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Women's Income, Fertility and Development Policy

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WOMEN'S INCOME, FERTILITY AND DEVELOPMENT POLICY

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EXECUTIVE SUMMARY

In all nations, women play a crucial role in society's most fundamental processes. Women have primary responsibility for the management of the home and for the rearing of children, and they make major economic contributions to the (measured or unmeasured) economic output of the nation. However, development planners generally pay little attention to women's role in the economy. This paper makes the case that women should be accorded special attention during the development planning process. It argues that women's roles are subject to the greatest changes during socioeconomic development and that these role changes have major consequences both directly for the growth of the economy and indirectly by their impact upon population growth. This paper focuses on the latter, examining the relationship between women's labor force participation and fertility. It presents a framework for use in understanding how development policy can affect women's fertility through its impact on their labor force participation. Given the central importance of population policy in A.I.D.'s development activities, the paper assumes that a reduction in population growth is desirable in promoting socio-economic development.

First, a review of the literature for countries in the Asia and Near East region is presented, summarizing support for an inverse relationship between women's labor force participation and their fertility rates. Contrary evidence is also examined, and explanatory factors for variation in the relationship are cited, including access to family planning methods, the structure of employment opportunities, and family structure. A number of explanatory hypotheses are reviewed for applicability in the region, including the role incompatibility hypothesis, Sen's entitlement hypothesis, and the active-passive decision making framework. The common denominator in these various explanations of the inverse relationship between women's labor force participation and fertility rates is the general level of socio-economic development of a country, which generally includes increases in women's status. Our reading of the literature for Asia and the Near East leads us to believe that the indicators of a developing or transitional economy which may be particularly important for measuring women's status include: (1) employment opportunities in the modern sector, such that women work away from their home and for wages; (2) a declining surplus labor force, such that the best substitute childcare providers are gainfully employed elsewhere; and (3) an increase in women's wages and the status of their work, such that work provides sufficient monetary and psychological compensation for having fewer children, as well as greater input into household decision-making vis à vis men.

Second, the paper describes the various means through which development programs can affect women, by changing the environment in which individual decision making operates. Examples of such programs include:

(1) *Economic Infrastructure Investment*, which can fundamentally alter the style of production, its location, the quality and nature of labor required, and the extent of both the commodity and labor markets.

(2) *Direct Capital Investment*, through equity investment or loans to private entities, can influence the mix of goods and services produced and the structure of labor demand. For example, the capital equipment provided to these enterprises serves to increase the productivity of labor directly and to mandate the quality and type of labor required to use it.

(3) *Investment in Human Capital* can increase the productivity of labor by improving labor skills and versatility. These programs can be specially targeted to women and girls in order to influence their preferences and increase their labor opportunities, especially those that conflict with the traditional motherhood role if the goal is population reduction.

(4) *Social and Political Policy*, by promoting (or at least permitting) the social transformation that accompanies development, can give women the choice to work both inside and outside the home.

Many development programs affect women only indirectly, operating through the economic and social environment, and it is easy to miss their impact on reproductive behavior. As a result, planners often ignore this dimension as they assess the consequences of their policies and programs.

The following sections of this paper present a framework designed to show how the impact of development policy on fertility can be traced through its effects on women's income from labor. First, a model of the demand for children is presented that shows the "proximate decision factors" that directly influence a woman's desired completed family size. These factors are: relative preferences for children versus other activities; the perceived opportunity cost of a child; the expected economic contributions of a child; and a family's potential income. Later in the paper, we focus more carefully on the role of normative pressures from the husband and other family members on the determination of actual fertility.

The perceived opportunity cost of a child is particularly influenced by the labor force opportunities and constraints affecting women. The paper lays out the connections between the labor market and women's productive behavior in some detail. It shows that a wide range of policies operating on diverse spheres of the economy can have a significant impact upon the value of a woman's time, her labor force participation and income, and ultimately on her demand for children. Linkages between reproductive behavior and women's income are shown to connect public programs in the following areas: social policy, infrastructure investment, direct investment, agricultural policy, education policy, public health policy, family planning policy and commercial policy. We suggest that as A.I.D. officers continue to develop a multidisciplinary approach to program and project development, they begin to ask a series of questions to elicit the potential effects of an activity on women, their income and fertility rates. These questions include:

(1) To what extent does this project add to the alternative labor market activities available to women? Does the <u>form</u> of the project make it easy for women to participate in economic activity <u>and</u> rear children, or does it ease access to the former while making the latter more difficult?

(2) When evaluating projects that have the potential for reducing the demand for children by making labor force participation more attractive, ask: Are the family planning facilities associated with the location of this project sufficient to meet the additional demand likely to be generated?

(3) When supporting investment in roads and transportation systems that can extend the labor market, ask: Can infrastructure investments be designed in such a way as to expand <u>women's</u> labor force options?

(4) How do education projects affect women's potential wage rate? What changes would be necessary to endow women with the power to command higher wages?

(5) Does new investment in industry and business lead to increased opportunities for women? If not, how could the form of the investment be altered to increase opportunities for women? To what extent will new labor market opportunities conflict with large families?

(6) To what extent do agricultural investments make women more valuable as farm producers, thus reducing the relative value of women in child rearing activities? To what extent do agricultural investments make children more valuable, thus conflicting with population reduction goals in a given country?

(7) Programs designed to favor the economic position of women may be particularly difficult to implement in areas where there is high general unemployment for men. In that case, how could labor market preference be given to women, if it were decided that such preference were warranted?

(8) When social policy that is beneficial in and of itself (e.g., child care for working mothers, child allowances or maternity leave policies) conflicts with fertility reduction goals that focus on making women's labor force activities more attractive than, and incompatible with, child rearing, ask: Which of these goals is more important in the short run? in the long run?

The consequence of this variety of connections is that small changes in policy can have important effects on the opportunities and constraints that determine women's labor force participation. Changes in women's labor market opportunities can, therefore, have significant effects on their reproductive behavior and ultimately on a nation's rate of population growth.

1 Development Policy, Women, and the Economy

In all nations, women play a crucial role in society's most fundamental processes. They have primary responsibility for home management and for child rearing, and they make major contributions to the (measured or unmeasured) economic output of the nation through their critical participation in subsistence production and in the market economy.[1] However, development planners generally pay little attention to women's role in the economy. This oversight may have important and unanticipated consequences for development plans. Should particular attention be paid to women's roles during the development planning process?

One argument is that women may not need to be considered separately. Programs designed to raise general productivity -- capital and human capital investment, investment in infrastructure, etc. -- should have comparable effects on the productivity of men and women without accounting for gender differentials. This view ignores the unique role that women play in the process of socioeconomic development. They produce goods and services in the household that, although unmeasured in the national income accounts, are a fundamental component of the income of a nation.

Of course, women in all nations make huge unmeasured contributions to national income, but women in developing countries make an especially large contribution.[2] The labor is often unpaid work in family agriculture and family-owned businesses. Since they may not be paid directly, and since, in the case of agriculture at least, they are producing many commodities that will be consumed and not traded, women's contributions to national income and wealth are greatly understated. Moreover, a fundamental feature of the transition from a traditional economy to a modern, market-oriented economy is the increasing participation of women in the formal market for wage

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[1] See Kabir, 1990; Commonwealth Secretariat, 1989; U.N. Secretariat (Statistical Office), 1991.

[2] For example, one frequently quoted estimate states that if women's household labor were measured in economic terms, it would add an estimated one-third, or four trillion dollars, to the world's annual economic product (M. Ware, 1982).

labor.[3] **Figure 1** illustrates this trend for the United States between 1870 and 1970, and similar data can illustrate the phenomenon in other developed countries. This change in roles has profound implications for the economy and society, not only because of women's economic importance but also because of its impact upon their traditional occupation: motherhood.

Motherhood has traditionally conferred great status upon third world women, and the social, political and economic benefits of large families have contributed to the continuing high fertility rates in many areas. On the other hand, the history of the industrial nations in the twentieth century would indicate that the economic and cultural value of large families decreases as socioeconomic development proceeds.[4] The same holds true for today's developing economies (Turchi and Bryant, 1979). From an economic development point of view, this is fortunate. Research and findings during the past two decades have produced a general consensus that rapid population growth offsets the positive impact of socioeconomic development programs, in part by exacerbating some fundamental problems in a developing economy.[5] Planners have come to recognize that their efforts must include attention to the goal of population growth rate reduction through reduction of aggregate fertility rates.

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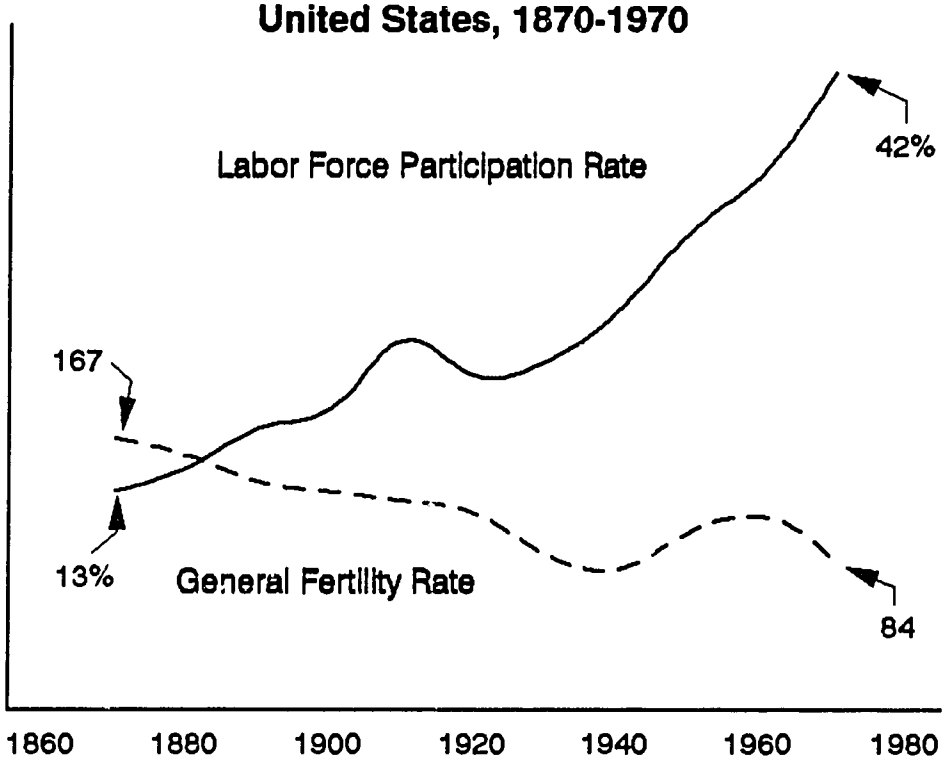
[3]Indeed, one could make the case that socioeconomic development has a much more profound effect on the social and economic roles of women than it does on the roles of men.

[4] See Bergmann, 1986, p.25. Her study of U.S. women during the 19th and 20th centuries found that despite major shocks to the economy (wars, depression), "the rise in women's participation in paid work went on with no important reversals from one decade to another. This suggests that it was not singular events such as wars or bursts of inflation or shifts in ideological fashion that were at the root of this development." She proposes that one important underlying factor was the hefty increase in real wages over time, making the benefits of work greater than the benefits of staying home, particularly in light of already decreasing fertility rates.

[5] Agreement on this point is not unanimous. One primary critic, Julian Simon, has argued ad nauseum over the years that population growth can have beneficial long run impacts on development. The 1986 NAS study has pointed out the weaknesses in earlier research that purported to demonstrate the unequivocal negative impact of rapid population growth. However, the weight of opinion still rests on the antinatalist side. See Kelley, 1988; Simon, 1976 & 1977; National Academy of Science, 1986; McGreevey, 1986; WDR 1984, Part II.

Figure 1
General Fertility Rate and Female Labor Force Participation
United States, 1870-1970



1.1 The Inverse Relationship Between Women's Employment and Fertility

Reducing aggregate fertility is fundamentally a consequence of the transformation of women's roles in the economy. As women's primary roles transform from mothers and household producers to mothers and participants in formal labor markets, women may feel a conflict between their traditional role as mother and their newfound role as labor force participant.[6] In many cases, the result is an increased burden on the woman if she is unable to purchase substitutes for her household production and childcare inputs. The burden worsens if she is unable to limit fertility. If family planning methods and services are available, then this conflict can be exploited to hasten women's increased participation in the economy and to facilitate a decline in the number of children desired.

In general, a woman's employment in the labor force can produce sufficient conflicts between maternal and productive roles for the household to experience a decline in fertility.[7] As Joekes states,

> "There is broad correlation between low fertility and high rates of labor force participation among married women, both between developed and developing regions and among developing countries. The demand for and supply of children are affected by changes in the socioeconomic variables and determine fertility through proximate variables."[8]

Studies have not infrequently supported the importance of women's participation in the labor force in reducing fertility. Yet assignment of direct causality is problematic given the correlation of many

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[6] The literature is fairly lively regarding women's dual or multiple roles in developing countries. See, for example, U.N. Secretariat (Statistical Office), 1991; Sivard, 1985; Commonwealth Secretariat, 1989; Leslie, 1989, A. Ware, 1982; and a variety of ICRW reports.

[7] For a review of LFP-fertility studies, see Dixon, 1978; Kupinsky, 1977. See also Standing, 1978 (general review); Schultz, 1970 (Egypt); Germain, 1975; MacCabe and Rosenzweig, 1976; Jelin, 1982; Lee and Bulatao, 1982; Youssef, 1982.

[8] Joekes, 1988, citing Easterlin, 1980.

factors (including education and age at marriage) with labor force participation. While "no universal assessment of the influence of paid employment on fertility in developing countries has been made," the evidence does "suggest that increases in paid employment for women can be an object of policy in promoting fertility reduction." (Joekes, 1988). One analysis of World Fertility Survey data from twenty developing countries found that "female participation in the labor force emerges as the single most important determinant of marital fertility" (Rodriguez and Cieland, 1981). Some conflicting studies have suggested that there is a positive relationship between fertility and women's labor force participation, particularly at low levels of income.[9] Controlling for type or location of work may change these results, as both factors play an influential role in determining the extent and even direction of the effect on fertility.

Researchers have emphasized that the type and location of work are important in producing the conflicts between maternal and productive roles which lead to decreased fertility. "What is found to be crucial is the type of work leading to a separation of domestic, reproductive and productive activities. When this separation does not occur, fertility may not be altered" (Nawar, 1985; Birdsall, 1976). An analysis of evidence from sixty developing countries concluded that women who work outside the home had fewer children (Sadik, 1990). Information specific to Asia, the Near East and North Africa also suggests that women's work outside of the home and in the formal sector is associated with fertility declines.

In Bangladesh, Mahmud found a 25% decrease in the number of children per family when the mother worked outside of the home.[10] In Thailand, Debavalya's work indicated that women's work outside of the home, particularly in white collar jobs, tends to be associated with lower fertility

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[9] Encarnacion, 1973, 1974, 1982; Cochrane, 1977; Hull and Hull, 1977; Rodmanee, 1980.

[10] Mahmud, 1988. He also found that the negative relationship between employment and fertility was more prevalent in wife-dominant and egalitarian couples than male-dominated ones.

(Debavalya, 1979). A recent UNFPA study of over 600 rural Thai households found that even among this almost exclusively agricultural group, desired family size was smaller for those women who worked for wages in the fields; the women surveyed said they were less productive when they had children in the fields with them, and wage labor required higher levels of concentration.[11] Nawar found in Egypt and the Sudan that fertility rates were lower among women who worked outside the home, for wages or in non-agricultural occupations (Nawar, 1984). A study in West Bengal, India, found a negative relationship between employment and fertility for women employed as agricultural laborers-cultivators or in mining manufacturing but a positive relationship for those involved in household industry.[12] Similar results supporting the inverse relationship between labor force participation and fertility are recorded for Pakistan, India, Indonesia, Thailand and Philippines.[13],[14]

Many socioeconomic and demographic factors restrict women's formal labor force participation in the Arab world, which is generally below 15%. Yet even in this region, an analysis of cross-sectional data from 18 Arab countries confirmed the inverse relationship hypothesis, finding that a high participation rate for women was associated with lower fertility and would promote economic growth (Azzam, 1979). A study of Malaysian fertility and women's labor force participation found considerable variation in the relationship, which the authors suggest reflects variation in the

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[11] Podhisita, 1990 (sponsored by U.N. Population Fund; T.A. from FHI/A.I.D.). Interestingly, the husbands apparently concurred with the smaller desired family size, since their work load increased substantially during the woman's pregnancy and the first year after birth (the period of intensive child care, including breastfeeding) to make up for the reduced labor provided by the wife. Among rural women in this region, nearly 100% were active in the labor force, either for wages or for family owned enterprise (mainly farming). Two to three months after birth, they resumed work but usually at a reduced intensity for the first year.

[12] Nandi, et.al., 1978. See also Bhargava and Saxena, 1987. For analysis regarding Indian women's employment and use of family planning services, see Vaidyanathan, 1989, who found women's work, especially non-agricultural, to be one of three strongest determinants (others are age at marriage and female educational attainment).

[13] King, et.al.,1986 (Pakistan, Philippines, Indonesia); Chalamwong, 1983 (Thailand); Jolly, 1981 (India).

[14] For a summary of ANE region studies on this topic, see Lim, 1984, pp. 625-626.

structure of socioeconomic opportunities. They propose that the opportunity structure approach rather than maternal role incompatibility should be used to explore fertility-labor force links in Malaysia, a recommendation which may be applicable to other Muslim countries (Mason and Palan, 1980). A similar conclusion can be drawn from Shah and Smith's comparative analysis of Pakistan and Philippines, where the stronger inverse relationship between women's employment and fertility in the Philippines was suggested to be due to the more diversified female occupational structure available to Filipino women.[15]

One further caveat to the inverse relationship should be discussed. There is some indication that the relationship between labor force participation (LFP) and fertility may be an inverted J-curve in certain cases, particularly in Asia. Fertility initially may rise as income increases if substitute child care providers are easily available and affordable (as with extended families), or if women's increased productive activities are compatible with child care (agriculture, crafts, family-owned businesses, trading).[16] In these cases, until the household reaches a plateau level of income, their tastes and preferences or continued high infant mortality rates may continue to dictate high levels of fertility. An illustrative study in the Philippines suggested that women's employment will negatively effect fertility when family income increases and normative orientations regarding female roles change (Herrin, 1980). In Egypt, Lynch found that women involved in "subsistance craft work, lacking long-term economic security, are unable to plan their lives with regard to childbirth as well as material survival." The women explained that higher fertility levels were needed to provide the additional child labor necessary to increase their productivity (Lynch, 1983). Finally, UNFPA's study of 38 countries found that only at higher income levels is employment an alternative to child bearing

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[15] Shah and Smith, 1979. See also Miraloa, 1981.

[16] See Popkin and Doan, 1989, for a discussion of work choice and child care arrangements in the Philippines. Work location, travel time, transportation, and type of work explain a substantial proportion of the variation in job compatibility within work status categories. Also, Nawar, 1985.

(Sadik, 1990).

Lim (1984) discusses the problems associated with a blanket application of the role incompatibility analysis to Asian countries, including:

- widespread poverty and high dependent ratios (children per income earner) that force women to seek paid employment;
- the prevalence of self-employment, household-based and informal sector work which poses little or no conflict with childcare responsibilities;
- the existence of substitute care givers in the form of maids and nannies for middle and upper class women, and unmarried daughters for lower middle and poor women; and
- work for women that is neither interesting nor satisfying.

In these cases, Lim suggests that "it is not work per se that is inversely related to fertility but rather work commitment and the importance of the income earned by the women. . . . Most women are committed to work more by economic pressures and [in Southeast Asia by] parental social control."[17]

While the model which forms the basis of this paper's discussion incorporates many aspects of the maternal role incompatibility hypothesis, it also recognizes a variety of other factors (such as worker commitment), which may be particularly applicable in Asia, and incorporates them into the analysis of women's labor force participation, fertility and economic growth. We have included below a brief discussion of two additional explanations or components of the inverse relationship between women's labor force participation and fertility, beginning with the hypothesis that the fertility-labor force participation relationship is operationalized through a change in relative input into the

[17] Other evidence from Java, Indonesia indicates that among young women seeking factory employment, economic factors motivate their participation rather than parental control. In Taiwan, however, the opposite is true, and parental social control, including the obligation to repay their debt for nurturance, is the primary reason for young women's participation in such employment (Bruce, 1989, citing Greenhalgh 1988 and Wolfe, 1988). See Bruce (1989) for a discussion of household decision making and women's use of income.

household decision making process.[18]

Sen's (1990) entitlement hypothesis proposes that a woman's productive activities lead to entitlements for the woman within the household. Entitlements are defined as "(1) better bargaining position, (2) clearer perception of one's individuality, and (3) a higher perceived contribution to the family's economic position." Studies have suggested that women's increased input to household decision making via their increased income is correlated with lower total fertility (Blumberg, 1988; Roldan, 1987).

Leibenstein (1981) suggests that fertility can be viewed in terms of an active-passive decision making framework. Fertility choices in developing countries are characterized as passive and routine; however, an event can occur that changes that routine, such as entry into the labor force, access to contraceptive information, or changing social norms (age at marriage, duration of breastfeeding, frequency of intercourse, age-specific fertility). Such events, including change in the age structure and increased opportunities for and acceptance of women's labor force participation, can change fertility patterns.

The common denominator in these various explanations of the inverse relationship between women's labor force participation and fertility rates is the general level of socioeconomic development of a country, which includes increases in women's status. Gille's (1985) analysis of World Fertility Survey data found that "increasing conflicts between employment of women and childbearing are more likely to occur with the advancement of the overall level of development and the engagement of women in work opportunities in non-traditional sectors of the economy." There are a number of

[18] It should be noted, as Harrin (1980) discusses, that estimates of the relationship between fertility and women's employment must take the problem of simultaneity into account, since fertility can sequentially or simultaneously influence the decision to enter or reenter the labor force. The issue of causality and direction is discussed in a number of papers, including Sweet, 1973; Terry, 1975; Weller, 1977.

indicators of a developing or transitional economy which may be particularly important for measuring women's status. Our reading of the literature for Asia and the Near East leads us to believe that these indicators include: (1) employment opportunities in the modern sector, such that women work away from their home and for wages; (2) a declining surplus labor force, such that the best substitute childcare providers are gainfully employed elsewhere; and (3) an increase in women's wages and the status of their work, such that work provides sufficient compensation for having fewer children. These conditions are often present in areas where increases in women's labor force participation are associated with reductions in fertility. Below, we try to make the case that development efforts which target women for increased employment in non-traditional occupations will eventually precipitate the decline in fertility rates.

1.2 Overview of Evidence for the ANE Region

While work does provide women an alternative to motherhood, employment opportunities alone do not guarantee lower fertility rates. Other factors (particularly family planning program performance) affect the fertility rates and trends. The conjecture is that high female LFP and high program effort together suggest a decrease in fertility. **Figure 2** provides a schematic depiction of the relationship between female labor force participation, fertility, and family planning program effort in eleven Asia and Near East countries. This figure shows a general relationship between program effort and female labor force participation (LFP) rates that, in turn, may affect fertility rates. [While the impact of education is not discussed in detail here, female education has been shown to have significant explanatory value in analyzing these relationships.]

Robert J. Lapham and W. Parker Maudlin (1985) first gathered family planning program effort scores for 100 countries in 1972. They later updated the scores with new data collected during 1983-1984, reported in "Contraceptive Prevalence: The Influence of Organized Family Planning Programs." The measurement of the scores rests upon interviews with family planning personnel and experienced observations. (See **Table 1**)

Four components comprise a final program effort score: policy and stage setting; service and service related activities; monitoring and evaluation; and finally, availability and accessibility of family planning methods and services. These components are tallied and summed to produce a final program effort score that ranges from zero to 120. "Strong" scores are 80+; "moderate" are 55-79; "weak" are 25-54, and "very weak or none" scores range from zero to 24. Of the countries depicted in Figure 2, two rank in the "strong" category with four countries each in the "moderate" and "weak" categories.

Figure 2

Fertility, Program Effort & Labor Force Participation

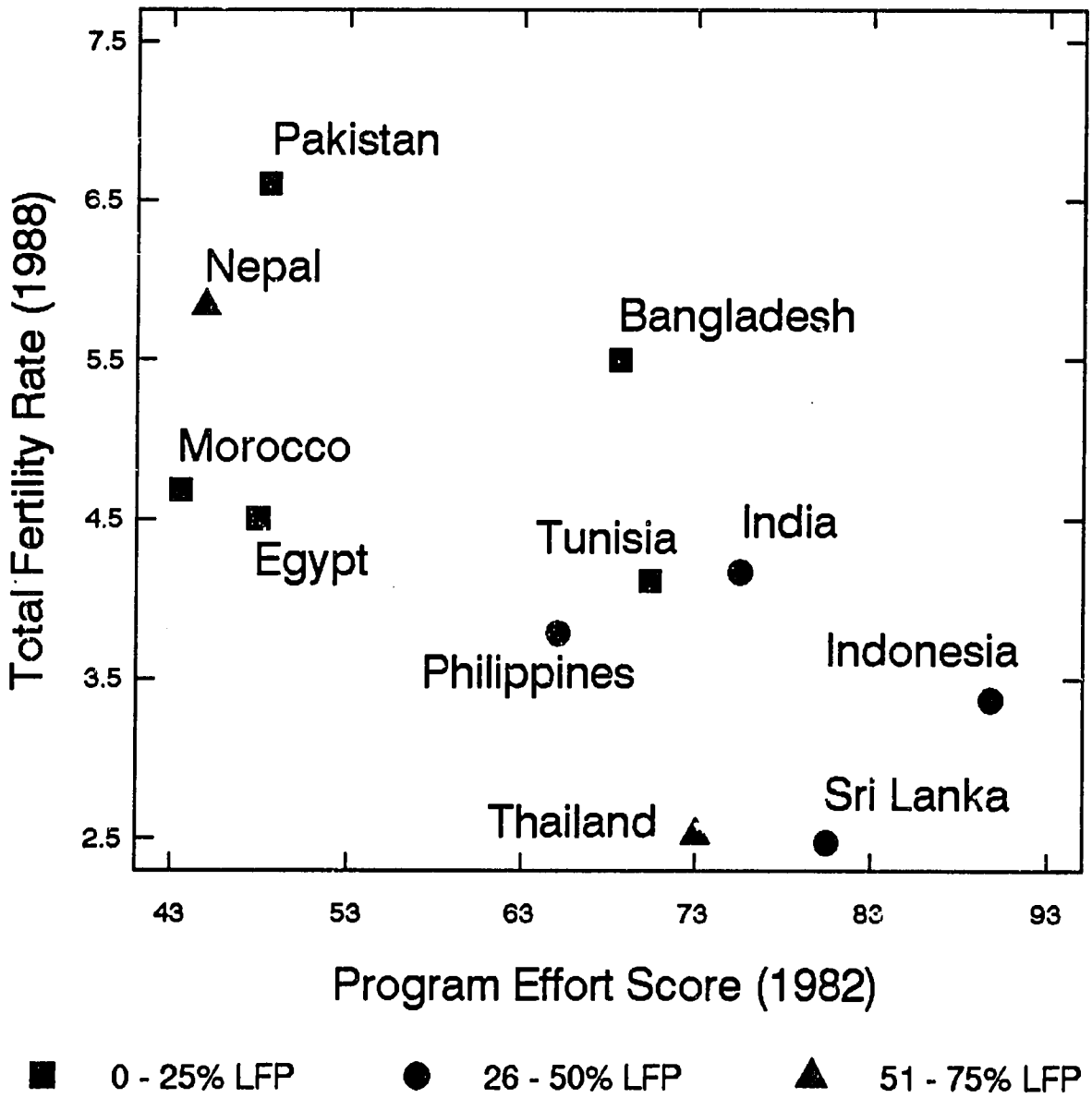

TABLE 1

Country	Program Effort Scores					Total Fertility 1988	% Women's Labor Force Participation
	1982 Program Effort Score	Policy and Stage-setting	Service and Service-related	Record-keeping and evaluation	Availability and accessibility		
Bangladesh	68.5	18.6	28.5	5.1	16.3	5.5	20
Egypt	47.6	16.1	19.8	3.0	8.7	4.5	8
India	75.6	23.0	31.5	7.2	13.9	4.2	29
Indonesia	89.9	24.5	40.6	11.2	13.6	3.4	33
Morocco	43.3	12.6	17.5	4.9	8.3	4.7	18
Nepal	44.7	17.7	15.6	5.0	6.4	5.8	60
Pakistan	48.5	18.8	14.5	6.3	8.9	6.6	12
Philippines	65.2	18.2	26.0	5.6	15.4	3.8	48
Sri Lanka	80.4	21.3	35.1	7.2	13.9	2.5	29
Thailand	72.9	16.7	27.5	8.6	20.1	2.5	70
Tunisia	70.2	19.8	25.4	7.5	17.5	4.1	24

Note: Program effort scores taken from Lapham and Maudlin, 1985. Fertility rates from World Bank Development Report. Female LFP percentages from census data, ILO Yearbook of Labor Statistics, and Women...a world survey, 1985.

Figure 2 shows an inverse relationship between female LFP and fertility. In conjunction with program effort, high LFP rates may suggest lower fertility. For example, consider Bangladesh and Thailand. Both countries have moderate program effort with scores of 68.5 and 75.5, respectively. Yet, their fertility rates and female LFP ratios differ substantially, suggesting a negative relationship between fertility and female LFP.

Cultural and religious distinctions by region may help explain the dynamics of the LFP, fertility, and program effort variables. For instance, the Near East countries have varying program effort scores, with Morocco ranking the lowest at 43.3 and Tunisia the highest at 70.2. Here, stronger program effort does not seem to lower fertility significantly. The factors that motivate a decrease in fertility may be determined by cultural mores associated with those countries where fundamentalist Islamic groups are more prevalent (note that Indonesia, Pakistan and Bangladesh are all Islamic).

Other regional distinctions can be distilled from this figure. In general, the fertility rate of South Asian countries seems to drop with added program effort. Moreover, the negative relationship tends to be stronger where female LFP is high. In particular, India and Sri Lanka have moderately high female LFP rates and moderate and strong program effort scores, respectively: the result has been generally low fertility rates for those countries. Pakistan, in contrast, with low female LFP and moderate program effort has the highest fertility rate in the group. The negative relationship between female LFP rates and fertility does not appear to apply to Nepal. A major reason for this discrepancy may be the geography of Nepal. The mountainous land may minimize the availability and accessibility of family planning services. The type of work women participate in also factors into the analysis. For example, women comprise 30% of Nepalese farm workers, according to 1980 ILO estimates. Agricultural labor is generally compatible with motherhood; thus, although women are active in the agricultural labor force, fertility rates for this group may remain high.

The South East Asian countries all have relatively low fertility rates. With aggressive service, service-related and availability schemes, the Philippines, Indonesia and Thailand have succeeded in reducing fertility through their program efforts. These same countries have reported impressive female LFP rates, again highlighting the complementary relationship between female labor force participation and family planning efforts factoring into fertility declines.

This paper explores the special nexus of women's labor force participation and fertility. It focuses on the ways in which development programs can influence changes in women's labor force participation and fertility -- changes that, in turn, can alter the outcomes of development programs. It examines the means by which development programs can be made more effective through careful attention to their impact on the social and economic environment that fundamentally influences women's labor force participation and reproductive behavior.

The next section describes the various ways in which development programs aim to effect changes in society and the economy. Following that, a schematic model of women's labor force participation and fertility is presented in order to illustrate the importance of expanded labor force opportunities for women in promoting overall fertility decline. Special attention is paid to the points of contact between development programs and households and families in order to emphasize explicitly the linkages between them. Throughout, the contributions of (and lacunae in) research literature on Asia and the Middle East serve to illustrate and inform the discussion.

2 Development Programs and Policy Points for Fertility Control

Development planning encompasses a comprehensive set of programs designed to effect the transformation of society and economy. It can be centralized and hierarchical; it can also be decentralized and enabling, providing an environment in which individuals, families and groups are encouraged to innovate and to bring about the fundamental transformations in economic, political and social structure that are necessary for modern development. Many development programs affect women only indirectly, operating through the economic and social environment, and often their impact is ignored. The following sections will examine this impact in detail; however, it is at first useful to explore more carefully the functions and types of development programs in order to emphasize the role that government can play in facilitating changes in the economic, legal, political and normative climate in which reproductive behavior takes place. Here are some of the ways in which development programs can change the environment in which individual decision making operates:

Economic Infrastructure Investment: A traditional and still very important function of development planning and programs is to improve the economy's infrastructure, i.e., its rail and road networks, its power generation and distribution capacity, its voice and data communications, and its port and airport facilities. These capital investments contribute indirectly to the production of final goods and services by lowering the costs of fundamental inputs to the production process by lowering the costs of distribution and by reducing the loss from wastage. Infrastructure investments can fundamentally alter the style of production, its location, the quality and nature of labor required, and the extent of both the commodity and labor markets.

Direct Capital Investment: Governments have often invested directly in the production of final goods and services in industries of importance. Either through equity investment or through loans to private entities, development programs can influence the mix of goods and services produced and the structure of labor demand. The capital equipment provided to these enterprises serves to increase the productivity of labor directly and to mandate the quality and type of labor required to use it.[19] The planning process can influence the geographic location of economic activity and indirectly influence the demand for specific types of labor. Potentially, government influenced direct investment can have important effects on the economic opportunities and alternatives for women; however, special care needs to be taken if these labor market changes are to have an impact on reproductive behavior.

Investment in Human Capital: The equity and basic needs oriented development planning of the last decade and a half has contributed directly to the increased productivity of labor by improving labor skills and versatility. Human capital investment programs can be specially targeted to women and girls in order to influence their preferences and increase their labor opportunities, especially those that conflict with the traditional motherhood role. Primary and secondary schooling, higher education, and specialized technical training can all be used to provide attractive alternatives to traditional economic and social roles; moreover, this can be done in context of the overall development plan. Education can work both on tastes and on the skills which alter the set of economic incentives that women face.

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[19] Recent research by Diamond (1990) however suggests that "capital expenditures on health, housing and welfare may boost growth in the short term; capital infrastructure expenditures may have little influence on growth; directly productive capital expenditures may even negatively influence growth; and current expenditures in directly productive sectors appear to exert a significant positive influence on growth." Diamond concludes that "capital expenditure seems to have exerted its influence through human capital formation rather than through the traditional direct investment channel."

Public health programs also can have a fundamental impact on the quality of the population and labor force. Maternal and child health programs serve to reduce the diversion of scarce resources that results when early health problems expand into more serious complications that lower productivity and increase absenteeism. Family planning programs contribute to maternal and child health and, of course, to improved access to safe and effective means of birth planning.

Social and Political Policy: As specialists in development adamantly maintain, economic development and economic *growth* are not synonymous. The former implies a fundamental transformation of society's institutions and norms in addition to an increase in the growth of output rate. For women to change the behavior that characterizes their traditional roles, the social and political environment must change in order to promote (or at least permit) behavior changes. Government sponsored education and information services can play a significant role in the social transformation that accompanies development.

As will be explored below, public development programs often affect individual level decision making only indirectly. In any case, if they are to have an impact on reproductive behavior, they must either affect the age at which a women enters into a sexual union or marriage or affect the factors which control fertility within marriage. The following sections will discuss the ways in which increased labor force opportunities for women can have the concomitant effect of reducing the demand for children.

The discussion in Sections 1 and 2 has proceeded from the point of view of development planners and administrators, whose own point of view derives from the programs and program

objectives themselves. What makes the incorporation of gender specific policy so difficult is that, viewed from this perspective, the role of gender is far from clear. Since most development projects and programs are not gender specific, their impact on women and their subsequent impact on other, more removed determinants of development is ignored.

The following section attempts to remedy this problem by reversing the point of view. We start from the individual woman and work upwards to the general economy and society. By doing this, we can show how reproductive behavior can be influenced by labor market opportunities and constraints and by a set of factors that directly determine the demand for children. At the end, we have illuminated a set of connections between the individual and the social and economic system, an have shown how public policy, which affects primarily these larger systems, can also have a profound impact on reproductive behavior.

This point of view will serve, we hope, as a useful tool to assist the policy analyst in approaching any given program or project from the perspective that will be most useful in understanding its implications for women and their reproductive behavior.

3 Fertility Within Marriage/Sexual Union

The majority of reproductive behavior takes place within marriage or more permanent sexual unions. Moreover, although the delay of pregnancy can have important effects on aggregate birth rates, fundamental changes occur only when the *completed fertility* of married women declines. Consequently, the core of our discussion must concern the interactions between reproductive behavior and labor force participation within marriage.

The theoretical basis for our discussion is a modified microeconomic theory of fertility. Although objections have been raised to the use of an economic model in this manner, it has gained increasing acceptance as a theoretical framework for the analysis of labor force participation and reproductive behavior.[20] The microeconomic model has the advantage that it forces the analyst explicitly to identify the factors that directly influence the demand for children. It also provides a useful framework for the analysis of contraceptive behavior because it again forces explicit consideration of the factors that determine whether or not an individual will or will not decide to contracept. Finally, it is well suited to the problem of linking individual reproductive and labor force decisions with the community level variables that are most significantly affected by public policy.

Although the model presented below is designed to be as comprehensive as possible, it is difficult to present a model that can be immediately applied to any particular third world setting. The economic model, like any other, must be adapted to the culture and institutions being studied and this may require substantial changes in terminology and viewpoint. We will, for example, refer to "marriage", "husband," and "wife" throughout this discussion even though for a number of cultures this

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[20] See Easterlin (1969), Blake (1968), Goldberg (1975), Turchi (1975a, 1975b, 1984a), and Rosenzweig and Seiver (1982) for discussions of the pros and cons of microeconomic models of fertility.

terminology and viewpoint will be inaccurate. The purpose of this discussion, however, is to illustrate the general usefulness of the approach, in particular its flexibility for adaptation to any particular region or culture.

3.1 A Model of Completed Fertility

Our subject is a "representative Asian woman" who is currently participating in a sexual union. The factors that are hypothesized to influence her current demand for a completed family of a certain size are illustrated in **Figure 3.** This figure illustrates those variable sets[21] or "factors" that the microeconomic theory identifies as being central to the determination of the woman's demand for children.

Because a woman acquires her children over time, her intentions regarding the size of the completed family are subject to change, both as a result of changes in factors that determine her demand for children and as a consequence of her experience with children of early parity. Therefore, life cycle models that characterize a woman as choosing a completed family size early in the reproductive life cycle and then maintaining that intention over a fifteen to twenty year period are probably doing considerable violence to the facts of reproductive decision making. The static theory of consumer behavior requires that consumption decisions be based on the set of decision factors that are operative at the time of the decision; if those factors change, then consumer behavior can be expected to change. Consequently, the decision model in Figure 3 characterizes a woman's situation

[21] Each circle in Figure 3 represents a collection of empirical variables that together measure the influence of a particular theoretical variable. Each collection of variables in a circle will be termed a "factor" in the discussion that follows, partly for purposes of expositional clarity and partly to acknowledge that the empirical researcher is often obligated to create indexes representing theoretical magnitudes out of collections of variables. The variables that might be contained in each circle will be described more fully in the following sections.

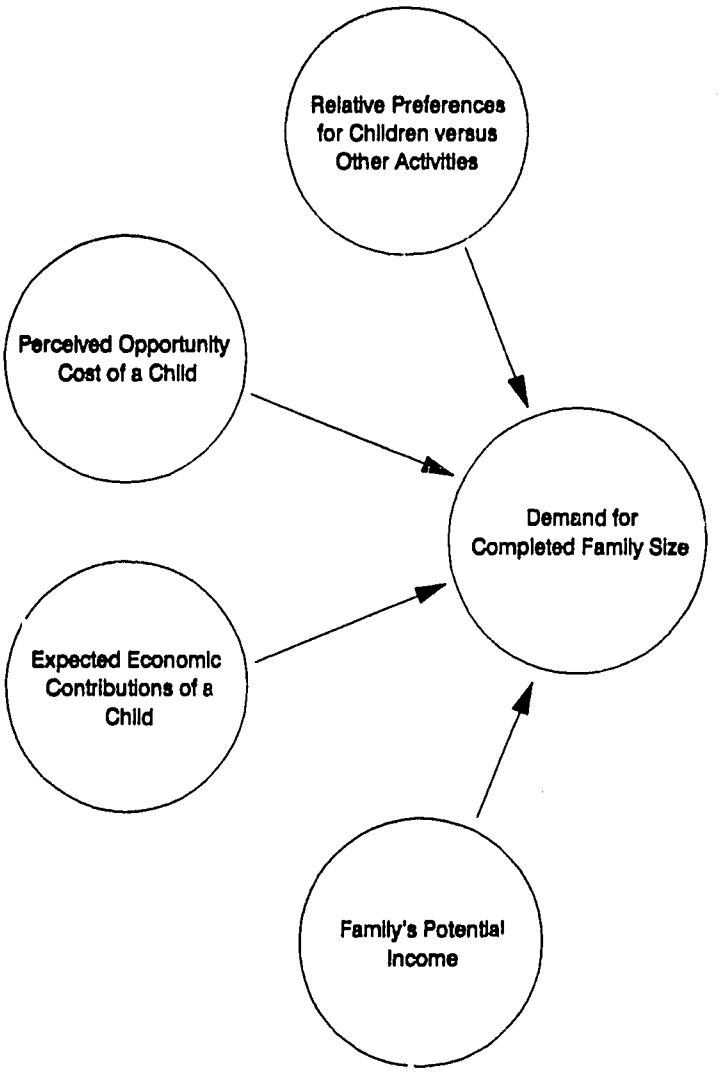

Figure 3

A Decision Model of Completed Family Size

at a point in time, recognizing that as time passes the factors that affect her choices may change, causing her to revise her intentions.

The microeconomic theory of fertility characterizes an individual woman as choosing that completed family size that, together with a set of nonchild-rearing activities, leads to her greatest perceived happiness. Because children require time and market goods and services, this choice is constrained by the resources available to the decision unit.

Economic theory identifies four variable groups, or factors, that directly influence the demand for children: relative preferences for child rearing versus other activities including work, the opportunity cost or price of a child as perceived by the parent, the expected economic contribution of a child, and the potential income available to the family. If the number of children demanded changes, at least one of these four factors must also have changed, and these proximate decision factors[22] constitute the paths through which all external factors must affect a woman's demand for children. Community level variables, if they are to have an effect on reproductive intentions, must alter these proximate decision factors. Use of the microeconomic model forces the analyst to develop specific hypotheses about how community level factors affect these proximate decision factors.

In standard models of consumer behavior, and in most traditional microeconomic theories of fertility, attention to determinants of demand stops with a consideration of prices and income. Relative preferences are often assumed to be homogeneous or randomly distributed in the population, and therefore capable of being ignored in statistical analyses.[23] However, a number of

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[22] These proximate decision factors should not be confused with Bongaarts' (1977, 1983) "proximate determinants of fertility." Unfortunately, there appears to be no graceful synonym for "proximate."

[23] In conventional demand analysis relative preferences are rarely directly observed, and the preference structure can only be "revealed" through estimated responses to variations in prices and income. This is unobjectionable only as long as preferences truly are homogeneous or, at least randomly and independently distributed with respect to prices and income.

economists (e.g., Easterlin, 1969; Leibenstein, 1975; Turchi, 1975) and sociologists (e.g., Blake, 1968; Ryder, 1976; Goldberg, 1975) have forcefully made the case that to limit analysis to the study of prices and incomes and their effect on fertility would be a major error for several reasons.

First, since reproductive behavior occurs in a particular sociocultural setting, a primary goal of fertility researchers is to understand the relationship between that setting and the reproductive behavior. Not only is this relationship often the primary focus of scholarly interest, it is also the channel through which public policy may have an effect on fertility. Rural development policy, for example, often affects directly the social and economic context that only indirectly alters the demand for children. Therefore, in order to understand the fertility impact of development policy, it is necessary to understand the connections between the socioeconomic environment, the proximate decision factors and the demand for children.

In addition, there is a practical reason for a thorough understanding of the linkages between community level variables, social attributes of individuals and proximate decision factors. Fertility data often contain large gaps in coverage, making a satisfactory empirical representation of a theoretical model very difficult to achieve. In particular, measures of proximate decision factors are often missing, and social attributes such as education or occupation are employed as proxies. However, the relation between these attributes and reproductive behavior is often complex and variable, and attempts to determine how community level factors affect fertility using these proxies may lead to misinterpretation. A theory that attempts to explain the various paths through which these proxies may operate may allow a more systematic and less ad hoc interpretation of results from incomplete data.

3.2 A Sequential Model of Reproductive Behavior

The static consumer model of economic theory from which our fertility model is taken assumes that the desired level of consumption can be attained in any given time period. When applied to reproductive behavior this assumption is no longer tenable since children arrive sequentially. Hence, even though a woman may, at any point in time, have an idea of her optimum completed family size she may be able to undertake behavior that achieves only part of her goal. Consequently, the goal of the fertility researcher is often to describe or predict behavior over a time period that is too short to allow achievement of an optimum family size. The sequential model of **Figure 4** shows the manner in which the basic model can be modified to account for reproductive behavior over time. This allows an explicit consideration of the relationships between a woman's labor force participation and her fertility.

Figure 4 shows that although demand for completed family size (shaded area) is an important determinant of short run fertility, other factors can be important. The short run demand for a birth is strongly affected by the woman's parity (or, more generally, "reproductive history")[24] and by competing demands for her time and for family economic resources.

Other factors can influence the short run demand for a birth, in particular the competing demands for a woman's time. For example, a woman may strongly desire another pregnancy in the immediate future, but, because she is a recent migrant to a city, be forced to postpone pregnancy in order to work and help acquire housing for the family. Issues such as this suggest that in any particular time period the demand for an additional birth and the demand for competing activities

[24] "Reproductive history" includes such variables as first birth interval, age at first birth, length of open interval, experience with fetal, neonatal, postnatal or child deaths, fecundity, frequency of sexual intercourse, previous complications in pregnancy, breast feeding status, use of contraception, etc., will be important determinants of the timing of a subsequent birth.

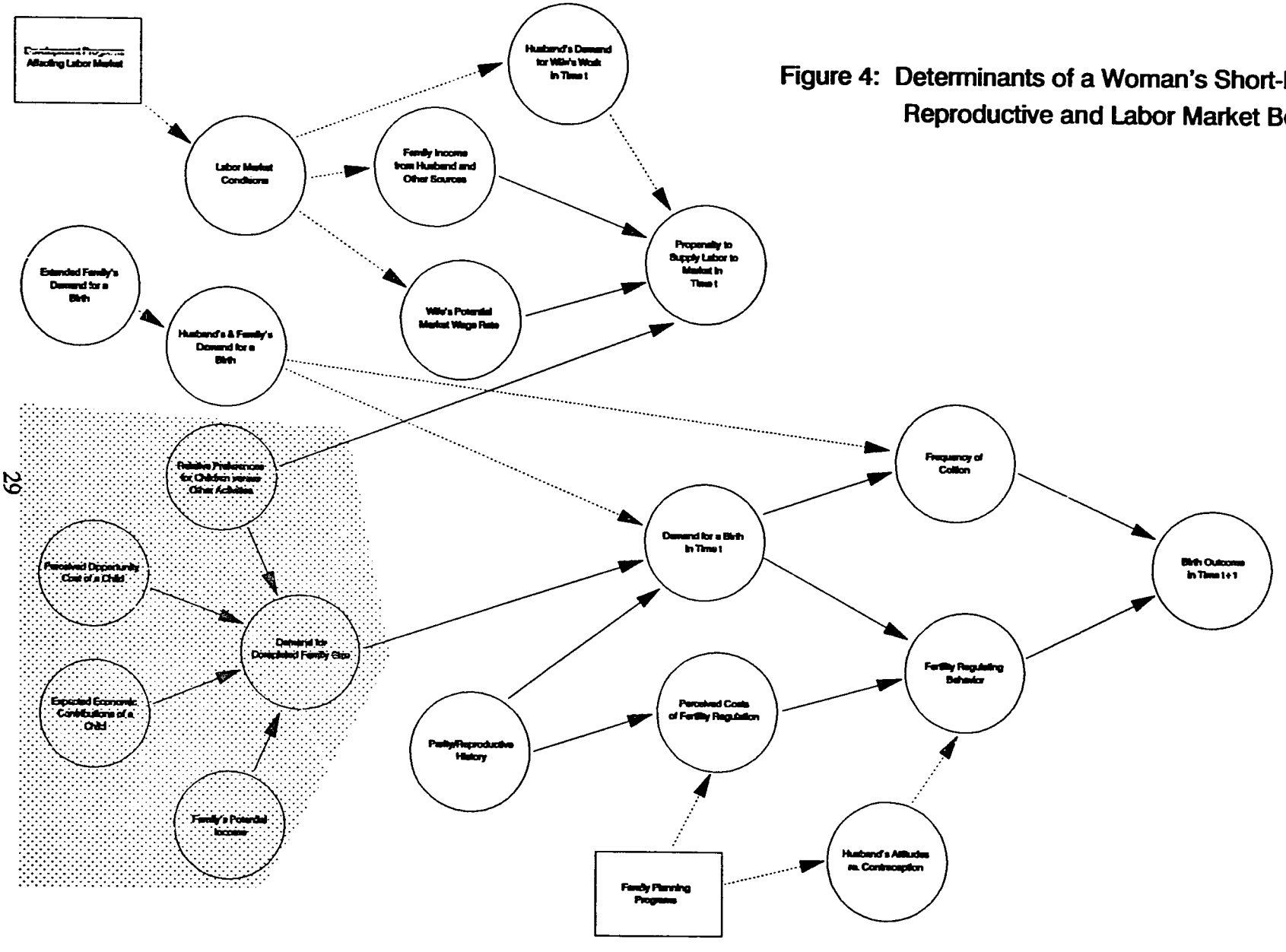

Figure 4: Determinants of a Woman's Short-Range Reproductive and Labor Market Behavior

are jointly determined. The more attractive, or necessary, participating in the informal or formal labor force is for a woman or her family, the more likely it will be to postpone a birth. The wider the range of market opportunities and the higher the wage rate that she can receive for them, the stronger will be the pull to the market. The more important a woman's income is to the family, the greater the pressure to work and the greater the role conflict inherent in motherhood, assuming appropriate substitutes are unaffordable or unavailable. Women in traditional activities such as family farms or businesses will encounter less role conflict and will be able to manage both work and family given close proximity of business and home. However, as the opportunities outside the immediate orbit of the family expand and as the difficulties of simultaneously working and rearing children intensify, the necessity for choice among alternatives becomes salient. In the absence of sufficient role conflicts (as may be the case in parts of Asia), women's potential wage rate and job status will become more important, and either will serve to draw women into the labor market, or give their families sufficient reason to push them into the market.

At any point, therefore, a woman's demand for an additional birth may range the continuum from a strong desire for the birth, through indifference to a strong aversion. The strength of the demand for an additional birth will determine in large part a woman's fertility regulating behavior, including her desire for paid employment, and, possibly, the frequency of sexual intercourse with her husband. Ultimately, therefore, whether or not a birth occurs in the immediate future depends upon a woman's fecundity, the frequency with which she engages in sexual intercourse, and the measures she takes to prevent conception or gestation.[25]

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[25] The reader will recognize that the variables just mentioned constitute the bulk of the well known "Davis-Blake" variables (Davis and Blake, 1956). Missing in this discussion are the variables concerning formation and maintenance of sexual unions that also form a part of the Davis-Blake framework. See also Bongaarts and Potter, 1983.

The majority of resources spent on family planning programs in the third world has been in the area of contraception. Publicly and privately funded efforts alike have concentrated upon the tasks of improving the distribution of contraceptives, developing new methods that are safer, more effective, and less aesthetically disruptive, and of extending the availability of improved methods. The goal, in terms of Figure 4, has been to reduce the perceived costs of fertility regulation so that women will be better able to act to achieve their family size intentions. To the extent that labor market opportunities serve to increase the desire to avoid pregnancy, family planning programs are essential in order to facilitate the desire to effect family limitation.[26]

Finally, Figure 4 attempts to make explicit the context within which reproductive decision making takes place. The broken lines show the influence that spouse, members of extended family and friends may have on the intentions and behavior of a woman at any particular point in time (Ben Porath. 1980). Clearly the cooperation (or at least acquiescence) of the spouse is fundamental in determining the success with which a woman undertakes family planning, and the influence of the spouse and other members of the family or social network are of potentially major importance in determining the nature of birth outcomes in a particular period of time.[27]

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[26] Cochrane, et.al (1990), found that the significant variables determining desired family size for Egyptian women were age at marriage and number of contraceptives known. With respect to returns to investment, Hess (1988) found that family planning was the predominant determinant of fertility in Asia, suggesting increasing returns to family planning over the fertility transition accompanied by diminishing returns to secondary education. However, Hess concluded that" increased education for women and family planning programs are best viewed as complementary," adding that Muslim countries which had experienced significant fertility decline had coupled early family planning efforts with efforts to advance the status of women through secondary school education.

[27] Indeed, Nandi, et.al, (1978) found family characteristics (joint or nuclear, reflecting degree of influence) to be the single most powerful determinant of fertility for both rural and urban families of West Bengal, India.

3.3 Community Links with the Individual Level Model

The basic economic model of fertility (Figure 3) consists of four proximate decision factors: (1) relative preferences for children versus other activities, (2) perceived opportunity costs of children, (3) expected economic contributions of children, and (4) potential income of the parents at the time(s) decisions are made. Each of these decision factors is, in turn, connected to determinants that are part of the social and economic environment within which people reside. Development programs have the potential of altering these decision factors in a less pronatalist direction. In the following subsections, each of the decision factors is discussed in relation to those environmental factors that theoretically determine it.

3.3.1 Relative Preferences for Children

A woman's relative preference for children is determined by her own personality and preference structure, which is, in turn, determined to some degree by her current family environment and family history. In turn, the social/normative environment affects family preferences and the woman's preferences directly. Consequently, the economic model is open to systematic influence by noneconomic factors operating through relative preferences. For instance, a change in norms for family size or the basket of goods required to maintain one's relative standard of living vis-a-vis one's neighbors might increase the household's preference for fewer children, increased women's employment and increased income. Evidence from Hungary suggests that decreased fertility rates for working women have been accompanied in the long run by falling fertility rates for non-working women as well (Barta, et.al., 1984). A study of women factory workers in Mauritius found that social interaction with coworkers was significant in determining women's desire for labor force participation,

an indication that preferences were swinging away from traditional maternal activities for some of the women (Hein, 1982). Analysts who ignore noneconomic factors are making the (acknowledged or unacknowledged) assumption that the impact of these factors on relative preferences is either unimportant or random. This assumption may be a reasonable starting point in the study of demand for most commodities, but, given the strong social and psychological role of children in most societies, it seems to be especially problematic with respect to the study of fertility determinants. The decision-theoretic model of Figure 3 explicitly displays the hypothesized linkages by which social/normative factors ultimately may affect the demand for children.

3.3.2 Perceived Opportunity Cost of a Child

The economic theory of fertility postulates that a woman approaches child rearing with a set of expectations and standards regarding the opportunity cost, in terms of parental time and financial resources, of a child. In particular, she is hypothesized to possess a set of standards regarding the quantity and quality of time necessary for child rearing, the types, quality and quantity of market goods and services necessary to child rearing and a sense of the extent to which the various inputs into the child-rearing process may be traded off. This set of standards is formally analogous to the economist's notion of a *production function for children*, where, instead of technology, the production function consists of the social norms and biological requirements that limit the range of options open to parents in child rearing. The prices of goods and services, including a mother's time, play an essential role in determining the opportunity cost of a child. Below, we will examine further the impact of labor market opportunities for a woman on the perceived opportunity cost of her children.

3.3.3 Expected Economic Contribution of a Child

Environmental factors play a major role in determining the scope of a child's expected economic contribution to the family. Recently, a number of authors have begun to describe the economic contributions that children make to their families in different third world settings (Nag, 1976; Cain, 1977; Caldwell, 1977; Nag, White, and Peet, 1978; Evenson, et. al., 1980; Tilakaratne, 1978; Khuda, 1980; Mueller, 1976; Molyneaux and Bilsborrow, 1984), and have thereby alerted students of fertility to another difference in reproductive motivation between the third world and industrial societies.

The economic environment also plays a major role in determining the value of children's economic contributions. The labor market determines the extent of availability of jobs for children both at home and in the formal sector and the wage rates that they might receive. The kind of agriculture practiced, the level of technology, the capital stock in place, etc. all determine the value of contributions to home production that children can make. Again, geographical differentials in fertility may be linked significantly to community differentials in the potential economic contribution of children. The potential importance of rural development policy in affecting the economic value of children should also be obvious.

For example, the land tenure structure or other cultural characteristics of an area can play a role in determining fertility behavior, particularly in terms of son-preference. Among Asia's largely rural population, land tenure for women may play an important role in their survival. Koopman (1990) suggests that "women's motivation to bear several children is . . . closely related to their economic roles and to their relative lack of personal access to productive resources such as land, livestock, capital and labor." Son-preference is strongly associated with access to resources: "If a woman is widowed or abandoned, but has sons who have socially recognized rights to inherit or

otherwise claim land, she can normally count on being able to support herself by cultivating a parcel of her son's land." For rural women with little or no education, Koopman contends that rights to land and access to labor are critical to their survival, and "it is highly likely that poor rural women regard having many children the best means at their disposal for retaining access to these essential resources." In such situations, increasing women's access to productive resources, "including inalienable resources such as education and training, can be expected to reduce women's imperative to bear many children" (Koopman, 1990).

3.3.4 Potential Income of Parents

The size of the family that can be supported by a couple is ultimately constrained by the economic resources available to it for consumption purposes. The "potential income" circle of Figure 3 represents the collection of variables that determines the maximum value of resources available over the couple's life cycle, and it is this value that constrains the family size that can be supported.[28]

Clearly the social/normative and economic environments play an important role in determining the potential income of the parental household. The labor market determines the wage rates available to husband and wife, the availability of jobs, and the constraints placed on women in the labor force. The land tenure system, size of the capital stock, fertility of the land and market prices for agricultural products determine the productivity, hence the implicit wage, of men, women and children in agriculture and in nonagricultural production. In addition, family structure and the social relationships between families of orientation and families of procreation determine the extent of economic assistance that the latter will receive from the former.

[28]We are implicitly assuming here that children represent a net economic drain on their parents. See Mueller (1976).

It is important to note, however, that the impact of income or wealth upon fertility depends fundamentally upon the price of children. Income serves as a direct constraint upon family size only to the extent that children are costly to rear. Indirectly of course, income is highly correlated with education, availability of employment opportunities, and attitudes toward women's roles, but these are secondary factors which must be controlled for. Much of the research on determinants of fertility, both in the third world and in the industrial countries has focussed upon income with little or no reference to the price of a child. The results are, understandably, inconclusive, because the role of income in determining fertility levels and differentials cannot be adequately assessed in the absence of specific attention to the role of the price of a child in determining fertility levels.

3.4 Community Level Analysis and Reproductive Behavior

Since most socioeconomic development programs affect individuals only indirectly, it is important to provide a more general picture of the environment within which reproductive decisions are made. **Table 2** provides the basis for this discussion. It is a list of variables of the type suggested by the socioeconomic fertility model, and is organized roughly in correspondence with Figures 3 and 4. We wish to make clear that our purpose here is not to present a definitive list of variables for use in fertility analysis. Instead, accept Table 2 as an illustrative list of the kinds of community and family level factors that affect fertility decisions. Below, we will select variables from this list to explore further how women's labor market opportunities and reproductive behavior are affected by public policy.

TABLE 2

VARIABLE LIST FOR COMPREHENSIVE FERTILITY MODEL

COMMUNITY LEVEL FACTORS AFFECTING DEMAND FOR COMPLETED FAMILY SIZE

- Social/Normative Environment
  - Family structure (nuclear, extended, etc.)
  - Social role of children and parents
  - Educational opportunities for males and females at given ages
  - Important reference groups: castes, tribes, racial groups, religious groups, occupational groups
  - Evidence of recent rapid social change? Social mobility?
  - Determinants of prestige
  - Women's role in family and society
  - Locus of political power. Children's contribution to political power
  - Demographic context
    - Sex ratio
    - Marriage market conditions (local, regional)
    - Population density
    - Prevailing age of entry into sexual unions
    - Types of sexual unions
    - Stability of sexual unions
  - Health environment
    - Mortality conditions
    - Morbidity conditions
    - Nutrition levels

- Economic Environment
  - Labor market conditions
    - Options for women of relevant age/wage rates
    - Options for men of relevant age/wage rates

- Aggregate unemployment levels and trends: local, regional, national
- Market vs. traditional employment options
- Geographic labor mobility patterns
- Child labor restrictions and opportunities/wage rates
- Seasonality of labor demand

Geographical and production environment

- Types of agriculture practiced and labor required (especially child labor)
- Growth potential for agriculture
- Types of nonagricultural production activities

Macroeconomic framework

- Income and wealth levels: local, regional, national
- Distribution of income and wealth
- Land tenure system
- Economic growth rates and prospects: local, regional, national
- Housing supply: size, price, quantity
- Organization of enterprises (family vs. other)
- Consumption alternatives available

FAMILY LEVEL FACTORS

Personal/Family History & Current Family Environment

Family of orientation

- Racial/ethnic identification
- Number of children
- Social prestige
- Religion/degree of religiosity
- Occupation of head
- Region of origin/migration history
- Wealth

Current family situation/background of subject

- Education
- Occupational qualifications
- Age

Living with own or spouse's family of orientation?

Personal migration history

Locus of decision-making power in household

Current family income and wealth

Assets: financial, land, other

Access to assets of extend family

Current income by source and person:

Income from self employment: agriculture, other

Wage income

Asset income

PROXIMATE DECISION FACTORS DETERMINING DEMAND FOR CHILDREN

Relative Preferences for Children vs. Other Activities
(Personality and Preference Structure of wife)

List of available alternative activities:

Consumption activities and labor market opportunities

Relative preference measures: child rearing vs. alternatives

Perceived Opportunity Cost of a Child

(Parental Standards for Time and Commodity Inputs)

(Husband's and Wife's Expected Wage Rates)

Required parental time inputs into child rearing

Required commodity inputs into child rearing: e.g., housing, food, clothing, education,

Prices of goods and services required in child rearing

Opportunity value of time required in child rearing

Expected Economic Contribution of a Child

(Parental Expectations re. a Child's Contributions)

(Opportunities for Child Employment & Exp. Wage Levels)

Jobs that a child can/will perform: in home, market

Age at which economic contribution begins

Probability that contribution will actually be forthcoming

Quantitative estimates of present value of contribution

Potential Income of Parents

(Husband's and Wife's Expected Wage Rates)

(Expected Nonlabor Income to Family)

Present value of income from assets

Present value of maximum parental income from wage labor

Present value of income from gifts, transfers, etc.

Total Family Size Demanded at a Particular Stage in Reproductive Life Cycle

FACTORS AFFECTING REPRODUCTIVE BEHAVIOR AND BIRTH OUTCOME

Frequency of Coition

Conception and Gestation Regulating Behavior

Use/nonuse of contraceptives, by type

Sterilized?

Attitude toward and use of abortion

Currently breast feeding?

Costs of Contracepting or Aborting

Information costs: level of knowledge of available methods and their effectiveness

Perceived health effects of relevant methods

Perceived psychic costs of relevant methods

Access costs: costs of acquiring methods (time, money, psychosocial)

Demand for an Additional Birth/Strength of Desire to Avoid Pregnancy

Reproductive History

Parity (and number of sons)

Family planning use history

History of foetal, infant, child deaths

Age of entry into sexual union

Fecundity

Frequency of sexual intercourse

Demand for Market Work and Competing Activities

Spouse and Family Influences on Reproductive Behavior

Husband's attitudes re. contraception

Husband's demand for an additional birth

Husband's demand for wife's participation in competing activities

Extended family's demands for additional birth(s)

Extended family's demands for wife to work

The major divisions of the table serve to group variables according to their roles in determining fertility and reproductive behavior. The first level consists of community level factors that shape the decision-making environment of individuals. The potential list of variables at this level is enormous; however, since community level variables rarely have a direct impact on decisions, a well articulated theory of reproductive decisionmaking is essential if the list of relevant community level variables is to be kept manageable.

The socioeconomic theory also points up the basic difficulty in defining the "community." Each community level factor is hypothesized to affect, directly or indirectly, a proximate decision factor; however, the "community" relevant to each factor may differ significantly. For example, the shadow value of a woman's time depends in part upon the wage rate in the "community" (i.e., in the relevant labor market). For an isolated rural village the labor market may be quite small and well defined; however, for a similar rural village served by a railroad the relevant labor market may no longer be local but regional. Development policy plays a fundamental role in expanding the market and the opportunities available to women through infrastructure development, secondary market towns, branch offices for credit unions or cooperatives, and training programs which increase skill levels.

While the relevant labor market may be defined at one level, other community level factors, e.g., the capital market, may operate over a much different geographical area that is not coterminous with the labor market. Normative pressures may be local, regional, national or even international in origin, and the economic model forces the analyst to propose a mechanism through which the community (or communities) affects proximate decision factors. This implies a complex model, but a model much more capable of facilitating understanding of the mechanism through which each community level factor influences reproductive decisions.

Family level factors include many of the socioeconomic attribute variables that have formed the basis of social correlates of fertility studies. Variables at this level are much more intimately

related to the actors under study; however, they do not directly determine decisions, per se. For example, the education level attained by an individual does not directly determine her demand for children, but it may be an important determinant of proximate decision factors such as relative preference for children, opportunity cost of a child, and potential income. Education also affects women's knowledge of and usually access to contracteptives. Cochrane, et.al. (1990) found that Egyptian women's demand for children was significantly affected by her age at marriage and the number of contraceptives known, which are both correlated with education. That education affects fertility through a number of different channels underscores the need for a theoretical framework that forces the analyst to make clear the hypothesized causal mechanism at work. Otherwise, family level factors will exhibit relationships with fertility that vary from sample to sample and that do not admit a plausible and stable interpretation.

Moreover, family level factors may be subject to significant interaction with community level factors. The implication of a high school education for a woman living in a farming area may be considerably different from that for a woman living in an urban factory center. Coordination of development programs can have a fundamental impact on market opportunities for women. Location of a factory requiring an educated labor force can be fruitfully combined with expanded education opportunities for women and access to family planning services.

The last major division of the table includes those factors that actually determine reproductive behavior over a given time period. This level is also organized in a decision-theoretic framework, based on our view that individuals weigh the costs and benefits before undertaking reproductive control. The "intermediate variables" (Davis and Blake, 1956) or the "proximate determinants of fertility" (Bongaarts and Potter, 1983) are also present at this level.

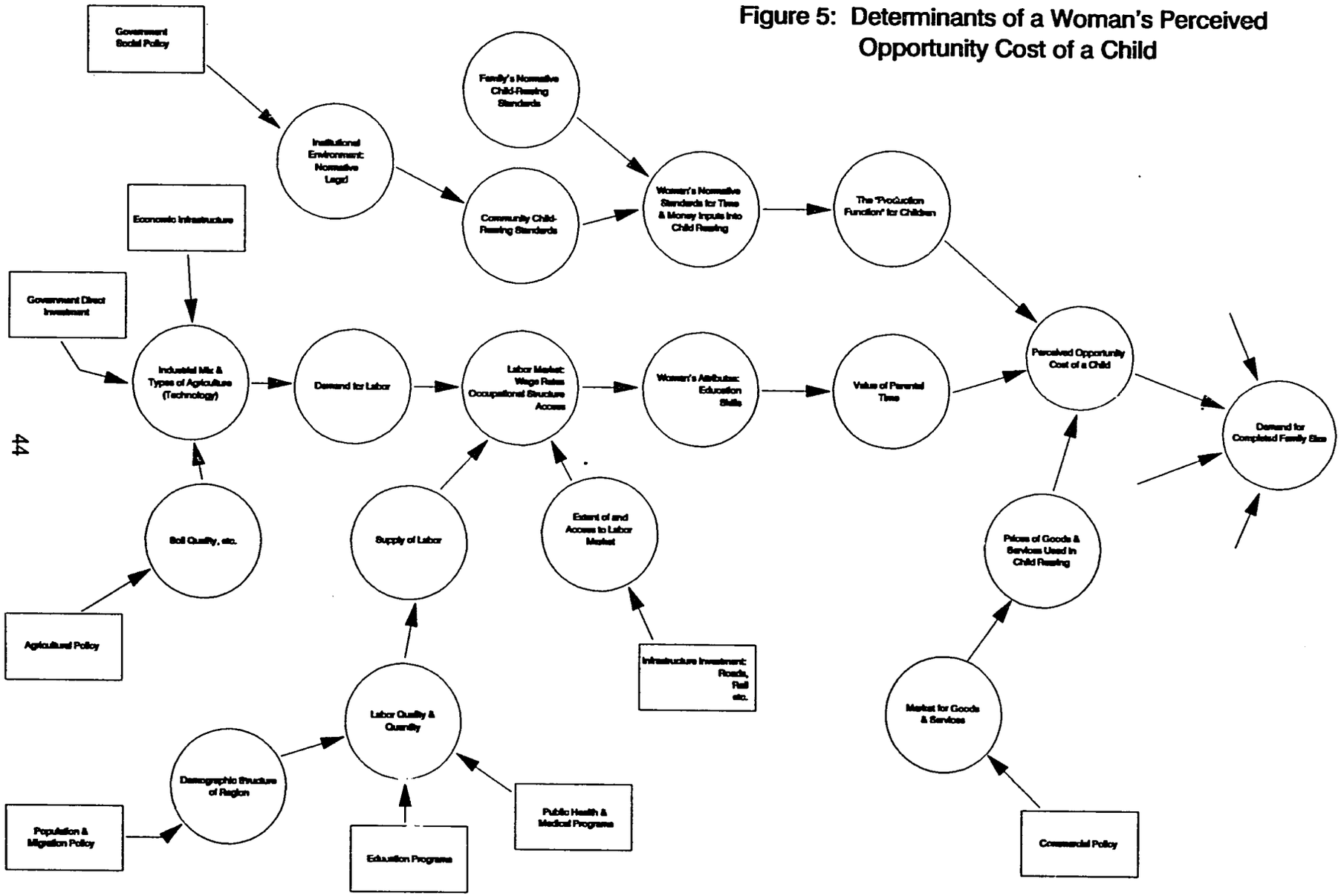
3.5 Fertility, Women's Income, and Policy

To this point we have presented an individual level theory of a woman's demand for children (Figure 3), shown how motherhood can be in competition with a woman's participation in the formal labor market (Figure 4), and have proposed a comprehensive list of variables through which individual behavior is connected to the larger social and economic environment (Table 2). The role of public policy in influencing labor force participation and reproductive behavior has remained generally in the background. Figure 4 showed that family planning programs can reduce the cost of effective family limitation and thereby allow intentions and outcomes to approximate each other more precisely. In addition, the policy box "Development Programs Affecting Labor Market" suggests that a woman's wage rate and other factors affecting her supply of labor to the market can be affected by policy.

This section expands our discussion of policy linkages by focusing more closely on a single determinant of the demand for completed family size, the perceived opportunity cost of a child. Figure 5 amplifies the linkages of this important fertility decision factor with the greater environment. Since a major element of the opportunity cost of a child is the value of a woman's time, it will become apparent that policies which increase women's attraction to the labor market will also increase the opportunity cost of parenthood.

Figure 5 attempts to identify the factors that determine the perceived opportunity cost of a child. There are fundamentally two paths through which community level factors can influence this proximate decision factor. The first path represents the social normative factors that determine the quality and quantity of inputs that parents supply to the child-rearing process. Figure 5A, which is a detailed part of Figure 5, pictures a woman as having a "production function" for child rearing in which a set of normative and biological factors determine the range of combinations of parental time

Figure 5: Determinants of a Woman's Perceived Opportunity Cost of a Child



and purchased goods and services that a woman will consider in the rearing of her children. The actual combination perceived to be most acceptable depends on the production function and upon the prices of the inputs, time, and market commodities actually chosen.[29]

To the extent that these standards vary across social, geographic, ethnic or religious groups it is necessary to consider the social and economic environment that produces a particular perception of the opportunity cost of a child. Figure 5A presents a schematic view suggesting that the social/normative environment, operating through an individual's preference structure and through the family, determines the production function for children. Public policy can have important direct and indirect effects upon family production standards for child rearing. The education system can be used to cultivate a demand for better educated children, i.e., if successful students are seen to earn higher wages in the labor market. The legal system can be used to raise standards for child-rearing activities, to mandate higher minimum levels of education, to raise the age at marriage, and to insure adequate minimum standards for child care and supervision. Public policy, by implementing school fees, immunization requirements, and so on, can increase the cost of child rearing and so help to deter high fertility rates.

The value of inputs that parents utilize in child rearing is also a function of the community environment (Figure 5B, detail of Figure 5). The value of time spent in parental activities is a function of the market opportunities available to parents because of their own characteristics (education, occupation, etc.), and the labor market determined level and structure of local wages. Market wage levels are determined by labor supply and demand factors. On the demand side the

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[29] The prices of market goods and services utilized in child rearing also depend upon the economic environment. The availability and prices of housing, education, clothing, market-provided child care, etc., are all potential determinants of the perceived price of a child. The degree to which parents can substitute away from high priced inputs is determined both by their own production function for children and by the availability of market provided substitutes.

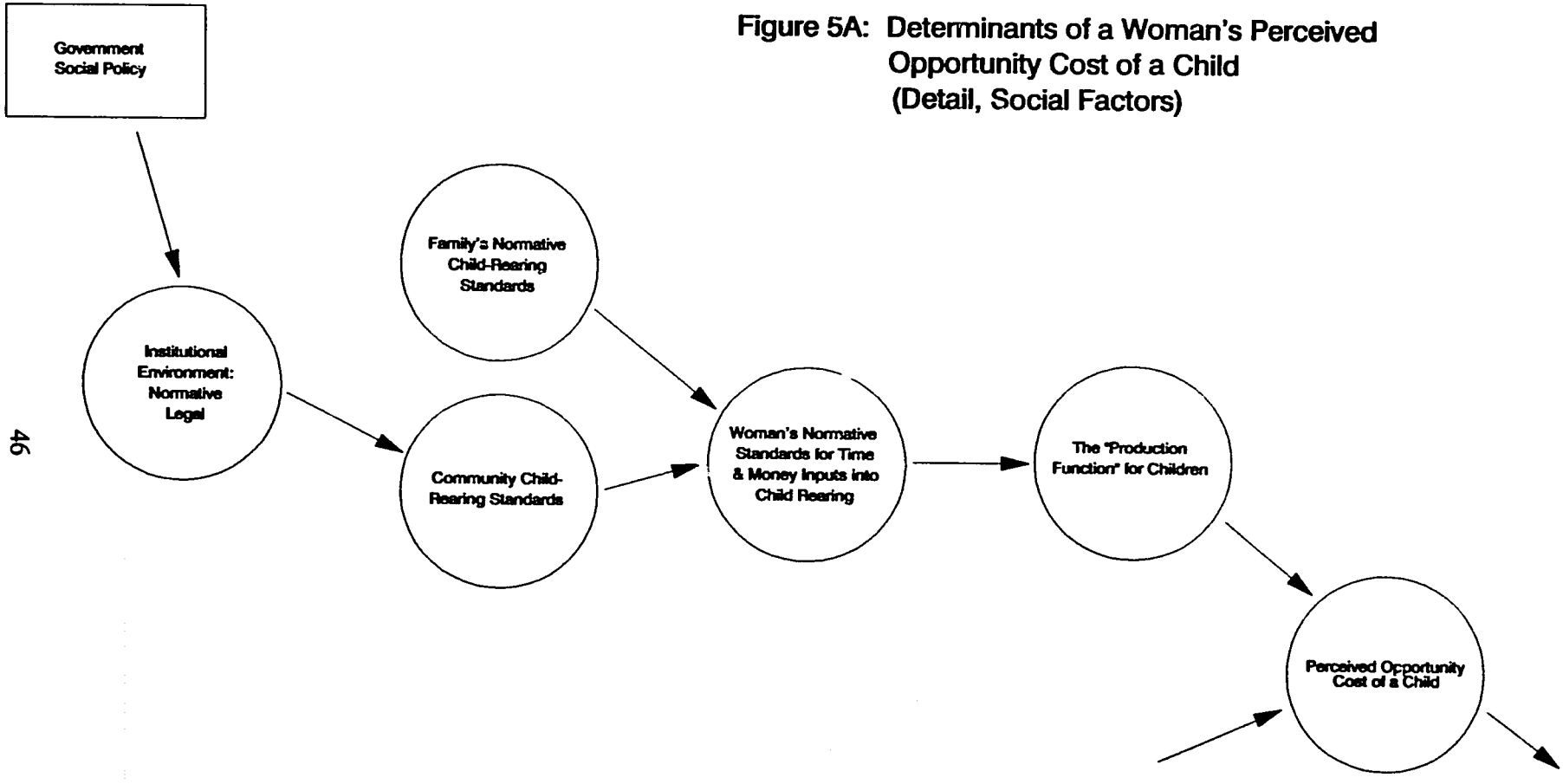
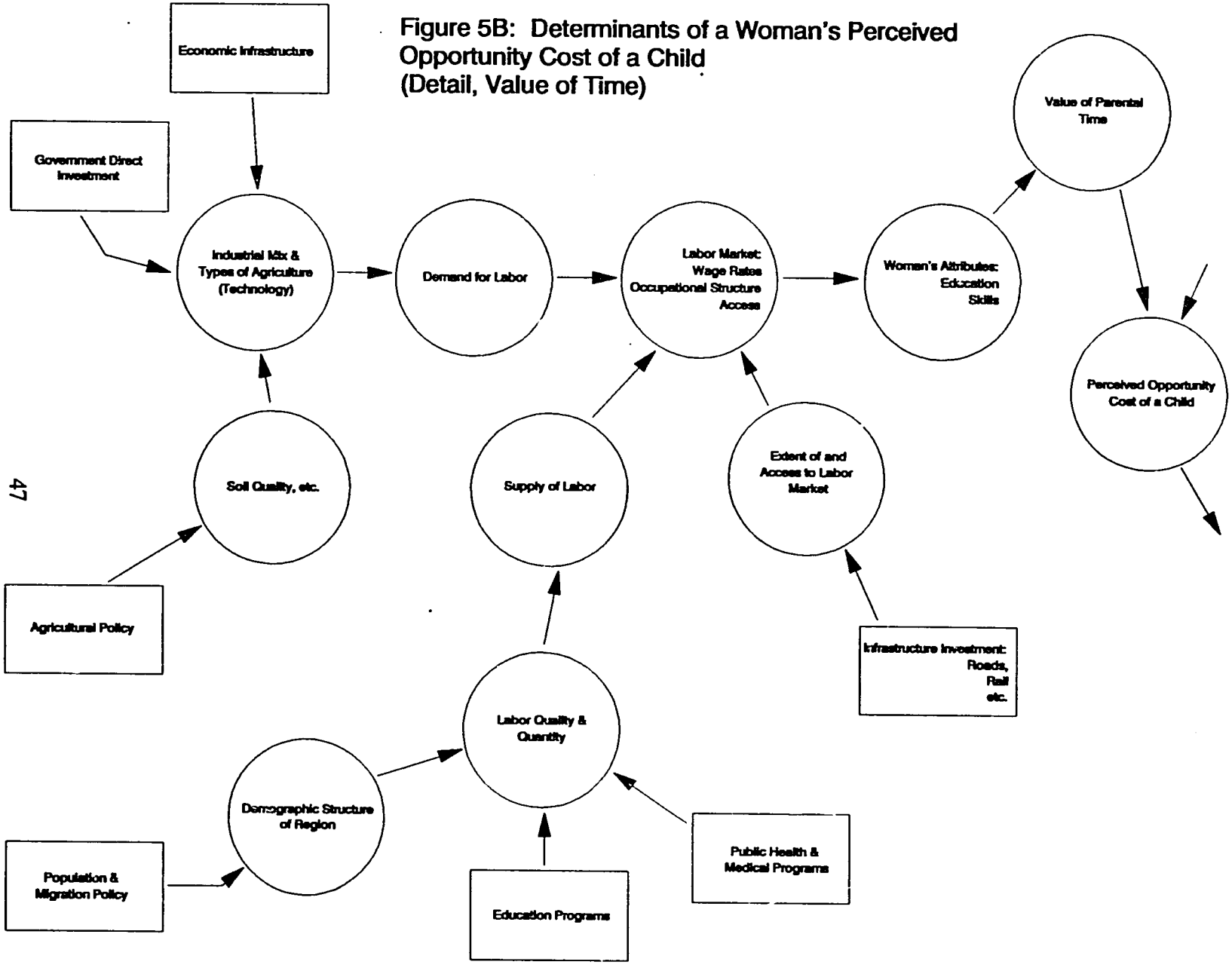


Figure 5A: Determinants of a Woman's Perceived Opportunity Cost of a Child (Detail, Social Factors)

Figure 5B: Determinants of a Woman's Perceived Opportunity Cost of a Child (Detail, Value of Time)



types of industries influence the demand for specific skills, and the time requirements placed on labor force participation. The mix of industries is determined by natural resource endowments, location of product markets, governmental economic development policy, and the quality of the infrastructure of production. The supply of labor, on the other hand, is determined by the demographic structure of the population and the quality of labor. Labor quality may also ultimately be determined by public policy such as provision of educational facilities and quality of public health services.

Development policy has an essential role to play in the determination of the value of a woman's time. Public health and education programs can improve the quality of labor that she can offer the market. Infrastructure investments can extend the labor market and improve access to employment. Agricultural policy can serve to change the labor requirements for agriculture while investment in the economic infrastructure and direct investment can alter the industrial mix, making the demand for women employees expand over time. Policies that make the potential wage rate of women higher serve to increase the opportunity cost of parenthood and to increase the attractions of wage labor. Both of these effects serve to reduce the long range and the short range demand for children, thereby increasing the demand for family planning services.

4.0 Summary of Policy Recommendations for Asia and Near East Regions

1. Women are fundamental, although under-acknowledged, contributors to the process of socioeconomic development. Not only are they responsible for a large share of a nation's economic output, they often bear primary responsibility for child rearing. High fertility rates impede economic progress, and *public policy designed to reduce fertility can have important consequences for the rate of growth of a nation's standard of living.*

2. Because the perspective of policy makers and administrators extends from development programs themselves, *the connection between women's economic and social roles and economic development is often missed or downgraded.*

3. This paper, by reversing the point of view, attempts to show how *women's labor force opportunities can affect the short range and long range demand for children.*

4. In the short run, we argue that labor market conditions can determine the degree of tension that exists between two of women's most important roles: participation in the formal labor market and bearing and rearing children. *If attractive labor market opportunities exist that more or less conflict with child rearing, there is pressure for women to postpone child bearing.* For any development project, the analyst should ask:

   "To what extent does this project add to the alternative labor market activities available to women? Does the form of the project make it easy for women to participate in economic activity and rear children, or does it ease access to the former while making the latter more difficult?"

5. *Development projects that make labor force participation more attractive while reducing the short or long range demand for children must be accompanied by effective family planning programs.* By making family planning programs available, the increased demand for contraceptive methods can be translated to lower fertility rates. In evaluating projects that have the potential for reducing the demand for children, the analyst should ask:

"Are the family planning facilities associated with the location of this project sufficient to meet the additional demand likely to be generated?"

6. *The long range demand for children can also be profoundly affected by labor market opportunities for women.* As the value of a woman's time on the labor market rises relative to its value in the home, the opportunity cost of a child rises. Many public development projects can have important impacts on the market value of a woman's time:

a. Investment in roads and transportation systems can extend the labor market, opening market labor possibilities to women. An important question to be asked is:

"Can infrastructure investments be designed in such a way as to make <u>women's</u> labor force options expand?"

b. *Public education programs may have the effect of increasing the value of women's time,* either by endowing them with higher earning potential, or by changing their preferences for work versus parenthood. The analyst should ask:

"How do the education projects in question affect a woman's potential wage rate? What changes would be necessary to endow women with the power to command higher wages?"

To the extent that women are more valuable in non child-rearing roles, the higher is the likelihood that they will eventually reduce their demand for children.

7. *On the demand side of the labor market, development policy also can have important impacts on the value of a woman's time.*

   a. Development projects that bring industry to an area can open new opportunities for women that increase the tension between market work and child rearing. The analyst should ask:

      "Does new investment in industry and business lead to increased opportunities for women? If not, how could the <u>form</u> of the investment be altered to increase opportunities for women? To what extent will new labor market opportunities conflict with large families?"

   b. Agricultural investments have some of the same potential: To the extent that they make women more valuable as farm producers, they may reduce the relative value of women in child rearing activities. Often, however, farm work and motherhood are quite compatible, and new agricultural investments might make <u>children</u> more valuable also.

8. It must be kept in mind that policy goals are often contradictory.

   a. *Programs designed to favor the economic position of women may be particularly difficult to implement in areas where there is high general unemployment for men* (e.g., Egypt, Tunisia, Morocco). In that case, how could labor market preference be given to women, if it were decided that such preference were warranted? The answer to this question may be that such preference is not politically or otherwise feasible; on the other hand, to ask the question is to point out the need for subtlety in structuring economic opportunities for women that do not (or do not <u>appear</u>) to conflict with those for men.

b. *Social policy that is beneficial in and of itself*, such as child care for working mothers, child allowances, maternity leave policies, etcetera, *may conflict with fertility reduction goals that focus on making women's labor force activities more attractive than, and incompatible with, child rearing.* Then, the analyst must ask:

"In this instance, which of these competing goals is more important?"

The framework that we have proposed for viewing the relationship between women's employment opportunities highlights the issues and conflicts that might arise when a multidimensional development policy is actually operationalized.

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