. As already suggested, the ability of women to combine childrearing with their economic, religious or political activities will affect the extent to which a birth represents "income" foregone, and it is therefore likely that the depressing effects of female participation in activities outside the home on fertility will be found only in relatively developed societies (i.e., those with a relatively high degree of functional differentiation). That is, the woman of tribal Africa whose children accompany her to the fields will find fewer costs in bearing children than the urban woman who gains a livelihood from wage work outside of the home. Thus, in addition to the general hypothesis that the wider the activities of women

the lower the fertility, we must also add that the greater the conflict of such activities with childbearing, the lower the fertility.<sup>1</sup>

Relatively high status for women may, however, affect the utility of children in ways other than through the mechanism of income foregone. For, to some extent, the production of income, power or prestige may be substitutable for the production of children in the eyes of a woman's family or community. The woman who according to custom must stay within the confines of the home has few ways in which to justify her existence other than by bearing children, while the woman who contributes to the viability of the family through labor force or political activities may in part be relieved of such pressure. This suggests, then, that regardless of the conflicts between outside activities and childrearing, the status and role of women may affect the utility of children.

The sexual division of labor may also affect fertility because of its effects on the relationships between husbands and wives. Although not thoroughly studied for most societies, the range of a woman's activities outside the home appears to affect the power she commands within the home, and a relatively high status woman is therefore more likely to have an egalitarian and companionate relationship to her husband than the relatively low status woman. These types of marital relationships are in turn thought to affect not so much the utility of children as the ability of couples to

<sup>1</sup>Except that where conflict is very great, the benefits of children may outweigh the costs of extra-familial activity to such a degree that all such activity is abandoned in favor of higher fertility.

control their fertility. Because status equality tends to promote freer communication between spouses, it is thus more adaptive to joint planning and communal action on the part of the couple than a marriage in which the woman plays the silent partner. This, plus the likelihood that the women in such marriages are more able to derive legitimacy from their other activities, suggests that egalitarianism in marriage will be inversely associated with fertility.<sup>1</sup>

D. Religion and Values

It has already been noted at least implicitly, that position in the stratification system affects the standards or values which parents hold for themselves and their children, and that these values in turn affect the costs and benefits associated with children. The stratification system, however, is not the only source of such standards and values. Of great significance in most societies also are religious systems and organizations, whose primary function it is to define and maintain the rules of social behavior. Indeed, to a great extent religious systems tend to rationalize the existing order of stratification, family structure and sex role structure in the society, and thus in an indirect fashion may help perpetuate particular levels of fertility. In addition, many religious

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<sup>1</sup>It should be noted, however, that the nature of the husband-wife relationship is affected not only by the relative status of men and women but also by the structural nature of the family, extended household organization often being associated with less egalitarian marital relationships than nuclear household organization. The causal priority among these three variables--sex roles, marital relationships and household organization--is very unclear, however. In many societies all three of these variables are correlated to a high degree.

systems maintain explicit norms about fertility ("be fruitful and multiply"), and in this way may promote or demote the utility of children.

There are two aspects of a family's relationship to the religious system which potentially affect the schedule of costs and benefits they associate with children. First is the particular religious system to which they ally themselves and its normative content with regard to fertility, family structure, sex roles and the stratification system. Religions obviously vary in the extent to which they stress high fertility as a value, and also vary in their stress on restrictive roles for women, the importance of status achievement for families, and the sacredness of extended family ties. Religions such as Catholicism in the context of the developed world or Islam in the context of the developing world should therefore promote higher fertility among their adherents than their neighboring religions of distinct normative content. Secondly, the strength of adherence of the individual family to their religion should also affect the utilities they perceive in bearing children, although the precise effect of greater or lesser adherence on fertility will depend on whether the religion is relatively pro- or anti-natalist in nature. For those religions which are markedly pro-natalist in outlook, the stronger the moral force with which the religions' teachings are felt by a family the higher the value they will place on children, while for religions with less pro-natalist outlooks the relationship may be reversed.<sup>1</sup>

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<sup>1</sup>When we speak here and elsewhere of anti-natalist norms, we mean norms against having children beyond some parity n, where n is greater than zero. While some groups may advocate zero population growth, none advocate zero children.

A family's relationship to the religious and stratification systems is not, of course, its only source of values pertinent to fertility, although these may be the most systematically identifiable value sources. A family's experiences--say with war, famine, natural disaster or other events creating great upheaval in social position or life style--may convince family members to alter their beliefs about the virtues of domesticity, hard work, bearing children or other basic life activities. While it is difficult to specify a priori the impact of such experiences on a family's values, and hence on its fertility behavior, it is possible to hypothesize about the effects of particular values on fertility, whatever the source of the former. Indeed, we have already implicitly done so in our discussion above. The more a family values status achievement, upward mobility, geographic movement or other shifts in family status which are likely to raise the costs of children in relation to benefits, the more likely are they to restrict fertility. Similarly, the greater the extent to which family members value loyalty to the family group (to some extent in conflict with achievement values in an "open" society), the greater the potential utility of children--for, the viability of reliance on children for economic support, especially in old age, for political support, and for social support in turn depends on the loyalty of children to the family unit. Finally, the greater the value family members place on a restricted role for women and the greater the disapproval of women gaining a share in socially-important economic, political or religious activities, the more strongly also will the production of children by women be valued. In a shorthand fashion, the complex of values stressing low achievement,

familism and female restrictions can be termed "traditionalism" while the opposite complex stressing individualism, upward social achievement and a wider role for women can be termed "modernism." In these terms, then, the more modern the values of family members, the lower the fertility.

E. Family Planning Systems

Finally, we consider in this report the relationship of "family planning" organizations or programs to a family's fertility behavior. In most countries, family planning programs have as their explicit purpose the promotion of greater contraceptive practice and, in some, the promotion of anti-natalist norms, as well. An individual family's relationship to such programs, therefore, should affect their fertility in several ways. First, the more strongly anti-natalist in posture the family planning program, the more likely that family members will espouse such values themselves, although this in turn probably is also dependent on the degree of social legitimacy such programs have. Presumably, then, when family planning programs are promoted by a legitimate government, or when their sponsorship involves prestigious groups (e.g., M.D.'s) or individuals, their impact on the values of an individual family will be greater than if the program suffers from low esteem. Similarly, the degree of the family's exposure to the program, the extent of its personal contact with family planning workers or clinics, and the ease with which such contacts can be maintained will influence the impact of such a program.<sup>1</sup>

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<sup>1</sup>Some of the factors which increase the effectiveness of family planning programs have been outlined in another RTI report prepared for NESAs/OPP by Dr. Mason (1970).

### Summary

The model developed for this report can be summarized in diagrammatic form (see Figure 1). Leaving aside many of the qualifications discussed above, the utility of children is hypothesized to be primarily a function of seven variables: family wealth or income, the education of family members, family social status, the functional inclusiveness of the family, the status of women in the family, the religion and religiosity of the family, and the family's access to family planning programs. As the  $X_u$  term in Figure 1 symbolizes, the utility of children will not be entirely explained by these factors, although the unexplained variance may be either large or small.<sup>1</sup>

Similarly, ability to control fertility (called "contraceptive control" in Figure 1) is believed to be a combined function of education, the status of women, and access to family planning programs, plus undoubted residual factors represented by  $X_b$ . Fertility itself, then, is a function of the utility of children and the ability to control fertility, plus residual factors,  $X_c$ , such as the biological ability of the couple to bear children. Figure 1 also depicts some of the other interrelations among the causative factors. In all cases the  $X$  variables represent unspecified residual causes, and the double-arrow, curved line connecting religion and education represents our assumption that these two variables are "givens," with no

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<sup>1</sup>Most students of fertility would probably argue that it will be large. Ryder has argued that most fertility results from nonrational behavior (1971) and the Sagi and Westoff research cited earlier (1963) specifically suggests that this is due to largely uncontrollable and biological conditions such as fetal wastage and subfecundity.

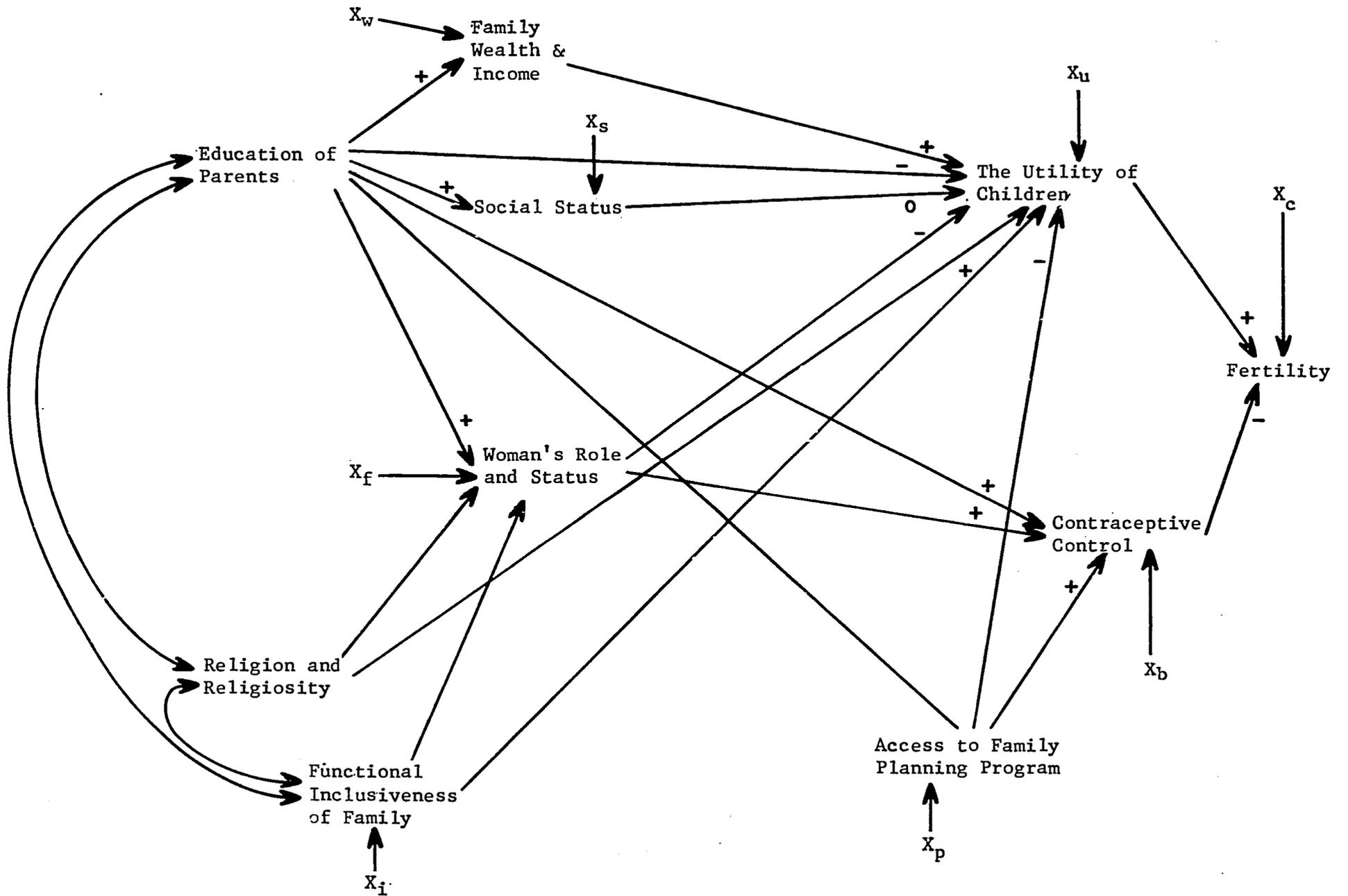


FIGURE 1: A Causal Model of Social and Economic Factors Affecting Family Fertility.

causal priority for either, but are probably correlated in some way. (For a fuller explanation of the assumptions underlying such a diagram, see the literature on path models: e.g., Duncan, 1966). The particular arrangement of variables in this example is by no means sacred, but the diagram is presented both to summarize graphically the hypotheses we have encountered in the literature and to suggest the kinds of estimations which might be made in future research.

In the chapter which follows we will not attempt to estimate the parameters of this model or similar ones explicitly. Instead, we will consider the empirical evidence which exists for various parts of this model, in particular, the hypotheses discussed above or those which arise out of the more general ideas explored in this chapter. We do not assume that such a model is necessary correct, especially for the varying country situations found in the NESAs region. Indeed, a problem beyond the scope of the current project, but important for any use made of this review of the literature, is to what extent general models of fertility behavior intended to apply across cultures or history are indeed meaningful. As we note at several points in our review, the development status of a country may be an important qualification on the determinants of fertility. This same principle may extend even further to the particular country or regional situation itself.

## II. EMPIRICAL FINDINGS

The review of findings from the empirical literature presented here is not exhaustive, nor are the gaps in it systematic. The conclusions we reach, therefore, are subject to revision. However, given these limitations of coverage we have attempted as systematic as possible an organization of the findings from the literature. For each hypothesis we have attempted to assess: (1) the nature of the relationship among the hypothesized variables (whether the independent variable is directly, inversely or unrelated to fertility); (2) the strength of the relationship if it is either inverse or direct; and (3) the adequacy with which the hypothesis has been studied. Table 1 presents our evaluations on these three dimensions for the major hypotheses derivative from our theoretical model presented above.

Before discussing the contents of Table 1, we wish to note several methodological problems common in the literature we reviewed. For several hypotheses, especially those relating stratification variables to fertility, a significant number of the relevant studies were conducted on aggregate data (e.g., for whole countries; for SMSA's within the U. S.). While such data are highly appropriate for many purposes, they are problematic when the interest lies, as it does here, in making inferences about individual- or household-level behavior. Those studies that were weak in this respect, however, tended to avoid another common problem, that of failing to perform multivariate analysis of the data. A number of the hypotheses we consider posit distinct effects on fertility of highly inter-correlated independent variables, and in these instances, especially, the

failure to examine the simultaneous effects of independent variables on fertility behavior is especially problematic. This latter failure underlies much of the ambiguity in findings about the household dynamics of the fertility process.

A part of the failure to examine independent variables simultaneously is also a general failure in the literature to measure directly and consider statistically the effects of social-psychological dimensions on fertility behavior. Put another way, relative to the subtleties of the hypotheses about fertility, the measurement and analysis of variables has on the whole been crude. For example, while income is related to fertility in several dozen studies, in very few are explicit measures of child labor, of actual or perceived costs associated with childrearing, or of perceived dependency on children for old-age support utilized in the analysis of fertility. Thus, interpretation of simple correlations between variables like income and fertility is difficult.

Finally, interpretation of the studies we have reviewed is also made difficult by the wide variety of fertility measures employed, and the tendency to employ only one fertility measure within a given study. It is quite natural that studies utilizing distinct data bases should also employ distinct measures of fertility, but because most studies do not consider more than one such measure it is difficult to discern how relationships to independent variables are affected by the particular aspect of fertility considered. We could, given more time, do more than we have to sort out differences in findings according to the particular fertility variable utilized, and believe that in further refinements of the present review it would be worthwhile to do so. How-

ever, in the present review it should be noted that where ambiguous findings exist, it is unknown to what extent the ambiguity arises from utilization of several distinct measures of fertility behavior in the studies under review.

In Table 1, we list the independent variables down the side, and for each one, specify the nature of its relationship to fertility. The symbols "+," "-", "0," and "?" are used, respectively, to indicate a direct relationship to fertility, an inverse relationship to fertility, no relationship to fertility, and an indeterminant relationship to fertility. The last usually arises because the studies relevant to the particular hypothesis show contradictory findings. Note that in some instances we offer more than one symbol (e.g., "+ or 0"); in these cases, the first symbol listed is the more commonly found relationship. Similar notation is used to indicate the relationship of the independent variables to contraceptive use (or attitude) but this is done only when a significant number of studies reviewed examined contraceptive behavior.<sup>1</sup>

For each variable, we next give our assessment of the strength of the relationship to fertility, using the symbols "H," "M," and "L" to stand for relationships of high, medium and low strength. Of necessity, when the so-called nature of the relationship is 0, the strength is also low. In all cases, the assessment of strength of the relationship is quite impressionistic, since in no instance were the findings of all relevant studies completely consistent.

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<sup>1</sup>Because the decision was made prior to the beginning of the study to avoid a thorough search of the family planning literature, studies relating the independent variables to contraceptive behavior were less frequently encountered than ones relating these variables to fertility.

TABLE 1

SUMMARY OF FINDINGS WITH REGARD TO MAJOR HYPOTHESES ABOUT  
THE INDIVIDUAL-LEVEL DETERMINANTS OF FERTILITY

INDEPENDENT VARIABLE	NATURE OF RELATIONSHIP <sup>c/</sup> WITH:		STRENGTH <sup>b/</sup>	ADEQUACY OF RESEARCH <sup>c/</sup>	PAGE REFERENCE TO THIS REPORT
	FERTILITY	CONTRACEPTION			
<b>A. STRATIFICATION</b>					
Wealth (income)					
(a) Developed Countries	+ or 0		L	F-G	37
(b) Transitional Countries	0 or -		L	F	37
(c) Developing Countries	- or 0		H	F	36
Reliance on Child Labor					
Direct Measures	?		?	P	40
Agriculture vs. other Occupations <sup>d/</sup>	+	-	M	F-G	40
Urban vs. Rural	-		L	F-G	41
Status					
SES and Occupation					
(a) Developed	0		L	P-F	43
(b) Developing	- or 0		L	P	43
Social Mobility	0 or -		L	P	44
Geographic Mobility	0		L	P	46
Education/Literacy	-	+	H	G	48
<b>B. FAMILY</b>					
Extended vs. Nuclear Family	?		?	P	53
Agricultural vs. other Occupations <sup>d/</sup>	+	-	M	F-G	40
Family Support of the Aged	+		L-M	P	55
Infant Mortality, Level and Perception of Change	?			F	12 Fn. #1
Legal Marriage vs. Common-Law	+	-	L-M	P-F	56

TABLE 1 (Continued)

SUMMARY OF FINDINGS WITH REGARD TO MAJOR HYPOTHESES ABOUT  
THE INDIVIDUAL-LEVEL DETERMINANTS OF FERTILITY

INDEPENDENT	NATURE OF RELATIONSHIP <sup>a/</sup> WITH:		STRENGTH <sup>b/</sup>	ADEQUACY OF RESEARCH <sup>c/</sup>	PAGE REFERENCE TO THIS REPORT
	FERTILITY	CONTRACEPTION			
C. SEX ROLES					
Female Labor Force Participation					
(a) Developed	-		H	G	58
(b) Developing	0 or -		L	F-G	59
Female Wage Rates	-		M	F-G	62
Other Extra-Familial Activities of Women	?		?	P	63
Egalitarian Marital Relationship	?	+ or ?	?	F-P	63
D. RELIGION AND VALUES					
Religion					
(a) Catholics vs. other Christians	+		M	F-G	68
(b) Moslems vs. Christians	+		L	P-F	69
(c) Moslems vs. Other	?		?	P-F	69
Religiosity	+ or ?		L	P-F	70
Modern Values	-		?	P-F	71
E. FAMILY PLANNING					
Government Support	-	+			72

<sup>a/</sup>We use (+) symbol if the relationship to fertility is direct, (-) symbol if the relationship to fertility is indirect, (0) symbol if there is no relationship to fertility and (?) symbol if the relationship to fertility is indeterminant.

<sup>b/</sup>Our assessment of the strength of the relationship is reflected in use of following symbols: "H" for high, "M" for medium and "L" for low with "?" for indeterminant.

<sup>c/</sup>We use the symbols "G", "F" and "P" to denote good, fair and poor coverage of the hypothesis.

<sup>d/</sup>Refers to the same studies, but listed twice.

Finally, in Table 1, for each variable we also give our impressionistic judgement as to how well studied the particular hypothesis is in the literature reviewed. Here, we use the symbols "G," "F," and "P" to stand for good, fair and poor coverage of the hypothesis. It should be noted that our evaluation here can refer to several specifics that are discussed in greater detail later in this chapter. A poorly studied hypothesis may mean one which few studies have examined at all, or may refer to one which while frequently studied has been done so only with poor samples or simplistic data analysis or very crude measurement. In section E, referring to family planning programs, we reserve these judgements entirely, because our literature search was not thorough enough to warrant them.

Let us now consider the findings summarized in Table 1. Although we hypothesized that economic status would be positively related to fertility except, perhaps, in agricultural families, we have found it necessary to summarize the literature relating income to fertility in terms of the development status of the country for which the study was conducted. Most studies we considered did not differentiate the relationship of economic status to fertility according to the source of family income (e.g., according to occupation) and a direct test of our interaction hypothesis was therefore not possible. The relationship of income to fertility did, however, appear to vary somewhat according to development setting; and several country-level analyses found such a difference explicitly. In general, the greater the development of the country, the more likely that a positive relationship between income and fertility is found, although a significant number of studies in developed countries

have found no relationship of income to fertility.

This pattern of distinct findings according to development setting may represent two underlying processes. First, differences in the portion of the population found in the agricultural setting may indeed be one reason why the positive relationship of income to fertility is found most often in developed societies. Mean differences in contraceptive "ability," however, may be another reason why this relationship varies from country to country. Because persons in developed societies are the most likely to be able contraceptive practitioners, they may indeed also be most likely to follow the dictates of utility in their fertility behavior. For persons in less developed nations where information, supplies and positive orientation toward contraceptive practices are less widespread, a number of families for whom the utility of children is low may nonetheless be having large numbers of offspring. How one interprets the relationship between income and fertility therefore is unclear. Studies that analyze the impact of income level on fertility separately according to occupation, and according to contraceptive practice while also separating economic from social status are necessary before the significance of income for fertility will be clear.

Very few studies we encountered measured a family's reliance on child labor directly, and the three which did so found different relationships to fertility level. Two indirect measures of a family's likely reliance on child labor, however, correlate in the expected manner with fertility. First a wide variety of studies find that families reliant on agricultural activity for their income tend to have higher levels of

fertility than do other families. And second, a wide variety of studies also find that rural residence is associated with higher fertility than urban residence. While the strength of this latter correlation is low in most instances, we would not expect it to be high; rural residence is a very imperfect indicator of a family's source of income. Thus, while there is some indication that reliance on child labor affects fertility, more studies are needed in this area.

Although we show lines for status and fertility in Table 1, the reader should be warned that in few studies was social status satisfactorily kept separate from economic status. Numerous investigations have correlated occupational status with fertility, and although occupation is indeed an important indicator of social status in most societies, it is also an indicator of economic status as well. Because most studies of occupation and fertility fail either to control for economic status simultaneously or fail to employ direct measures of the perceived costs of childrearing associated with differences in the social status of families, it is unclear how to interpret the findings in this area. It should be noted, however, that studies of occupation or general socio-economic status (SES) less frequently find direct relationships to fertility than do studies of income or economic status. The findings here, then, while for the most part based on less than satisfactory studies, nonetheless fit well with our theoretical conceptions discussed in Chapter I.

The findings with regard to social and geographic mobility, however, do not fit our theoretical concepts. Although studies for developing countries are rare and not of the highest quality, those for the developed

countries clearly indicate that mobility experience has very little or no relationship to fertility. Further research is needed, however, on mobility expectations as a determinant of fertility, and, as in many other areas, studies for the developing countries are especially needed.

The studies of geographic mobility and its impact on fertility we encountered are often of even lower quality than studies of social mobility and fertility. The most common fault of these studies lies in their inability to specify the time at which migration occurs for the family, and the second most common fault lies in their inability to control for differentials in stratification variables associated with migration status. While there is perhaps little reason to expect a strong relationship between geographic movement and total fertility (and indeed, studies here have found more impact of movement on spacing of children than on total births), nonetheless we would expect under the conditions of proper control variables to find some relationship. For less developed countries especially, higher quality studies are also in order here.

Of all the stratification variables related to fertility, education is the one most frequently studied and the one most often found to be strongly and inversely related to fertility. On the basis of our theoretical discussion, education should be the most important of the stratification variables for fertility, in part because it should affect both the utility of children and the ability of the couple to control their fertility. That we indeed find a strong relationship of education to fertility in several dozen studies is therefore quite consistent with our model. While it would be interesting to determine the relative impact of husband's and wife's

education on fertility behavior, for the most part studies have ignored this question and it is therefore not possible to make any reliable assessment here.<sup>1</sup> This, as well as questions about selection into different educational experiences and the precise manner in which educational attainment affects fertility (including the question of how important educational content is as opposed to the mere fact of formal school attendance) are questions that warrant further study.

To summarize the findings with regard to stratification variables: While most findings are not inconsistent with the hypotheses derived from our theoretical model, there is a clear need for multivariate analyses of these factors, many of which are highly intercorrelated. This need appears to be greatest for precisely the countries of greatest interest to NESAs/OPPs; viz., the less developed countries.

Research on the relation of family factors to fertility is far less common than research on the stratification variables, and the conclusions to be drawn here are consequently less certain. While there are several studies of household kin composition and fertility (especially in India), the findings of these studies are contradictory and fraught with methodological problems. A general problem with them may be the rather loose fit between the structural composition of families and their functional inclusiveness. Studies that investigate more directly what families do and how they obligate family members would therefore be useful if we are

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<sup>1</sup>There are some exceptions, however. For example, Ben-Porath (1970) finds wife's education in Israel a far stronger predictor of fertility than husband's education.

to understand the validity of the functional inclusiveness hypothesis.

To the extent that families engaged in agricultural activities are more functionally inclusive than those found elsewhere in the labor force, the findings on agricultural vs. other occupations are again confirmatory of expectations here. Those few studies, moreover, that have directly considered the perceived dependence on children for old-age support in relationship to fertility have also found the expected direct relationship. These latter studies, however, for the most part have been "soft" in nature, often concentrating on a particular village or rural community. Similarly, while the findings on the legality of sexual unions have tended to confirm expectations, these studies have also been of limited application and of a qualitative nature. Thus, in general, while there are empirical findings consistent with our hypotheses about the division of labor between family and society and its bearing on fertility, there is clearly a need for more studies here if these hypotheses are to be better understood.

Research on sex roles and fertility has been of two extremes. Female labor force participation and fertility have been studied frequently, and for developed countries at least, are inversely related in every study. But although this is one of the better studied areas of fertility behavior, problems in the interpretation of this relationship still exist; in particular the problem of whether fertility or labor force participation is causally prior. In less developed countries, the inverse relationship of female labor force participation to fertility is less frequently found, but since childcare is less likely to conflict with labor force activities in these

countries than in more industrialized systems, this itself may be consistent with our theoretical expectations.

While not as thoroughly studied as labor force participation itself, female wage rates have been related to fertility in several investigations and the findings of all have been fairly consistent with expectations. Both extra-familial activities outside the economic sphere and the nature of marital relationships, however, have been far less frequently studied, and these are aspects of sex role organization greatly in need of further investigation. Studies for these two variables are sparse enough to warrant no sound conclusions about their relationship to fertility behavior.

Findings on religion and fertility are not entirely consistent from study to study, but fertility differences between some religious groups appear to exist. In the context of developed countries, Roman Catholics tend to have higher fertility than most other Christian groups (with some important exceptions, however, e.g., Mormons). And in less developed countries, Moslems appear to have higher fertility than most other groups, although by no means all others as has been claimed. Those few studies investigating religiosity as well as religion have also for the most part found the expected, direct relationship to fertility, although the relationships here are not robust. Finally, although very understudied in our opinion, there is evidence that the values cherished by individuals with respect to dimensions of modernization are indeed a significant predictor of fertility. Of some interest here would be studies which link values both to fertility, on the one hand, and to

the social variables thought to affect values, on the other. For if values are indeed a key intervening variable in the process by which families produce fewer or more children, their antecedents open to policy manipulation must be understood.

In general, then, we have found confirmation for more hypotheses than not, but in most cases the certainty with which hypotheses can be accepted is low. Two general conclusions strike us quite forcefully. First, there is a tendency in the literature to concentrate on too small a focus, both geographically and in terms of the number of variables considered in the analysis. Secondly, just as the less developed countries are relatively impoverished economically, so too is the research into fertility dynamics in these countries impoverished relative to the more developed countries, especially the United States. Larger-scale and more sophisticated studies into fertility dynamics of the type done in the United States should be seriously considered for the countries of the NESAs region.

A. Stratification Variables

We now consider the findings for each hypothesis in greater detail.

The first hypothesis we consider is:

The higher the income or command of wealth of a family,  
the higher the fertility (when perceived economic costs  
of children are held constant).

The idea that this hypothesis may be true only under particular conditions of development arose in part from an aggregate cross-national data analysis conducted by Friedlander and Silver (1967). Grouping nations into developed

(N=18), intermediately developed (N=20), and underdeveloped (N=85) categories, they found a positive relationship of per capita income to crude birth rate for the developed countries, a fluctuating and nonsignificant relationship for intermediate countries, and a negative relationship for underdeveloped countries.<sup>1</sup> While the high level of aggregation of their data made interpretation of the findings difficult, they nonetheless suggested that development status might be an important qualification on the income-fertility relationship.

If studies done within countries (in most but not all instances with household-level data) are classified in these approximate categories, this impression about the variation of the income-fertility relationship by development status is more or less confirmed.

For studies conducted in so-called underdeveloped countries, all but one find an inverse relationship between measures of economic status and measures of fertility. Berelson's (1966) review of KAP studies from several countries finds consistent inverse relationships between income level and desired family size; studies by Tabah and Samuel (1962), Sinha (1957), and Stoeckel and Choudhury (1969) for Santiago, Chile, Uttar Pradesh, India, and Comilla District, East Pakistan, respectively, find

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<sup>1</sup>The following countries were classified by Friedlander and Silver as developed: Canada, USA, Belgium, Czechoslovakia, Denmark, Finland, France, East Germany, West Germany, Luxembourg, Netherlands, Norway, Sweden, Switzerland, United Kingdom, Australia, New Zealand, and the USSR. The intermediate countries were: Mexico, Puerto Rico, Argentina, Brazil, Colombia, Uruguay, Ceylon, Israel, Japan, Austria, Bulgaria, Greece, Hungary, Iceland, Ireland, Italy, Poland, Malta and Gozo, Romania, and Yugoslavia. The remaining 85 countries in their sample were all classified as "underdeveloped."

inverse relationships of income to total fertility. Only Morsa's (1966) study of Tunisia finds a direct relationship.

Within the intermediate countries (Puerto Rico and Mexico for these studies) one study done in Mexico (Zarate, 1967) finds a significant inverse relationship of income to fertility; two find extremely weak inverse relationships (Hatt, 1952; Nerlove and Schultz, 1970, both in Puerto Rico); and only one finds a direct relationship (Moore, 1952) done in Mexico. The majority of studies for these countries thus find a weak inverse relationship or no relationship.

Finally, of ten studies done in developed countries (mostly, the U.S.A.), four find a direct relationship for at least some portion of the population (Cain and Weininger, 1970, analyzing SMSA's in the U.S.; Freedman and Slesinger, 1961, analyzing the fertility differentials for the indigenous non-farm population of the U.S.; Freedman, Goldberg and Sharp, 1955, analyzing Detroit Area Survey data; and Kiser and Whelpton, 1949, analyzing the complete contraceptors from the Indianapolis study); two find no significant relationship (Kiser's 1968 analysis of Census data; and Whelpton, et al.'s 1966 analysis of the 1960 Growth of American Families survey data); and four find a negative relationship, at least for selected subpopulations (Duncan, 1964, re-analyzing the Indianapolis data; D. Freedman, 1963, analyzing U. S. national survey data; Freedman and Slesinger, 1961, analyzing national survey data for persons with farm backgrounds; Freedman, Baumert and Bolte, 1959, analyzing West German survey data; and Blake, 1967a, analyzing Gallup Poll data). Of those studies finding an inverse relationship, however, at least one (D. Freedman, 1963) can be considered an exception that

"proves the rule." While Freedman found husband's income negatively related to number of children ever born, husband's income relative to his occupation-age-education class was positively related to fertility. Because relative income, more than income alone, controls for differences in social status associated with different economic statuses, her findings suggest the veracity of the economic hypothesis more than they deny it.<sup>1</sup>

However, it should be noted that several of the U. S. studies finding negative fertility differentials argue persuasively that these can be attributed almost entirely to the farm or rural sectors of society. Among the urban born and bred, socio-economic differentials in fertility are extremely small. Thus, relationships are not wholly consistent within any development category, although there is a distinct tendency for studies in lower development settings to find a relationship more toward the negative than toward the positive end of the continuum.

A plausible explanation for the apparently contradictory findings in the United States is offered by Blau and Duncan (1967) and by Bumpass (1969). Noting that socio-economic differentials in fertility were not uniform throughout the population of the United States, particularly that for couples with a farm background (either living on the farm, or parents lived on a farm) there is a negative relationship between fertility and status, and for second generation urbanites no such differentials are found (Goldberg, 1959, 1960; Freedman and Slesinger, 1961; Duncan, 1965); and

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<sup>1</sup>However, a later analysis by Duncan (1964) suggests that Freedman's findings with regard to relative income may be a statistical artifact.

that among Catholics there is a positive relationship between fertility and status, and among non-Catholics the relationship tends to be negative (Westoff, Potter and Sagi, 1963; Freedman, Goldberg and Bumpass, 1965; Goldberg, 1965; Whelpton, Campbell and Patterson, 1966), these investigators added a third such limiting condition, namely, age at marriage. Blau and Duncan used data specifically gathered by the Census Bureau as part of their regular monthly Current Population Surveys (CPS); more than 20,000 men were covered in this Occupation Changes in a Generation survey (OCG). The independent variables used were husband's occupational status, income and educational achievement; the dependent variable was number of children ever born to the wife. Bumpass used data from the 1955 and 1960 Growth of American Families surveys and the 1965 National Fertility Study (a total of more than 3,000 women), and used wife's education as the independent variable and expected completed fertility as the dependent variable. Both studies found that among women who married before they were 19 years old there was a negative relationship between wife's education and fertility; and among those who married after reaching age 23 there was a positive relationship between fertility and wife's education. For those who married between the ages of 19 and 22 the relationship was somewhat contradictory. Furthermore, this pattern holds for both Catholics and non-Catholics, and for persons both with and without a farm background. (However Bumpass' data were restricted to women who currently resided in an urban area.)

Given that in the United States, Catholic women marry on the average one year later than Protestant women (but earlier than Jewish women), and

that rural women marry half a year to a year earlier than urban women (Whelpton, Campbell and Patterson, 1966, p. 321), considerable new light is shed on the relationship between socio-economic status and fertility.

It is tempting to draw an analogy between Blau and Duncan's, and Bumpass' findings by age at marriage, and Friedlander and Silver's (1967) findings by developmental level of nations. If, as seems probable, developed nations have a higher average age at marriage (or first sexual union), and underdeveloped nations have a low average age at marriage, then the two sets of findings are highly compatible.

As noted previously, this pattern of findings may in part be explained by several other hypotheses, among them:

The greater the extent to which families utilize children for labor, the higher the fertility.

Only three studies we reviewed tested this proposition directly, and of these, two found the expected, direct relationship but one an unexpected, inverse relationship. Schultz's (1968) study of Puerto Rican data, and Schultz and DaVanzo's (1970) analysis of Egyptian data both find the expected relationship, but a later Puerto Rican study by Nerlove and Schultz (1970) finds an inverse, although weak, relationship. Surveys that investigate in greater detail the role of children in the economic and social life of the family would be most helpful in testing this hypothesis.

Of greater consistency are findings for studies that index the use of children as family labor in an indirect manner. For example, seven studies investigating the relationship of agricultural occupations to fertility find that farm occupation or farm residence are directly

associated with fertility level (Duncan, 1965, and Whelpton, et al., 1966, in the USA; Yaukey, 1967, in Lebanon; Taeuber, 1960, in Japan; Freedman Baumert and Bolte, 1959, in West Germany; Rele, 1963, and Driver, 1963, in India; Miro and Mertens, 1968, in eight Latin American countries; Szabady, 1964, in Hungary; Hatt, 1952, in Puerto Rico; and Rizk, 1963, in Egypt) and two additional studies find that farm occupation or background is inversely associated with contraceptive use (CELADE, 1965, in eight Latin American cities; Khan and Choldin, 1965, in East Pakistan). In some instances, farm background of urban dwellers is also associated with higher actual or expected fertility, although the relationship of an agricultural background to fertility appears to be more fragile than the relationship of farm residence or employment to fertility (see, e. g., Duncan, 1965, and Blau and Duncan, 1967, for data on the U. S.). Most of these relationships are of moderate strength.

Similarly, a number of studies have found that urban residence is associated with somewhat lower fertility than rural residence (Kiser, 1968, for the U.S.A.; Gendell, 1967, for Brazil; Hatt, 1952, for Puerto Rico; Zarate, 1967a, for Mexico; Miro, 1966, and Smith, 1958, for various Latin American countries; Mazur, 1967, for the Soviet Union; Blacker, 1962, for Zanzibar; and Badenhorst and Unterhalter, 1961, for the Union of South Africa). There are a few studies, however, which have found other results (Abu-Lughod, 1964, in a study of Egyptian Census data finds no urban-rural differential; and Robinson's 1961 and 1963 cross-national analyses of both survey and census data finds inconsistent differentials). Moreover, some of the studies that find the expected differentials also find strong exceptions; e.g., Duncan's (1965) analysis of U. S. data suggests

that farm background is conducive to high fertility only for persons failing to complete high school. But both these exceptions and the small size of most differentials are to be expected, given the heterogeneity of family structure, economic activities and educational levels found in both rural and urban areas.

The hypothesis relating social status to fertility developed above was:

The higher the social status of the family, the greater the cost of rearing children, hence for a given income level the lower the fertility (or: when income is not controlled, social status will be unrelated to fertility).

This hypothesis, while straight-forward, is difficult to test empirically. Measuring a family's expected childrearing expenses directly is not easy in most cultural settings, and although there are variables that index social status quite well without such measures (e.g., occupational status), these latter variables are usually highly correlated with economic status as well. Thus, in order to separate the effects of social and economic status using variables such as occupation or caste or some index of socio-economic status (SES), great care must be taken in the multivariate analysis of the data (see D. Freedman, 1963, for one example of such an analysis). Unfortunately, most studies do not take such care, but instead simply correlate occupations or SES levels with fertility. Such studies must be interpreted with caution, at least as regards our hypotheses.

Although there are fewer studies that investigate occupational or SES in relation to fertility than studies that look at income in relation to fertility, we choose nonetheless to present findings separately for the developed and the developing countries (the latter including both the intermediate and underdeveloped categories of Friedlander's analysis).

For the developed nations (more precisely, the USA) there is little relationship found between occupational or SES status and fertility, whether the analysis is based on census data (Kiser, 1968; Blau and Duncan, 1967), or on survey data (Goldberg, 1957 and 1959; Westoff, et al., 1961 and 1963), except for certain groups (e.g., those women married by age 22). But for the developing nations there is in a majority of cases an inverse relationship of occupation or SES to fertility (Miro, 1966, for eight Latin American cities; Sinha, 1957, studying caste in India; Potter, et al., 1965, studying Jat and Chamar castes in India; Rele, 1963, studying social class in India; Stoeckel and Choudhury, 1969, studying occupation in East Pakistan; Abu-Lughod, 1965, studying social class in Egypt; and Paydarfar and Sarram, 1970, studying occupation in Iran). In two cases, however, no relationship is found (Morsa, 1966, in Tunisia; and Morrison, 1956 and 1957, in India), and in one study a direct relationship between occupational status and fertility is found (Windle and Sabagh, 1963, in a study of Iranian employees of the national oil company).

Just why there is this tendency for an inverse relationship to appear in developing countries but no relationship in the U.S. is not entirely clear. As with the variation in the economic status-fertility relationship by development, part of the explanation may lie in differential contraceptive ability in developing and developed countries, especially among the less privileged segments of the population. The difference may also reflect the greater role which formal education plays for all social classes in the United States, compulsory and public education perhaps equalizing the costs associated with children to a greater extent than in

countries where formal education is still more of an option utilized largely by the upper classes. Finally, differential age at marriage by development status may also contribute to this difference. Thus, as with the economic status hypothesis, there is also need here for further studies which explore some of these possibilities. It should be noted that despite the inadequacies of studies testing the social status hypothesis, the findings nonetheless are fairly consistent with the hypothesis.

The studies which test the social mobility hypothesis, however, are not very consistent with the hypothesis. That hypothesis, it may be recalled, states:

The greater the planned or actual inter- or intra-generational upward social mobility of a couple, the lower their fertility.

Thirteen studies were found which tested this hypothesis in some more or less explicit manner, but of these only four demonstrated the expected inverse relationship between mobility and fertility. A study of women in Budapest by Szabady (1964), of men and women in the United Kingdom by Berent (1952), a study by Hutchinson (1961) of data from eight Brazilian cities, and an analysis of the Indianapolis data by Kantner and Kiser (1954) find the expected inverse relationship, and in the case of the Hutchinson study this relationship is shown to hold up under several important control variables.

Studies in the United States by Blau and Duncan (1967), and in the United Kingdom by Berent (1952) both find that the fertility of mobile persons is typically intermediate between the average fertilities of the class of origin and the class of destination. Blau and Duncan found also that social mobility in either direction tends to depress

fertility slightly over what would be expected from a purely additive model, but the effect is too small to account for much variation. The influence of mobility is much overshadowed by other variables, namely white collar status, late marriage and urbanization. However, studies by Tien (1965) of faculty members at an Australian university, by Perrucci (1967) of engineers in the United States, by Boggs (1957) of a white collar sample in the United States, by Scott (1958) of school teachers in England and Wales, by Brooks and Henry (1958) of a small sample of Catholics in the Northeast United States, by Westoff, et al. (1961 and 1963) of families in ten metropolitan areas in the United States, and by Gonzales-Quiroga (1968) of rural Costa Rican women all fail to find any consistent or significant relationship between upward social mobility (mostly intergenerational) and fertility level. In the first two of these studies, however, mobility has some relationship to the spacing of early births.

The failure to find the expected mobility relationship in the developed countries may suggest a qualification on the original hypothesis. Perhaps only when upward mobility represents a shift from the agricultural, traditional sector of society to the industrial--rather than more or less "normal" upward movement within the industrial sector--does it have a significant impact on fertility. This fits well Blau and Duncan's (1967 p. 392 ff) observations for the United States:

We have concluded that occupational mobility, in general, is not a very productive variable for purposes of demographic analysis. On the other hand, a specific type of spatial and social mobility--the movement off farms--may indeed be of some considerable demographic importance. This movement is accompanied not only by a reduction in the over-all level of fertility, but also, in the generation after it occurs, by a drastic alteration of the pattern of differential fertility.

These last remarks of Blau and Duncan would seem to be particularly relevant to the rapidly urbanizing countries of the Third World. It is tempting to infer that as currently underdeveloped nations become more urbanized and industrialized that the relationship between fertility and mobility may become weaker and follow the pattern prevalent in the United States. But this temptation should be resisted, for there is no indication that the pattern of fertility differentials are following those of the developed countries in other respects.

The mobility studies we have reviewed may also fail to show a significant relationship between mobility and fertility for other reasons--(1) They may be examining the mobility of the wrong persons. Most studies have measured the intergenerational mobility between grandparents and parents and have in turn related this to the number of children these parents bear. More important than studies which examine such patterns of mobility may be studies which relate mobility plans and aspirations for children's status to number of children born. (2) They are examining only actual mobility. Few studies have examined mobility aspirations or plans in relation to fertility (an exception is Featherman, 1970). There are presumably many couples who hoped to improve their socio-economic status but were unsuccessful in spite of having limited their fertility (Blau and Duncan, 1967, p. 370).

Geographic movement was also hypothesized to affect fertility, viz.:

The greater the planned or actual geographic movement of the married couple, the lower their fertility.

It is important to distinguish migration by single persons and that of families here, for the way in which the migration of single and married

persons affects fertility is probably quite different.<sup>1</sup> Unfortunately, several studies of migration in relation to fertility have been unable to distinguish the point in the life cycle of movement, and the lack of relationship between migration and fertility these studies find may therefore reflect this (included in this category are Paulus' 1966 study of migration in India and Long's 1970 study of migration to and from Canada and the United States). Some studies which have, however, been able to determine the time of movement nonetheless find no relationship to fertility (e.g., Westoff, et al., 1961 and 1963, Macisco, Bouvier and Renzi, 1969; this latter study finds migration differentials in fertility but also finds that they are almost entirely attributable to differentials in educational attainment). Several studies have found the expected inverse relationship (Kantner and Whelpton, 1952; Kiser, et al., 1968; deJong, 1968; Wilbur, 1970--all for the United States), but relationships are never strong nor thoroughly explored. The one case of geographic movement known to affect fertility is that from farm to nonfarm areas in the United States (Blau and Duncan, 1967). This movement, however, is occupational as well as geographic and the extent to which the geographic component is crucial is not clear. In light of relatively high levels of fertility achieved in the aggregate by highly mobile populations, such as

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<sup>1</sup>The migration of single persons is probably important for fertility insofar as it affects age at marriage. Migration from rural areas to cities, or from one country to another is mentioned by Davis (1963) as an important means of reducing fertility, both by increasing age at marriage and by increasing urbanization.

that in the United States, it is perhaps best to conclude that if there is any general relationship here it is probably very weak.

With regard to educational attainment, we hypothesized that:

The higher the educational level of the husband or wife, the lower the fertility.

There is certainly overwhelming empirical evidence for this hypothesis. In 24 out of 32 empirical studies from various countries that we examined, a clear-cut and in most instances strong inverse relationship is found (for the U.S.A.: Blake, 1967b, Whelpton and Kiser, 1943, Kiser and Frank, 1967, and Whelpton, et al., 1966; for India: Rele, 1963, Driver, 1963, Morrison, 1956, and Minkler, 1970; for East Pakistan: Stoeckel and Choudhury, 1969; for Iran: Paydarfar and Sarram, 1970; for Egypt: Abu-Lughod, 1965, and El-Badry, 1965; for Israel: Bachi and Matras, 1964, and Ben-Porath, 1970; for Tunisia: Morsa, 1966; for Puerto Rico: Hatt, 1952, and Schultz, 1970; for Mexico: Moore, 1952; for Chile: Tabah and Samuel, 1962; for Brazil: Gendell, 1967; for Latin American countries: Miro, 1966, and Miro and Mertens, 1968; and for Japan: Taeuber, 1960). In another five studies, an inverse relationship is found only for certain subgroups or the relationship is extremely weak (Yaukey, 1962, in Lebanon; Rizk, 1963, in Egypt; Freedman, Baumert and Bolte, 1959, in West Germany; Hong and Yoon, 1962, in Korea; and Westoff, et al., 1961, in the United States). Finally, in one study done among village women in India no association of wife's education to fertility is found (Morrison, 1956), and in three studies a positive or curvilinear relationship is found (Carleton, 1965, in Puerto Rico; Roberts, et al., 1965, in Dacca, East Pakistan; and Freedman, Goldberg, and Sharp, 1955, in Detroit). And the study by Bumpass (1970) mentioned

earlier found that the relationship between wife's education and fertility varies with wife's age at marriage.

However, neither what produces these deviant cases nor what the cause is of the generally negative association is clear in most studies. The deviant cases do not occur at only one level of development, nor within a single religious or ethnic group. Thus, the interaction of education with age at marriage mentioned earlier does not seem likely to explain these variations in findings. Similarly, whether those studies which do show a negative association find this correlation because of differentials in child mortality, age at marriage, age, women's labor force status or a host of other variables associated with different levels of educational attainment is unclear in many instances. There are studies which control for other variables and those which do not; their findings do not seem to vary consistently in any way. In one case, intelligence measured in childhood is related to fertility in adulthood and an inverse association found (Quensel, 1958).

In addition to studies which relate education to total fertility, there is one study which investigates the relationship of education to birth intervals (Davidson, 1970). Education is positively related to the length of time between marriage and the first birth, but not related to subsequent intervals.

Although most studies which correlate education with fertility do not explore the meaning of this association in any systematic way, there is one intervening variable which has been studied with some frequency, namely, knowledge and use of contraception. It will be recalled that one

reason education was expected to have a potent effect on fertility was that it would influence not only the utility of children but the ability of the couple to control their fertility as well. In other words:

The greater the education of husband or wife, the greater the use of contraception or other effective means of controlling fertility.

Most studies indeed confirm this hypothesis, showing education of either spouse to be directly related to all aspects of contraceptive use (Ahmed and Ahmed, 1965, and Khan and Choldin, 1965, both in East Pakistan; Morsa, 1966, in Tunisia; Hong and Yoon, 1962, for Korea; Freedman and Takeshita, 1965, and Freedman, Takeshita and Sun, 1964, for Taiwan; CELADE, 1965, for eight Latin American cities; and Bereleson, 1966, reviewing a variety of KAP surveys), although in some cases there is a tendency for education to be less related to actual use of contraception than to knowledge and avowed willingness to use contraception (e.g., CELADE, 1965). If it can be assumed that contraceptive use in turn actually lowers fertility, then these studies suggest that family planning utilization may be one of the major intervening variables between education and fertility.

Although it is possible that the relationship of education to fertility is causally spurious, few studies have considered this possibility. In one study done in the United States, it was specifically questioned whether women's educational experience (in this case, college) actually changed their fertility desires and values, or whether, instead, selection of particular women into college produced educational differences in desired family size (Westoff and Potvin, 1967). Although probably relevant only to college educated women in the United States, this study concluded that

the experience of going to college probably did relatively little to change women's desired family sizes. Instead, other factors in women's backgrounds determined both their attendance at college and their family size desires.<sup>1</sup>

The question was raised above whether it is the formality of schooling or its curricular content which produces the influence on fertility behavior. That is, and this is an especially crucial question in the nonwestern context, does the fact of going to school reduce fertility, or does going to school reduce fertility only if the content of school curriculum is largely Western rather than traditional and native. The hypothesis is:

Educational attainment will be negatively associated with fertility only when the curricular content of the education is largely Western, or "modern," rather than traditional (e.g., religious education).

There is very little research directly relevant to this hypothesis conducted in nonwestern countries. One recent study (Armer and Youtz, 1971) relates the curricular content of education to a direct measure of "modernity of values" among Nigerian school boys and tentatively concludes that Western curriculum is more significant for these values than the fact of attending a formal school. Within the United States, several studies have examined the influence of parochial school education among Catholics on fertility desires and behavior (Freedman, Goldberg and Sharp,

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<sup>1</sup>One of these other factors suggested by Bumpass (1970) is fecundity status. Subfecund women may have a tendency both to attain higher levels of education and to marry later than the highly fecund.

1955; Harter and Roussel, 1969; Westoff and Potvin, 1967; Westoff, et al., 1961; and Whelpton, et al., 1966), and most have found higher fertility desires and rates among the parochially educated (a partial exception is found in Harter and Roussel's study of New Orleans couples). While American Catholic parochial schools teach much the same subject matter as other schools, it is clear that in addition they stress religious values and tradition. This relationship is thus consistent with the notion that it is the content of education which is most important in eventually affecting fertility behavior, not the fact of attending school per se.

Of the stratification variables relevant to fertility, then, education is probably the one most consistently and strongly related to fertility. While it, too, might be profitably subjected to further study, of all the stratification variables it is probably least in need of study. However, studies that examine the simultaneous effects of stratification variables rather than further studies which investigate only one variable at a time would be most fruitful.

#### B. Family Division of Labor Variables

The general hypothesis here is:

The more functions performed by the family, the higher its fertility.

Specifically, we have suggested that families engaged in economic production, in political action, or in corporate social or religious activities will more than "specialized" families exhibit high rates of fertility. To the extent that the structural inclusiveness of household groups is

correlated with the functional inclusiveness of the family, this hypothesis can be rephrased as:

Corporate kin groups will encourage higher fertility than will other types of families, and extended or jointly organized families will encourage higher fertility than simple, conjugal or nuclear families.

Perhaps because this hypothesis is structural while its rationale is functional, we find very contradictory empirical evidence for it. An important problem is the variety of definitions which studies have given to the terms "joint" and "nuclear," (this definitional problem is noted by Burch and Gendell, 1970); studies by Driver (1963) in India, by Freedman, Takeshita and Sun (1964) in Taichung, Taiwan, and by Stoeckel and Choudhury (1969) in East Pakistan all to some extent indicate either that fertility is higher in joint families than in nuclear ones, or that contraceptive acceptance (net of parity) is lower, thus supporting the hypothesis. A study by Liu, et al. (1970) in the Philippines similarly finds that kinship oriented women tend to have higher fertility than others.

However, in studies by Morsa (1966) in Tunisia, by Mathen (1962), Nag (1965) and Samuel (1965) in India, and others (see studies cited by Burch and Gendell, 1970), either no significant relationship between family type and fertility (or contraceptive) behavior is found, or an inverse relationship is found (i.e., joint families have lower fertility than nuclear families). The quality of data in these studies is highly variable, and in some instances, controls for marriage duration, parity and other variables which might affect the dependent variable independently of family type were not made (see Burch and Gendell, 1970).

Samuel (1966) notes that fertility may be no higher in joint families than in nuclear ones for a variety of reasons. For example, crowding and control by elders over sexual access among the younger couples in the joint household may limit coital exposure and thus keep fertility relatively low. Burch and Gendell (1970) suggest that joint families may even go to the extreme of forcing couples out of the household if their fertility becomes unacceptably high (thus producing inverse relationships). It seems minimally evident, then, that further research could be done in this area; in particular, as Burch and Gendell note, research which clarifies the precise process by which joint families do or do not encourage higher fertility. However, the increasing tendency toward conjugal family organization throughout the world (see Goode, 1963) may make this problem of little practical significance.

Although the original hypothesis about functional inclusiveness of the family could be tested more directly than via the structural nature of households, this has in fact been done only in rare instances. With regard to the function of economic productivity, those studies cited above (pp. 40-41) which relate agricultural occupations or farm residence to fertility are not only tests of a stratification hypothesis but also to the hypothesis that:

Families which act as units of economic production will have higher fertility than other families dependent on wage-earning of adult family members.

To some extent also those studies cited above that relate use of child labor to fertility are also implicit tests of this hypothesis (p. 37). We have, however, encountered no studies which rigorously addressed themselves to family functions other than these.

There are, however, some "soft" studies which address themselves to the hypothesis that:

Families which depend on adult children for economic and social support of the aged will have higher fertility than other families.

Impressionistic studies done by Blake (1961) in Jamaica, by Hatt (1952) and Stycos (1955) in Puerto Rico, by Rizk (1963) in Egypt, and by Poffenberger (1968), Collver (1963), Malhatra and Kahn (1961), Anand (1964) and Saraj, et al. (1969) in various parts of India, suggest that a primary motive for high fertility in these less developed, relatively high mortality societies is insuring that enough children (or sons) will survive to adulthood to support their parents in their old age.<sup>1</sup> In an even more indirect manner, studies by Roberts, et al. (1965) in Dacca, East Pakistan, by Hong and Yoon (1962) in Korea, and by Morrison (1957) in India, also suggest the importance of old-age support for fertility. These studies all find a strong negative relationship between the desire for additional children and the number of living sons. If one can assume that in these societies sons are crucial to parents because, among other things, they are the children capable of and expected to support parents in old-age, then such a correlation suggests the importance to families in which such dependence exists of achieving relatively high levels of

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<sup>1</sup>For Hindus, especially, it has also been noted that surviving sons are crucial for performing religious rituals on the death of the father, for continuing the "family line," and for bringing daughters-in-law into the home as additional household labor (see Samuel, 1965; Pathare, 1966; Gupta, 1965).

fertility.<sup>1</sup> Thus while the methodological quality of most studies in this area is low, there are nonetheless fairly consistent indications that perceived dependency on children for various forms of old-age support--social as well as economic--in turn promotes relatively high fertility.

The final way in which the division of labor between families and society as a determinant of fertility behavior has been studied is in relation to the legitimacy of sexual unions. In particular, it is hypothesized that:

The more institutionalized and permanent the sexual union, the higher the fertility. That is, legal or church marriages will have higher fertility than consensual or common-law unions; and common-law or consensual unions will have higher fertility than nonresidential sexual unions.

While the theoretical rationale for this hypothesis is that legitimate children are of greater social value to parents than semi-legitimate or illegitimate children, there is also another, non-normative reason why type of union might be correlated with fertility. This is the simple fact of extent of exposure to sexual intercourse. Particularly when comparing nonresidential unions with those in which partners share an abode, differentials in fertility might well reflect differences in coital frequency. However, this problem can to some extent be controlled if desired family size or other planned fertility variables are studied along with actual fertility level.

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<sup>1</sup> However, review of the relationship of perceptions of infant mortality to desired family size conducted at RTI (Rulison, 1970) found contradictory evidence in support of the idea that a reduction in child mortality will in effect reduce desires for surviving family size (although it may result in a lower number of desired births).

Most studies of completed fertility have found the expected correlation, but there are some major exceptions. A study by Moore (1952) among Mexican textile workers found that the number of births declined from church marriages, to civil marriages, to consensual unions. A study by Roberts (1955) in five West Indies islands found a similar progression from legal marriages, to common-law unions, to women without any formal union as did a study in Jamaica by Blake (1961). A study by Badenhorst and Unterhalter (1961) of Bantu women in South Africa found that among those few women willing to admit to consensual unions, births were lower than in marriages, even controlling for age.

However, a report by Miro (1966) on surveys of several major Latin American cities failed to find a consistent relationship between union status and fertility. In some cities the expected relationship obtained, but in others it was nonexistent or even reversed. Although Miro's analysis failed to control for age, marriage duration, or other variables which might have affected the relationship, the relatively high quality of her data warrant that the results not be ignored, especially since Stycos (1968), too, was unable to confirm this hypothesis in Puerto Rico.

The one study which examined desired family size and contraceptive knowledge as well as actual fertility, however, (Stycos and Zack, 1964) found a consistently positive relationship between fertility desires and degree of institutionalization of the sexual union. Jamaican women in the less institutionalized unions also had better knowledge of contraception than other women.

Although this hypothesis has not been as well studied as it probably could be, there is also little reason for much further study in terms of the NESAs region. Unless sexual unions outside of a fully-institutionalized context become more common in the NESAs countries than they presently are, this particular variable is unlikely to be of much significance in affecting fertility.

In general, then, there is some support, but not complete, for hypotheses about the functions performed by the family and its level of fertility. From the point of view of the NESAs countries, there certainly are further questions here which could be profitably studied. For example, the problems associated with old-age dependency are neither well studied nor well understood; it would be especially helpful to understand how well pension plans, social security systems or community action groups are able to substitute for the kin group in performing this function in societies where the kin group has performed it for many centuries. Especially for countries like India where the holds of traditional village life are slow to break down, further studies in this area may be of great importance for understanding methods by which fertility levels could be changed.

#### C. Sex Division of Labor and Women's Roles Variables

One of the most frequently studied hypotheses about fertility is:

The greater the participation of women in economically-remunerative activities, especially in the "labor force," the lower their fertility.

For developed countries especially, this inverse relationship between labor force participation and fertility (actual, desired, ideal or

expected) is found in numerous studies and is one of the strongest correlations between a social variable and fertility behavior. Studies in the United States (Blake, 1965; D. Freedman, 1963; Goldberg, 1957; Ridley, 1959; Kiser and Frank, 1967; Pratt and Whelpton, 1956; Whelpton, et al., 1966; Clarkson, et al., 1970; and Westoff and Potvin, 1967), in Western Europe and North America (Collver, 1968; Collver and Langlois, 1962; Freedman, Baumert and Bolte, 1959), in Israel (Bachi and Matras, 1964; Ben-Porath, 1970), in the USSR (Vosztrikova, 1961), in Puerto Rico (Carleton, 1965; Weller, 1968; Nerlove and Schultz, 1970), elsewhere in Latin America (Miro, 1966; Requena B., 1965; Miro and Mertens, 1968; Stycos, 1968; Gendell et al., 1970), and in the Philippines (Harman, 1970) all indicate that women's past, present or expected labor force participation is inversely associated with their fertility behavior or directly associated with the use of contraception and abortion.

However, several studies done in less-developed countries do not find the expected correlation. Weller's study (1968) of Puerto Rico finds the expected correlation only for certain occupational groups and for women who have no relatives at home to care for their preschool age children. Stycos and Weller (1967) report on Turkish data in which no significant association between labor force participation and fertility can be found. Zarate (1967), in a sample of Mexican men, finds a relationship only between wife's work prior to marriage and subsequent fertility of the husband, but none between work experience after marriage and fertility. Miro and Mertens (1968) find the expected relationship in Latin American cities, but not in village or rural areas. Minkler (1970) in a study of New Delhi teachers and uneducated

women finds no association between ideal family size and work status, but the less educated women have much higher actual fertility than do the women teachers (who, for the most part, participate in the labor force). Jaffe and Azumi's study (1960) of women's participation in cottage industries finds no evidence of lower fertility than among nonparticipants. Finally, a study of central India (Driver, 1963) finds a positive relationship between employment status and fertility but this relationship is reduced to zero when controlled for age.

Stycos and Weller (1967) argue that those situations in which the expected correlation fails to appear are those in which either one of two conditions prevail: (a) Women have no contraceptive techniques available to them, or (b) they find no incompatibility between labor force participation and rearing children. Weller himself (1968) provides a partial test for this proposition (although his measures of "role incompatibility" are poor) and a study by Hass (1971) using CELADE data finds that in metropolitan areas of Latin America fertility is inversely related to employment outside the home, but is not related to employment in the home where role incompatibility is minimal. Furthermore, employment may not produce role incompatibility if there is a mother substitute (most commonly the grandmother) in the home. This is a common situation in the developing countries, but is probably a one-generation phenomenon--in the next generation grandmothers (as well as mothers) will be working outside the home. Thus, there is good evidence for the general proposition that labor force participation is inversely associated to fertility in developed

societies, and there is some exploration of the reasons for variations in this relationship in the less developed context.

However, there are still several problems in the interpretation of the labor force-fertility relationship. First, because most studies in this area have been relatively simple, there is little evidence regarding the direction of causality between women's labor force activities and their fertility behavior. It seems clear that a number of women determine their labor force participation according to their fertility, especially in developed societies, but it is unclear how many women allow their labor force activities to determine their fertility--the direction of causality of greatest relevance here.

Secondly, it is also possible that the inverse association between labor force activity and fertility appears because the former affects child spacing but not total fertility. There is evidence for the United States that women's labor force participation is indeed directly related to the length of the interval between births (Namboodiri, 1964). But whether the women who work ever "catch up" to those who do not in terms of total fertility is unclear. Namboodiri argues they do not. But D. Freedman (1963) argues they do, basing her inference on the fact that while work participation is one of the strongest predictors of fertility for American women married less than ten years, it is one of the weaker predictors for women married ten years or more. Thus, research that will clarify the relative impact of labor force participation on spacing as opposed to total natality, especially for the less developed countries, is much needed.

Also missing from the literature on women's economic activities are studies which investigate non-wage earning economic activities of women in rural settings; e.g., their participation in agricultural activities, in marketing, in home production of goods, and in small-scale money lending operations.<sup>1</sup> One recent study of women's roles in economic development (Boserup, 1970) suggests that African tribal communities in which women are responsible for subsistence agriculture exert less pressure for fertility than those in which women have no such valued economic activities (1970:51). No "hard" data, however, are presented as evidence for this assertion. Because the majority of women in the developing world (including the NESAs region) still live in rural areas where opportunities for wage earning for either sex are relatively restricted, investigation of the impact of these other economic activities on fertility seems especially important.

One rationale for the hypothesis that labor force participation should be inversely related to fertility lies in the income that women workers forgo if they leave the labor force to bear a child. This rationale also suggests the hypothesis that:

The higher the wage-rate a woman worker can command, the lower her fertility.

This hypothesis has not been well studied, especially outside the United States, but those few studies which have examined women's wage rates as

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<sup>1</sup>We are indebted to Dr. Steven Polgar of the University of North Carolina for this observation.

well as their labor force participation have generally confirmed the hypothesis. A study of aggregate data for SMSA's in the United States by Cain and Weininger (1970) found an inverse relationship between average potential earnings of wives and mean fertility level. An individual-level investigation for the United States (D. Freedman, 1963) also found an inverse relationship of actual wage rates to fertility, net of several other independent predictor variables. This relationship was significant but not nearly as strong as that for labor force participation per se. Finally, a study of farm women in the United States (Gardner, 1970) also found wage rates to be inversely related with desired family size.

Although it is also hypothesized that:

Participation of women in extra-familial activities of a noneconomic nature will bring about lower fertility,

to date very little work has been done in this area. Two studies in the United States (Pratt and Whelpton, 1956; Ridley, 1959) investigated the relationship of women's club and voluntary organization memberships to fertility, but their findings were contradictory. The Indianapolis data (Pratt and Whelpton) showed that such outside activities are inversely related to fertility, although not as strongly as is labor force participation. The Growth of American Families data (Ridley), however, showed no significant relationship here, at least among relatively fecund women.

So far we have discussed variation in women's roles outside of the home. Variation in women's roles within the home, however, are also thought to affect fertility; in particular:

The more egalitarian, companionate and communicative the husband-wife relationship, the lower the fertility and the higher the contraceptive use and efficacy.

The logic of this hypothesis, which originates from the work of Elizabeth Bott (1957) on conjugal role relationships, is somewhat complex. As noted in our theoretical discussion in Chapter I, greater equality between spouses should be associated with greater ability to achieve common goals of any sort, including fertility goals; hence, contraceptive efficacy in particular should be affected by the marital relationship. However, this to some extent assumes that the goal of couples is to restrict their fertility rather than to expand it, and where this is not the case, companionate marriages may in turn be associated with higher fertility than other types of marriages. The logic of this hypothesis may also be somewhat confused by the multidimensional nature of marital relationships. Not all egalitarian relationships are companionate, nor is inter-spouse communication necessarily highest when the power of husband and wife are relatively equal. Which particular dimension of the marital relationship is most important for contraceptive or fertility behavior, however, is not especially clear. Indeed, as a study of Puerto Rican couples by Stycos (1955) suggests, the aspect of marital relationships affecting contraception may be highly specific--for, in Stycos's analysis, it was sexual distrust of the spouse brought about through the cult of machismo which made certain forms of contraception unacceptable to partners.

The findings of studies with harder data than the Stycos one are mixed. Two studies by Rainwater (1960 and 1965) in urban areas of the United States find a direct correlation between more egalitarian-companionate marital relationships and contraceptive efficacy, and an inverse relationship with desired family size (which Rainwater argues represents variations in

the satisfaction available to wives in these different types of marriages). Similarly a study by Michel (1967) of French urban families finds that communication between spouses about family size goals and contraception is strongly associated with contraceptive efficacy. Also, a study of Philippine couples by Liu, et al. (1970) which studied the husband-wife relationship through the "revealed differences" technique-- a distinct methodological improvement over some other studies<sup>1</sup>-- also finds that greater equality and affection between husband and wife are associated with both lower family size desires and higher contraceptive efficacy, even when socio-economic status is controlled.

However, a study by Polgar and Rothstein (1970) of lower class Negroes and Puerto Ricans in New York City finds no differences in contraceptive use by type of marital relationship, and in contrast to the above studies, finds that desired family size is larger in the more egalitarian, sharing types of marriages. Because of the relatively high quality of this study

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<sup>1</sup>A study by Yaukey, Griffiths and Roberts (1967) has pointed out the weakness of many husband-wife "communication" studies. Many such studies interview the husband and wife separately, and ask each partner their own desired family size and their perception of their spouse's desired family size. If the desired family sizes of husband and wife agree, and if couples are accurate in predicting each other's desired family sizes, then it is usually said that the couple communicates and tends to be emphathetic in their goals. However, as Yaukey et al. note, much agreement and accuracy of predictions about the spouse's desires can occur purely by chance. Also, as Freedman (1961-62) has noted, predictions may in fact be most accurate among highly traditional couples who rarely communicate with each other. Because traditionalism makes the outlook of others highly predictable, spouses can guess what the other desires without communication. It may only be in a more disorganized, less institutionalized settings, then, that communication among spouses is significantly related to knowledge of others' positions or desires.

(despite its specialized sample), we conclude that findings in this area are not entirely clear. Although the husband-wife relationship is indeed the location of fertility decisions--suggesting a need for further study in this area--there is some question as to the relative payoff of studies in this area as compared to studies of the stratification variables or women's roles outside the home. A couple's marital relationship does not emerge out of the blue, but is instead a product of their position in the stratification system, their household kin composition, the functions their family unit performs and their personal characteristics and values they bring with them to the marriage. Thus, while the marital relationship may be one important intervening variable through which other factors operate to affect fertility, from the point of view of large-scale population policies and programs it may be more important for the time being to study variables more easily manipulated by governmental agencies than is the intimate relationship between husband and wife.<sup>1</sup>

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<sup>1</sup>In addition to the ways considered in this section, sex roles may also affect fertility in other ways. In particular, a hypothesis we have not explicitly considered is that the greater the inequality between the sexes, the more parents will display sex preferences for children, and because sex preferences may not be adequately met by the first n births of a couple, the higher the likely fertility. While there is evidence that parents in a number of traditional societies prefer sons over daughters and increase their fertility to satisfy these desires (see, e.g., Morrison, 1957; Roberts, et al., 1965; Morsa, 1966; Hong and Yoon, 1962), there is also evidence that sex preferences exist even in fairly egalitarian societies--the preference being in these cases for at least one child of each sex. When such preferences exist in countries like the United States they increase fertility every bit as much as they do in countries like India (see D. Freedman, R. Freedman and Whelpton, 1960; Westoff, et al., 1961).

D. Religion and Value Variables

As several of the founding fathers of sociology were at some pain to demonstrate, religions differ significantly in the values they espouse and these differences in turn affect the behavior of their adherents. With regard to fertility behavior, we have suggested that the values of particular significance will be those relating to the role of women, loyalty to the family, individual status achievement, the importance of marriage, and fatalism-vs.-rationality, as well as those directly concerned with fertility (e.g., bans on contraception or espousal of a "be fruitful and multiply" stance). Thus, we can more formally hypothesize:

The greater the extent to which the religion of a couple stresses fatalism, low status of women, the importance of marriage, a positive value on high fertility, and the importance of sex, and the greater the extent to which it condemns contraception, abortion or infanticide, the greater the couple's fertility.

Although it is extremely difficult to rank the normative content of religions along these dimensions, there does seem to be some agreement about some of the religions which fall at either extreme. Calvinism is traditionally cited as a religion whose values stressed rationality, hard labor, the acquisition of material goods, and frugality--all values tending to de-emphasize sexual pleasure, high fertility for its own sake and perhaps tending to raise the status of women as well. At the other extreme, Roman Catholicism and Islam are normally cited as "high fertility" religions--those in which fecundity is celebrated, in which women are relatively oppressed, and in which sexual pleasure and hedonism

are relatively unrepressed. Various fundamentalist Protestant sects are sometimes argued to produce high fertility because of a strong value on fatalism and nonrationality, and Mormons and Buddhists are also argued to be religions productive of high fertility.

The empirical evidence for such differences among religious values and among particular religions is, of course, variable. Within the United States, it has repeatedly been demonstrated that the fertility of Catholics is higher than that of Protestants (Burch, 1966; Glick, 1960; Freedman, Goldberg and Sharp, 1955; Harter and Roussel, 1969; Westoff et al., 1963; Whelpton and Kiser, 1943; Whelpton, et al., 1966), although this differential may be declining with time (Glick, 1960; Zimmer and Goldscheider, 1966) and may in part be the product of differential age at marriage by religion (Bumpass, 1970). While the fertility of Jews is markedly lower than that of Protestants or Catholics in the United States, Freedman, Whelpton and Smit (1961) have shown that the Jewish-Other differential can be explained away by differences in education, socio-economic status, and region. The Catholic-Protestant differential, however, cannot be explained away, even when religiosity is introduced as a control variable. Thus, this particular religious differential is relatively well demonstrated for the United States. However, very little study has been devoted to discerning exactly why such a differential exists with the exception of studies of the effects of parochial school education. see pp. 51-52.

Catholic-Other fertility differentials appear to follow along these same lines for other Western countries (e.g., Freedman, Baumert and Bolte,

1959, find that West German Catholics desire larger families than do members of other faiths and Van Heek, 1956, shows that Dutch Catholics have higher actual fertility than Dutch Protestants), but may vary for the more heavily Catholic countries, particularly those in Latin America. For example, in Mariano Requena's study of abortions in Santiago (1965), induced abortions were more common among Catholics than among adherents of other faiths.

The evidence for differentials in fertility between Moslems and others also tends to confirm the hypothesis, although with some exceptions. Dudley Kirk's review of available data for Arab countries (1966) concludes that Moslems everywhere tend to have higher fertility than their non-Moslem neighbors, and a study of Soviet ethnic groups by Mazur (1967) similarly concludes that the ethnic groups with highest fertility are either Moslem or Buddhist. A study of Iranian employees of an oil company by Windle and Sabagh (1963) finds that Moslems have higher fertility than Christians, but in this study and the others as well there are no control variables used.

When such controls are available, the results are less consistent. Thus, for example, Yaukey's study (1962) in Lebanon finds the expected Moslem-Christian differential only for particular subgroups of the population (e.g., those living in urban areas). And in central India, Driver (1963) finds the fertility of Moslems to be about the same as that of Hindus and lower than that of Buddhists. This differential between Moslems and Buddhists is also found in Thailand (Goldstein, 1970).<sup>1</sup>

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<sup>1</sup>Note, however, that in both India and Thailand, Moslems have minority status.

Thus, while most studies appear to confirm that the fertility of Moslems is high relative to that of many Christians, the evidence suggests that Moslem fertility is not always higher than that of their other neighbors.

It has also been hypothesized that:

The greater the religiosity or strength of religious adherence of a couple, the higher the fertility.

The validity of this hypothesis, however, admittedly hinges on the values espoused by the couple's religion, and such differences in religious values may in part account for the somewhat inconsistent findings among studies of religiosity and fertility. Most of the studies done in the United States have found the expected relationship between measures of religious commitment and fertility for Catholics (e.g., Freedman, Goldberg and Sharp, 1955; Whelpton, et al., 1966; Westoff, et al., 1961), but some have failed to find it (Brooks and Henry, 1958). Other studies, moreover, contradict one another as to whether a similar relationship exists for Protestants in the United States, the Freedman, Goluberg and Sharp (1955) study finding a relationship for Protestants, but the Westoff, et al. (1961) study finding it only for Catholics (the all-Protestant Indianapolis study found an extremely weak relationship between religiosity and fertility; see Freedman and Whelpton, 1950).

Studies of religiosity and fertility for the developing countries are rare. The two we encountered both found no relationship between religiosity and fertility or the frequency of induced abortions (Liu, et al., 1970; Requena B., 1965). In two studies done in Israel, however,

religiosity related both to desired family size and to contraceptive practice (Matras and Auerbach, 1962; Bachi and Matras, 1964).

There have not been many studies that investigate the relationship of values and fertility outside of the religious context, but the few which have done so support the notion that a rationalist, planning, egalitarian and achievement-oriented outlook is associated with relatively low fertility. In a secondary analysis of data from Mexico and Brazil, Kahl (1967) showed that a scale measuring "integration with relatives" (one of several scales of modernism developed in his original data collection) accounted for a significant portion of the variance in men's ideal family sizes, those low in the scale having smaller ideals. Similarly, both in Israel and in the United States, scales of "traditionalism" of outlook have been found to be directly associated with fertility (Bachi and Matras, 1964; Freedman and Whelpton, 1953), as have fundamentalism of religious outlook (deJong, 1965), and a relative absence of a "planning orientation" (Freedman and Whelpton, 1951). Finally, a study in Ceylon (Kinch, 1962) showed that future-oriented, ambitious men were more in favor of family planning than men preoccupied with the pressures of day-to-day living. Thus, although there are not very many studies of values and fertility, and although there is little standardization in the measurement of values among these studies, there is nonetheless evidence that value orientations may be an important intervening variable in the process of family fertility behavior. Certainly, studies which investigated not only fertility and values but some of the social and economic variables as well might be quite relevant for our understanding of fertility in the NESR region.

E. Family Planning Program Variables

It was not the purpose of this investigation to examine the family planning literature in detail, but for the sake of balance we mention some of the main hypotheses in this area and some evidence from the literature. Undoubtedly, the most common hypothesis is:

The greater the availability of family planning services, the more couples will utilize contraception, and the lower the fertility.

This hypothesis has, of course, been the subject of acute controversy. While family planning administrators often claim great success for their programs, and while KAP studies show in most populations a high level of willingness to use contraception were the supplies available (Berelson, 1966), critics point out the seeming lack of change in population growth rates in many countries with massive family planning programs, or stress that growth rates might have changed without the family planning program. Indeed, many evaluation studies of programs (e.g., Hawley and Prachuabmoh, 1966; Koya, 1959) can be faulted for not providing control groups and for failing to measure program inputs in a systematic manner.

An exception to this is the Taiwan experiment (Freedman, 1969) which included a pre- and post-program survey and a detailed experimental design to assess the effects of the family planning action program conducted between surveys. One of the most interesting aspects of this project was the fact that the relationship of a "modernization" index to acceptance was low, because the modern young couples in Taiwan were already practicing family planning and, therefore, were not as affected by the action program as the less modernized couples. The latter more often felt

the effect of family size pressures. The project demonstrated that a family planning program can be effective among "non-modernized" families if supported by public policies.

The second hypothesis we made about family planning programs was:

The greater the extent to which official organization, mass media, governmental bodies, community groups and the like espouse anti-natalist policies and the use of family planning, the greater the pressure couples will feel to limit the size of their families.

The Taiwan study reviewed above (Freedman and Fakeshita, 1969) is, of course, one study supporting this hypothesis. Also, of relevance to this hypothesis are some investigations of how different sources of contraception information affect rates of subsequent adoption. The Taichung experiment, for example, found distinct rates of adoption according to the woman's source of awareness (Palmore, 1968). Particular considerations of awareness source and type of contraception had different effects on the adoption process. Information on "male" methods was most often provided by the husband, who also had tried these methods. Information on "medical" methods were diffused as often by medical sources as through primary groups (kin, friends, neighbors, etc.) but were tried more often if approved by the latter. After initiation of the experiment, primary groups were the awareness source of the most effective methods; over 60 percent of the women who tried the IUD between the "before" and "after" surveys had recommended it to at least two other women.

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### III. CONCLUSIONS AND RECOMMENDATIONS

In this review, we have organized the potential causes of family fertility into four categories: the stratification variables, the division of labor between family and society, the division of labor between the sexes, and religious and value system variables. Of these four, the first is probably the most frequently studied and from a policy standpoint may be the most important to understand. Our review suggests, however, that in this area, as in the others, our understanding is still limited. We have some idea as to which variables correlate with fertility and the direction of these correlations, but how all these variables fit into a crusal system is not well understood at this time. Also understood in only the most rudimentary way, in most instances, is how "gross" social and economic indicators operate through social-psychological intervening variables to actually affect fertility. In general, then, we recommend that further studies on individual-level fertility both be of broader scope and of greater depth than the majority of the past studies we have reviewed here.

Of particular importance, we believe, are studies which attempt to sort out more clearly the interrelationships among the stratification variables and fertility. As we noted in the body of this report, while in theory social and economic status are distinct dimensions with quite differing implications for fertility behavior, in practice they are highly intercorrelated and their impact on fertility thus somewhat confusing. This confusion in part arises from a paucity of direct measures of the factors thought to underlie the distinct implications of social and

economic status for fertility; for example, the extent to which families can rely on children for economically productive activities, or the extent to which children are perceived to incur costs associated with the maintenance or raising of family status. Multivariate studies of stratification variables which in addition to measuring the standard occupation, income and education variables measure the economic roles of family members and the perceived or aspired costs associated with children would, therefore, be of great significance, especially if done for countries of the NESR region. Effective and efficient policies designed to manipulate levels of fertility in families will only be possible once the true significance of the stratification and other variables for fertility behavior is understood.

In addition, we also suggest several other foci for basic research into family fertility based on what we perceive to be the gaps in our current understanding. Studies of social mobility have been extremely disappointing from a theoretical point of view, and we suggest that this disappointment may in part lie in focus on the wrong kind of mobility or in the mobility of the wrong persons. We recommend that studies be undertaken that examine the mobility aspirations of parents in relation to their own fertility, and that such studies pay especial attention to mobility which occurs between major segments of the society (e.g., mobility involving a shift from the traditional village setting to the "modern" urban setting). Included here should also be investigations of geographic mobility, with special attention paid to the life-cycle position at which

geographic mobility occurs and to possible confounding variables which may create spurious correlations between geographic movement and fertility.

Within the realm of the functions performed by families and their fertility behavior, there is also great need for studies that measure more directly what it is that families actually do, and that control for stratification, sex role and value variables. Agricultural occupations may be a crude indicator that a family is responsible for economic production, but only a crude one. Far more relevant to testing the model we have presented here would be studies which investigate directly just what functions a family performs and what they perceive the responsibilities of family members to be. Of especial importance here is rigorous investigation of the role of old-age dependency on fertility-- investigation which would, moreover, ascertain the degree to which people believe social security, welfare, pension or savings programs are true substitutes for care of the aged by adult children.

Although the impact of women's labor force participation on fertility is one of the better studied relationships we have reviewed, there is still much room for further research here, especially since there are theoretical reasons for believing that sex roles are a basic determinant of fertility. In those social settings where wage-earning activities of women are fairly common, there is need to understand the relative impact of such activities on child spacing as opposed to total fertility. And for those less developed settings in which such wage-earning activities appear to be unrelated to fertility, there is need for further studies which explicate the reasons for this lack of inter-connection.

Perhaps even more important are investigations of the economic activities of women in rural settings and how these activities affect either child spacing or total fertility. Although there are great variations in the extent to which women are responsible for agricultural activities, for animal husbandry, for cottage industries and for small entrepreneurial activities such as money lending, there is virtually no research into how and why variations in such responsibilities affect fertility behavior. Since a majority of the world's women still live in rural settings in which wage-earning activities for both men and women are relatively uncommon, research in this area seems of especial importance from the policy point of view.

In addition, studies which go beyond women's economic activities to consider their status more generally and how it relates to fertility behavior would also be of some importance. There are theoretical reasons suggesting that women of higher status may be more able to legitimize their existence without bearing numerous children than women of lower status, but there are to our knowledge, no rigorous studies in this area. Because women's rights are becoming a universal social concern, research in this area is also of potential policy importance.

Our primary recommendation, then, is that further research be pursued in the areas we have outlined above.

We also suggest, however, that work of a quite different order is needed if the fruits of basic research are to be of real use in policy formation. It strikes us that understanding which variables affect fertility most strongly is indeed an important first step to understand

how fertility behavior can be changed, for in a sense this is understanding which "buttons" must be pushed on the input end of a social system if the output is to be certain average family size. This is, however, only a first step. It is in the nature of social systems that some "buttons" are more pushable than others--that some aspects of people's behavior are more amenable to manipulation than are others--and that, moreover, some buttons cost more to push than others. Understanding which variables affect fertility behavior, then, will not inform the policymaker as to which variables can most readily be manipulated, nor in what way they can be manipulated most efficiently. We suggest, therefore, that in addition to assessing the state of knowledge with regard to fertility behavior itself, there is also need for an assessment of the state of knowledge with regard to what might be termed political studies of social change.

We recommend, therefore, that NESAs/OPPs consider a review of the literature pertaining to studies of social change as a useful task complementary to the present one. We are aware that there are ongoing studies into some aspects of social manipulation, e.g., studies on the use of monetary and nonmonetary incentives, and we are also aware of a growing professional interest in how legal changes either affect or fail to affect fertility behavior. There are also, undoubtedly, other strategies of social manipulation which have been tried and are under study. A review of such studies of social change, then, could cover some or all of the work to date that has attempted to assess what forms of human behavior can be deliberately changed and by what methods such change is

best brought about. Although our knowledge of what determines the fertility of families may not be equal to the task which countries of the NESAs region face in controlling their populations, we believe that such a review of knowledge about how social change can be most readily rendered would aid us to make the best possible use of what little we do understand about fertility behavior.

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**APPENDIX A**

**ON THE EXISTENCE OF "DESIRED FAMILY SIZE" AND SIMILAR CONCEPTS**

## ON THE EXISTENCE OF "DESIRED FAMILY SIZE" AND SIMILAR CONCEPTS

Although many of the studies reviewed by us employ the concept of "desired family size" or of "ideal family size," relatively little research has been done to validate these concepts. We briefly note here that there is evidence both in favor and against the validity of these concepts, suggesting either that the meaningfulness of such concepts varies according to society, culture or level of development-- or that further work is needed in order to understand the validity of these concepts at all.

A number of researchers feel that desired and ideal family size are meaningful concepts because as variables they behave approximately as one would expect them to. Desired and ideal family size tend to correlate with social and economic variables in a manner similar to the correlation of these variables with actual fertility, with contraceptive practice, etc. Secondly, the fact that there is a tendency in many parts of the globe for people to say they want fewer children than they actually have (Berelson, 1966) suggests in turn that desired or ideal family size is not simply a rationalization for the children a couple already has borne.

Also, there are several investigations which suggest that contraceptive use, efficacy or recourse to induced abortion all increase markedly as a family's number of living children approaches and then surpasses their desired or ideal family size (Sagi, Potter and Westoff, 1962; Mendoza-Hoyos, 1968).

However, there are some findings which cast suspicion on these concepts. Matras and his associates in their study of Israeli maternity cases first screened women by asking them if they had ever thought about their desired family size at all before asking them what it was (Bachi and Matras, 1964; Matras and Auerbach, 1962). Only 40 percent of the sample replied in the affirmative, and although the women who had never thought about family size were disproportionately Oriental and African Jews, of lower educational attainment, and higher religiosity and traditionalism, there nonetheless were surprisingly many such women even in the more sophisticated groups. Because other studies have tended to avoid such screening questions, it is difficult to tell whether the Israeli figures are typical or atypical of other parts of the world.

A study conducted in Haiti by Stycos (1964) also suggests that for some groups, at least, family size is not a salient feature of social life; neither is it a concept in terms of which people think nor make decisions. The sample on which this study was done was highly distinctive, being of extremely low socio-economic status and located in one rural village. Also, the technique by which saliency was determined, involving verbal responses to photographs of large and small families, is of unexplored reliability and validity; to our knowledge, it has never been used elsewhere. Thus although this study distinctly suggests a low salience of family size among lower class Haitians, it is unclear how widespread this low salience is. Using the 1965 National Fertility Survey data, Ryder and Westoff (1969) found that intended, expected, desired and

ideal family size were far from synonymous, although means were similar; mean intended family size was 3.24, mean desired family size was 3.29, mean ideal family size was also 3.29, but mean expected family size was 3.36. Eighty-seven per cent gave the same answer for expected and intended, and a majority of these (68 per cent of the total) expected and intended no more children. Six per cent intended no more children, but expected at least one more child (i.e., they expected a planning failure), and one per cent intended more but expected none (i.e., they anticipate fecundity impairment).

Ryder and Westoff's analysis makes it clear that wording of such questions is crucial. In phrasing questions about ideal family size, for example, it is necessary to make clear if this is a personal ideal or an ideal national average. In very few studies is the distinction between the four measures made completely clear, and it is rarely appropriate to make comparisons between studies. We suggest, then, that future studies use more care in exploring desired or ideal family size than has been the case in past studies.

**APPENDIX B**

**WORK ORDER STATEMENT FOR SU-518, CONTRACT AID/NESA-460**

ATTACHMENT A

CONTRACT AID/NESA-460

Work Order No. SU-518

RTI will undertake a study to identify social, economic and other factors affecting family-size decisions, to describe the nature of these relationships, and to ascertain the current state of knowledge about the empirical validity of each relationship.

Although effort will be devoted to using the relationships among variables to form an overall model or models of the determinants of fertility, the concern of this study will be upon the empirical validity of those relationships. It is outside the scope of this study to move beyond simple structuring to deriving new estimates of quantitative relationships or to use the model as part of an optimizing process for allocating resources, although these objectives are of potential relevance in the future.

Subject to the constraints of time and cost, RTI will undertake a study including, but not limited to, the following tasks:

1. Identify an individual-level, causal model or models of the factors thought to affect family fertility decisions or completed fertility in NESA countries. This model will be formulated, using suggestions in the literature (e.g., Schultz's economic model), extant reviews of the literature, and consultation with specialists.
2. List the hypotheses about factors affecting fertility decisions implied by this model or models.
3. Using this list of hypotheses, search the empirical literature, including extant review articles, and consult with specialists to ascertain as best as can be done with no additional data analysis or extensive methodological critiques:
  - a. the extent to which a given hypothesis has been previously researched,
  - b. evidence for the validity of this hypothesis (if any),
  - c. evidence for the nature of quantitative parameters involved in this hypothesis (e.g., size of correlations, or of slopes),
  - d. evidence on benefit-cost measures associated with this hypothesis (if any),
  - e. suggestions on the extent to which independent variables in this hypothesis can be manipulated by policy makers.
4. Report to NESA the results of the above literature search.