The relationship between female employment and fertility has been investigated repeatedly, utilizing aggregate census data as well as cross-sectional fertility survey data. Both sides of the equation have been investigated: the restraints of fertility and the associated demand for child care time (presence and number of children, and age of the youngest child) on female labor force participation; and the fertility-reducing effects of female employment, in terms of smaller completed family size, earlier and more effective use of contraception.

Research in Developed Nations

In developed nations, research has substantiated the finding that wives who are employed have lower fertility than the nonemployed. The negative relationship between female employment and fertility is produced primarily by differential contraceptive behavior due to a desire to work, rather than by the self-selection of subfecund and involuntarily sterile women into the labor force. Although associations exist between employment and fecundity (Freedman, Whelpton, & Campbell, 1959b; Whelpton, Campbell, & Patterson, 1966), considerable evidence has been amassed in the U.S. indicating that the wife's work experience is strongly related to use of contraception, effectiveness of contraceptive use, probability of using contraception before the first pregnancy, and lower expected family size (Freedman, Baumert, & Bolte, 1959a; Freedman et al., 1959b; Freedman, 1962; Whelpton et al., 1966). Dur
tion of employment is also associated with lower fertility (Freedman et al., 1959b; Westoff et al., 1963; Whelpton et al., 1966; Collver, 1968b).

Women who are employed full-time and those with stronger work commitment also have lower fertility than those employed part-time or those who are less committed to employment and work for economic reasons only (Kupinsky, 1977; Mott, 1972). Finally, the association between work intentions and desired family size has been noted among single women as well. Blake (1965), for instance, presents survey data gathered from high school and college coeds showing that even the desire to work outside the home after marriage is related to lower desired family size. The heightened commitment of young women to employment and motherhood is considered a major factor promoting continuation of low fertility in the U.S.

Similarly, fertility variables (age of the youngest child and number of children) are usually the major determinants explaining a greater proportion of the variance in female economic participation than any other variables (see, for example, Sweet, 1973). Attempts to incorporate a life cycle approach (presence of children under three, under six and between seven and eleven), yield similar findings (Cain, 1966).

The census data so analyzed have not provided information on availability and cost of child care, and so authors have assumed that in the U.S. "younger children require more care than older children, thus depressing the probability of employment of their mothers" (Sweet, 1973, p. 16). Although the inverse relationship still exists in the U.S., it is apparent that fertility, especially the presence of a young child, has become less of a constraint on female employment than in the past (Weller, 1977). As the labor force parti-
Participation of U.S. married women has increased, through greater part-time employment, expanding opportunities, and the decline in mobility within male occupational categories, the labor force participation of mothers with very young children has changed considerably since 1960. Participation rates remain high following the birth of the first child and drop off following the birth of the second child. Thus, the constraining influence of children will probably continue to decline in the future. The exact reasons for this change are not known but probably represent a mixture of related variables: change in sex role attitudes; delayed marriage and greater work experience prior to marriage; economic factors relating to inflation and substitution of the wife's employment for lack of mobility in male occupations; and more effective contraceptive use and lower family size desires.

Within the developed world, evidence of a negative association between fertility and female employment is not confined solely to the United States. Similar results have been obtained in Denmark (Denmark Statistiske Departement, 1955; Johnson, 1960); Belgium (Morsa, 1959); Germany (Freedman et al., 1959a); Federal Republic of Germany (1960); Sweden (Gendell, 1963; Myrdal & Klein, 1956); and France (Girard, 1958, 1959).

Data from Eastern Europe as well generally indicate lower fertility among employed wives than among wives who are not employed in Poland (Piotroski, 1963; Mazur, 1968); Hungary (Klinger, 1963; Mazur, 1968); Czechoslovakia (Mazur, 1968); and Armenia (Davtyan, 1967).

Research in Developing Nations

The expansion of the female labor force in developing nations has been advocated as a policy which will help induce fertility decline by changing
traditional family relationships and encouraging a situation competitive with childrearing (Collver & Langlois, 1962). However, the research relating female employment and fertility in developing nations could be characterized as a methodological muddle of contradictory findings.

Studies conducted in developing nations fall into two main categories: areal studies of countries, based on aggregate data from national census divisions, such as provinces or metropolitan and non-metropolitan areas (essentially correlational studies); and studies conducted in specific cities or countries, using individual data from random samples of the female population. In reviewing the research, emphasis will be placed on Latin American studies which predominate the literature.¹

Areal studies in developing nations are handicapped by a number of methodological problems: differences in unit of analysis, time of analysis, measures of female economic participation and fertility, as well as controls. Moreover, figures on female labor force participation in developing nations are highly prone to underenumeration.²

Data gathered on female employment and fertility in cross-sectional fertility surveys in some ways clarify the situation, although are still beset with methodological problems. Typically, only current employment is considered (rather than work history) and information on child care substitution is not gathered. Many of these studies attempt to test the role incompatibility model originated by Stycos and Weller (1967) by hypothesizing that certain positions more incompatible with motherhood (i.e., white collar employment, full-time employment, and employment outside the home) should also be associated with lower cumulative fertility and greater or earlier contraceptive use.
Sample restrictions and controls instituted vary greatly, however. The
use of ever-married or ever-mated samples (Gendell, Maraviglia, & Kreitner,
1970; Rothman, 1969) does not sufficiently control for exposure to pregnancy,
given that female employment is selective of women who are heads of household.
Other studies utilize urban samples of married women, note a relationship, but
fail to control for factors related to employment and fertility, such as age
at union, marital duration, educational attainment, and fecundity (Miro, 1966;
others fail to disaggregate within employment categories and merely compare
employed and nonemployed wives.

The effect of employment on fertility. It is generally concluded that
female economic participation in rural areas and areas where domestic employ­
ment predominates does not act as a constraint to fertility. In fact, in
labor-intensive agricultural settings, economic production can be more easily
combined with childbearing, and the need for additional farm labor would
stimulate high fertility. For a given household income, participation by
women in agricultural, cottage industry, or other informal sector employment,
especially unpaid activity, might be expected to have no effect or a positive
effect on fertility since incompatibility is nonexistent (Jaffe & Azumi,
1960), and employment would increase household income and enable the family to
afford more rather than fewer children (Standing, 1978). Little attention has
been paid, however, to disaggregating fertility differentials among different
types of agricultural workers or to distinguishing fertility differentials
between paid and unpaid agricultural workers. Data on total household income,
availability of fertility-regulating methods, child care arrangements, and
employment of other family members are similarly missing from analyses. Finally, the absence of work history data prevents a thorough investigation of the interrelationships between work, age at marriage, and age at first childbearing.3

Studies conducted in rural areas of Latin America (Miro & Mertens, 1968), in Lima, Peru (Stycos, 1965) and urban and rural Turkey (Stycos & Weller, 1967) show no consistent differences in fertility or in attitudes toward family size and birth control between employed and nonemployed women. Although these studies do not adequately address differences in type of employment, reference is made to the compatibility of employment and fertility in these areas and the traditional nature of women's work. In an investigation in Chimbote, Peru, on the other hand, where most employed women work in small factories (steel and fish-canning), working women have lower fertility and lower preferred family size, although on other attitude questions no differences are noted between employed and nonemployed women (Stycos, 1968). Based on a 5 percent census sample of 9,500 women aged 15 years or older living in Guatemala City, Gendell et al. (1970) also conclude that being economically active has a depressing effect on women's cumulative fertility, independently of age or marital status. For instance, within groups of ever-married and never-married women 35 years of age and older, inactive women have the highest cumulative fertility and domestic servants the lowest. Although the authors challenge the view that domestic service is compatible with childbearing, their division of marital status into ever-married and never-married components inadequately controls on present exposure to pregnancy. Thus, the low fertility of domestic servants may not be due to their
desire to contracept, resulting from role incompatibility, but to the inter-
action between an oversupply of domestics and a preference among employers
for young, single, and childless women and the necessity for work among women
who are heads of households.

Other surveys focus on currently married women, instituting appropriate
controls. In Thailand, a study relating the labor force participation rate
to children born per ever-married women noted a positive relationship in rural
areas but a negative relationship in small urban areas and within Bangkok
(Goldstein, 1972). However, women in both rural and urban areas who had
worked for wages prior to marriage generally had fewer children than women who
had not. In a later study, based on a representative sample of currently
married women living in 12 rural areas in Thailand, most of the explained
variance in fertility was due to life-cycle variables (age, duration of
marriage, and age at first marriage) and modernity (urban contact and mass
media exposure). The only other significant determinant of fertility was non-
familial work (Cook & Leoprapai, 1977). The pattern of rural-urban migration
of single women and their return migration to rural areas may explain the
underlying relationships between urban contact, mass media exposure, non-
familial work, and lower fertility in these rural areas.

Although it is expected that an inverse relationship might more likely
exist if economic activity took place outside the home, the relationship would
still depend on the work setting, employment structure, and perceived oppor-
tunities for mobility within the female labor market.

The relationship between employment and fertility in urban, industrial
areas is also not conclusive, however, despite the vast array of empirical
research. Negative relationships have been noted between the child-woman
ratio and female work participation rates in nondomestic occupations in metropolitan areas of 20 countries (Collver & Langlois, 1962), and a later study in metropolitan areas of eight countries of varying levels of industrialization (Collver, 1968b). Completed fertility shows a fairly high negative correlation with nonfamilial paid female employment in Peru (Heer, 1964). Using municipios as the unit of analysis, similar findings are reported in analyses of Brazilian census data in 1950 (Gendell, 1967) and Puerto Rican data for 1940, 1950, and 1960 (Weller & Sakoda, 1970). In the latter study, fertility (measured as the child-woman ratio) showed a fairly high and increasingly stronger negative correlation with female labor force participation (the proportion of females age 14 and above in the nonagricultural labor force). Holding constant urbanization and industrialization (percent of the labor force in manufacturing), results remained the same. The correlation between female employment and fertility was -0.21 in 1940, -0.32 in 1950, and -0.39 in 1960.

Surveys on currently mated women in Puerto Rico, which have instituted controls for education or type of employment, have found a relationship. Weller (1967, 1968) reports that normally fecund employed wives in San Juan have lower marital fertility, more adequate contraceptive knowledge, greater current use and more regular use than nonemployed women. A larger survey of Puerto Rican women (Jaffe & Azumi, 1960) similarly concluded that, controlling for education, women employed outside the home have fewer children than those who do not work or those employed within their homes.

Other area studies indicate that the relationship between employment and fertility is greatly reduced when appropriate controls are introduced. Heer
and Turner (1965) find only a very slight negative relationship between the child-woman ratio and the proportion of females in the labor force (all forms of employment combined) in 318 local areas in 18 Latin American nations, after seven other fertility differentials are controlled (the partial r$^2$ is only equivalent to -.084 when such variables as literacy, sex ratio, and percent urban are controlled). Analyzing the results separately for each country, the authors conclude that in 14 out of 18 nations, the relationship is negative. However, in Chile, Honduras, Nicaragua, and Panama, there is actually a positive relationship between the extent of female labor force participation in an area and fertility.

Problems of correlation and causality. The studies reviewed differ in the unit of analysis, measures of employment and fertility, and inadequately examine the structure of female employment within different countries with varying levels of development. Even if these factors were taken into account, however, much of the observed correlation between employment and fertility might not be causal (participation directly affecting fertility or vice versa); but due to the influence of other variables related to both employment and fertility, such as education, household income, age, marital duration, and marital status.

Whether or not female employment is causally related to lower fertility through differential contraceptive use is a moot point. Studies in San Juan (Weller, 1967, 1968), San Jose, Panama City, and Bogota (Hass, 1971) report relationships, even with controls. Research in Lima (Stycos, 1965), Jamaica (Stycos & Back, 1964), Buenos Aires, Mexico City, and Caracas (Hass, 1971) do not. Stycos and Back (1964) conclude that fertility affects employment status.
in the case of more stable unions. Marital status affects employment status both directly and through the medium of children. Underlying associations between educational attainment, modern sex role attitudes, and contraceptive use are noted in the CELADE data on Latin American cities as well (Hass, 1971).

The impact of marital status is particularly relevant to analyses of female employment in Latin America where consistent patterns of female-dominated migration from rural to urban areas appear to exist in various countries: Costa Rica, Cuba, Mexico, Guatemala, and Chile (Youssef, Buvinic, & Kudat, 1979). Migrants to urban areas, in particular larger cities and metropolitan regions, are primarily single women in their late teens and twenties and a smaller stream of older women who are heads of households. Since migrant women comprise a large share of the urban female labor force (66 percent in metropolitan São Paulo, for instance), female employment would tend to depress the child-woman ratio simply through an increase in the number of single women. Therefore an inverse aggregate relationship would not be indicative of a direct relationship between employment and fertility (Standing, 1978). In a Mexican study, for instance, Zarate (1967b) finds that the negative correlation between proportion of females economically active and children ever-born to all women aged 20 to 24 drops sharply from -0.440 to -0.132 when differences in marital status (percent of females married) are controlled through partial correlation.

In countries with wide disparities in rural and urban wages and conditions, and restrictions in productive urban employment opportunities, female economic participation rates will continue to be low and the informal service
sector will absorb low-income urban females and women migrating from rural areas (Hollerbach, 1979). In such situations, the chief effect of female labor force participation may be to raise the mean age at marriage and age at first birth. Work history prior to marriage or immediately following has been shown to be negatively related to fertility.

Education, however, has often explained the association between current employment and cumulative fertility, although it may affect fertility in countervailing ways. Education increases a woman's opportunity wage and motivation to work, as well as her contraceptive knowledge, all of which should reduce fertility. However, women with high education and high opportunity wages may also have high levels of fertility, if child care substitutes are freely available (Standing, 1978).

Investigating the role incompatibility hypothesis utilizing CELADE survey data on currently mated fecund women residing in seven metropolitan areas of Latin America, Hass (1972) concludes that many of the relationships existing between role incompatibility and fertility are due to the higher education and greater approval of nondomestic activities among employed wives. When demographic and attitudinal variables are added (marital duration, educational attainment, and sex role attitudes), differences in fertility by place of employment disappear and differences by number of hours employed and socioeconomic status of the wife's occupation remain in only a few cities. In fact, the woman's attitude toward nontraditional roles is more strongly related to fertility than her actual employment status.

Analyzing the relationships by city, role incompatibility is rarely associated with fertility in cities with very low fertility (Buenos Aires) and
high fertility (Mexico City). In Rio de Janeiro, Bogota, and Caracas, limited support for the hypothesis disappears with the introduction of controls. Only in San Jose and Panama City (where fertility was declining at the time of the survey) is role incompatibility (measured as place of employment, number of hours employed, and socioeconomic status of the wife's education) still associated with low fertility, greater contraceptive use in San Jose, and earlier timing of use in Panama City. Aside from the fertility declines apparently occurring at the time, women employed outside the home in these two cities shared many social characteristics, and more importantly, the female labor force was markedly different from the labor force in other cities. Wives employed outside the home in San Jose and Panama City married later, had higher educational attainment, and greater urban experience than the non-employed. Both cities also had relatively few wives employed in the lowest status occupations, which include domestic service (approximately 24 percent) and high proportion of full-time workers (> 50 percent). In an analysis of survey data from five Brazilian communities, past work experience in high-status occupations associated with urban-industrial areas was also crucial (Rosen & Simmons, 1971).

Synthesis

Hass argues that a decline in societal-level fertility must occur independently before women in role incompatible positions intentionally control fertility to continue employment. She argues that in a situation of declining fertility, women may begin to perceive the possibility of other roles aside from motherhood, simply because fewer demands are made by smaller families, technological advances free them from some household functions, and cultural
acceptance of nondomestic roles increases, as does provision of role incompatible employment. If employed women basically approve of nondomestic activities, have access to effective contraception, but restricted access to low-cost child substitutes, role incompatibility should be causally related to fertility among fecund women. Other authors have also suggested that a certain level of economic development may be necessary before a relationship between female employment and fertility appears (Concepcion, 1974; Standing, 1978; Stycos & Weller, 1967).

In his review of the literature, Standing (1978) concludes that fertility is probably unlikely to have an effect on female employment in preindustrial, low-income, or rural societies due to compatibility between employment and fertility and sharing of child care by the extended family.

However, in urbanizing and industrializing societies, the effect could increase until alternative forms of child care were developed to replace the extended family. The process of urbanization and industrialization may strengthen the child care constraint through a variety of mechanisms: employer discrimination against women with young children or those liable to have children; preference for male rather than female workers, which broadens the male-female opportunity wage differential, and perpetuates intrafamilial division of labor with women concentrating on child-rearing roles; decline in the kinship support system and reduction in average family size, which reduces the availability of alternative family members to care for children; compulsory education of children, which reduces their economic value and availability for employment and child care of other family members; and shifts in the quality of children, which requires more time-intensive child care.
On the other hand, industrialization and urbanization may also produce alternative forms of child care to replace the extended family, thereby reducing the child care constraint. Low wages for women in agriculture combined with rural-urban differentials in wages and social conditions, high levels of urban unemployment, and restrictions in productive urban employment opportunities for women will insure the absorption of female workers, especially rural-urban migrants, in domestic and other personal services (Hollerbach, 1979). If educated women work in urban areas, the existence of inexpensive domestic labor reduces the child care constraint on these women, enabling employment and fertility to co-exist.

In his review of the literature, Standing (1978) develops a conceptual model relating the constraining influence of fertility on female economic activity and the causal relationship between economic activity and fertility (see Figure 1). After discussing the model, largely in terms of Standing's discussion, an elaborated model will be presented. The hypotheses suggested by these models require future testing, but seem to offer the most plausible avenues for research.

The effect of employment on fertility. A number of antecedent factors, in particular the labor market structure (rather than fertility per se), influence the level and pattern of female labor force participation. "The existence of a direct causal relationship from economic activity per se to fertility is most likely if the opportunity wage of women is high and if any interruption of economic activity to have children would lower their expected lifetime earnings" (Standing, 1978, p. 167). Therefore, the structure of the female labor market is crucial.
The opportunity cost of inactivity will tend to be relatively low when female employment opportunities offer little possibility of advancement, and when entry, withdrawal, and re-entry into the labor force are relatively easy, e.g., various forms of self-employment and unpaid family labor. Second, the employment structure determines the degree to which fertility acts as a constraint. If work allows flexible working hours, involves work within or near the home, the incompatibility of fertility and employment is reduced. Some types of agricultural work, cottage industry, or other informal sector activity could have a positive effect on desired fertility, since the increased household income would allow a family to afford more children (Standing, 1978). Alternatively, if the increased income were used to purchase consumer durables, the demand for children would be reduced. It should be remembered, however, that past work experience as well as the type of employment available to women will determine their motivation to work, and hence the extent to which fertility will deter economic activity. If work and childbearing are made completely incompatible, women will be discouraged from considering nondomestic roles and families will invest resources in training and education of male children.

In contrast, the opportunity costs of economic activity are relatively high for women trained for "career-type" jobs before marriage or before childbearing. In this situation, a negative effect on fertility is particularly likely. However, if employment is desired for its intrinsic value as well as for its income, regardless of the type of work, the opportunity cost of inactivity will be greater than if the work is desired solely for income. In addition, some sociologists have argued that prior work experience or
experience produce a more egalitarian relationship between husbands and wives, which should be related to more effective contraceptive use and lower fertility. However, the empirical evidence on this relationship is contradictory (Hass, 1971).

If there is a large differential between male and female opportunity wages, a household division of labor with continuing female involvement in domestic activities is encouraged, which would promote higher fertility (and possibly son preference). However, a rise in the female opportunity wage, perhaps resulting from increased educational attainment of women or additional demand for female labor, implies an increase in foregone income, and the opportunity cost of economic activity would rise, encouraging lower fertility desires (Standing, 1978). In highly developed societies, on the other hand, the male-female wage differential is reduced. A decline in the male opportunity wage and hence perceived social mobility of the family also implies an increase in foregone female income. A rise in the opportunity cost of economic activity would induce additional female employment (Oppenheimer, 1977).

The effect of fertility on employment. Reversing the direction of the relationship, Standing (1978) argues that the degree to which fertility acts as an effective constraint on women's economic participation depends on three factors.

First, societies with high fertility or large family size norms tend to exclude women from career opportunities and access to higher education and training, given sex role expectations that women are essentially childbearers and only secondary workers with less commitment to employment. Discrimination in training and employer preference for male workers will constrict the
variety of opportunities available to women and promote a large differential 
between male and female opportunity wages.

Second, high fertility will depress outside female economic activity 
where child labor can be used as a substitute, as in rural areas and urban 
areas of low-income countries. The substitution can be eased by the increased 
availability of female children to care for younger children, freeing male 
children for labor force participation. The abolishment of child labor, 
perhaps through compulsory education requirements, is likely to increase the 
use of female labor as a substitute for child labor, improving the competi­
tive position of women in the labor market. Restrictions on or abolishment of 
child labor should reduce the economic value of children, depress marital 
fertility, and raise the age at marriage and childbearing (further encouraging 
lower fertility), by improving the competitive position of adult single women 
in the labor market.

Finally, controlling for the influence of household income, fertility 
is expected to be an inverse function of the opportunity cost of child care 
time. The child care constraint on female economic activity depends upon the 
availability, cost, and quality of alternative forms of child care: the 
extent of reliance on the extended family, the availability and price of 
domestic servants, and the availability and cost of institutional child care, 
in particular the cost relative to the woman's opportunity income.

The major determinant of the supply of low-wage domestic labor in most 
low-income countries is the female opportunity income in agriculture. Where 
this is low, rural-urban migration of single women and women who are heads of 
household insures a steady supply of domestic servants willing to work at
extremely low wages. In these circumstances, the opportunity cost of economic activity for most educated women with children will be low, as long as the cost of child care is less than the income derived from economic activity. Therefore, high fertility might not be incompatible with employment of well-educated women, capable of earning high incomes: the relative cost of domestic substitutes would comprise only a small proportion of their total household income. Counterbalancing this effect, any interruption of employment for childbearing would result in lower current income foregone and a reduction in lifetime income, which would encourage lower fertility (Standing, 1978).

The extent to which the presence of children acts as a constraint on employment also depends upon the time-intensity and quality of child care required and the investment of the family in quality children. Thus women with higher education may allocate more time to child care than women with relatively little education, even though the opportunity costs of economic inactivity are much higher for the more educated. Withdrawal from economic activity can be perceived as raising the quality of children (Standing, 1978). Alternatively, if high quality child care facilities are available (e.g., nursery schools), the use of such substitutes may also produce a high quality child and hence encourage earlier return to work, reducing the constraint between employment and fertility. Quality children would have to be balanced against the potential cost of withdrawal from the labor force, in terms of currently foregone income, and a reduction in lifetime income and career advancement.

Elaboration of the Standing Model

As noted in Figure 1, the Standing model attempts to associate structural
variables (the labor market structure), psychological variables (intrinsic work motivation), and fertility variables (birth control knowledge, desired fertility, and actual fertility). However, no explicit reference is made to the family as the unit of analysis and economic unit, responsible for the production of the supply of labor and the consumption of goods and services. Within the schema, children are perceived as economic liabilities, and the opportunity costs of the mother's time devoted to childbearing vs. employment are the major factors considered in female labor force participation. The potential contribution of other family members to status maintenance and enhancement is not incorporated within the schema. Although the quality of children and availability of substitute domestic labor are represented in the links from labor market structure and education to the opportunity cost of inactivity, no specific variables relating to the cost and quality of other child care substitutes appear in the Standing schema. Finally, no reference is made to the cultural context which shaped normative female sex-role expectations and intrinsic work motivation of women.

In an attempt to broaden the model to include micro- and macro-perspectives, I have developed an alternative model. In addition to incorporating the salient features of the Standing model, this adaptation attempts to delineate the determinants of female labor force participation, before and after marriage, on a cross-cultural basis. The model, appearing in Figure 2, assumes that the family is the basic unit of analysis. Specific reference is made to economic participation of other household members as alternatives to maternal employment and considerations in the opportunity costs of economic activity. Moreover, the stage of the family life cycle is included as a
determinant of the opportunity costs of economic inactivity. Third, the model includes structural variables (male and female labor market structures, female employment opportunities, and male-female wage differentials, structure of the child care system); temporal demographic and economic factors; the cultural context determining sex role orientations; and additional psychological variables (work commitment, perceived costs and benefits of children, aspirations for children, and preferences for alternative goods). Finally, the interrelationship of fertility and female labor force participation is more specifically defined through reference to a variety of demographic variables which are associated with each (female education; age at union; and knowledge, perceived availability, and acceptability of fertility-regulation). The latter three variables are in part determined by family planning program efforts.

Female labor market structure. Within the revised theoretical model, the variable female labor market structure encompasses a variety of characteristics: occupational segregation of women; employer preferences for women or particular marital status or age groups; opportunities for advancement within the female labor structure; and the cyclical elasticity of female employment. It is hypothesized that changes in the female labor market structure are heavily dependent upon the male labor market structure, both of which can be influenced by temporal economic trends, demographic factors, and locale. Economic trends reflect inflation, recession or expansion in the economy, the unemployment rate, effects of government policies and specific interventions, etc. Demographic trends refer to changes in the size of the economically dependent and independent population due to changing patterns of fertility,
mortality, or migration. As noted in the diagram, the structure of the female labor market is also related to the level and content of female education within the society and rural-urban residence (work locale).

Structure of the child care system. The variable, structure of the child care system, refers to the availability, cost, and acceptability (quality) of institutional child care (pre-school centers, educational institutions), as well as informal market substitutes (domestic servants, salaried sitters) and informal nonmarket substitutes (relatives, other children, self-care). On the household level, an assessment is made of the wife's potential earnings minus the substitution costs of the wife's domestic household services. Substitution costs depend upon the necessity for child care (which is determined by the life cycle stage of the family—the number and age of the children for whom care is required), the availability of child care and the cost. It is hypothesized that the wife's net relative contribution to family income classified by husband's income or classified by family income minus the wife's income, will be the major economic determinant of maternal labor force participation in societies or areas in which wage or salary remuneration predominate. Child care substitution costs may be a minor consideration in societies in which low-cost institutional care is available through educational institutions or informal nonmarket substitutes, such as other relatives, whose potential earnings are less than that of the wife's.

The perceived costs and benefits of children. Much of the previous research on female employment views employment within a vacuum, linking cumulative fertility to structural characteristics of current occupations,
such as place of employment, hours, and socioeconomic status. In contrast, the orientation assumed in Figure 2 views the family as the basic unit of analysis. The direct and indirect economic and noneconomic contributions of all family members (husbands, wives, and children) must be examined together, since the family responds to changing economic conditions and attempts to maintain or enhance its socioeconomic status within a changing environment.

The perceived costs and benefits of children are partially determined by aspirations for children and tastes and preferences for alternative goods. These aspirations and tastes are shaped by education, urban contact, and mass media exposure (the communications network). When aspirations are high and preferences exist for alternative goods, the perceived economic costs of children are high and fertility desires are lower.

Sex-role orientation and the cultural context. The perceived costs and benefits of children (in terms of economic contribution and the child care constraint) are partially determined by female employment opportunities and male-female wage differentials; the woman's sex role orientation and the cultural context defining appropriate roles for women; and the woman's work commitment. The concept of work commitment indicates the extent to which employment provides alternative satisfactions to those gained through childbearing alone. These variables are synonymous to our key variables "family relationships" and "sex roles/female status". Together, these variables determine the alternatives to childbearing which are available to women and the opportunity costs of economic activity.

Given the economic framework of the Standing model, cultural considerations and sex-role attitudes relating to male and female roles are de-empha-
sized. However, their influence in determining the social and psychological costs of economic activity are noteworthy.

Social maintenance and enhancement is determined by the prevailing norms regarding appropriate sex role behavior for husbands and wives. In societies or subgroups characterized by familism or patriarchal authority, an assessment will be made regarding whether maternal employment would threaten the social status of the family, maintain it, or enhance it. The structure of female employment opportunities available to women and the male-female wage differentials in part determine the impact of wife's employment on the social status of the family. However, the social implications of female employment are an additional constraint on female employment within societies characterized by familism or patriarchy.

Female employment will be normatively supported within groups in which employment would be expected to maintain or enhance the overall status of the family (Oppenheimer, 1977). If outside employment would threaten the social status of the family (and violate norms that the husband is the major provider and determiner of status), employment within the home (which is less visible) or part-time employment might be the preferred response. Alternately, other responses (geographical mobility, additional employment assumed by the husband, employment of other family members, or an increase or a reduction in fertility, depending on the perceived economic value of children) might be the preferred response to maintain or enhance the status of the family. Or, aspirations themselves may change.

As female employment rates increase within a society, however, it is expected that changes in behavior will induce changes in attitudes, and that
The net economic contribution of the wife and her individual work commitment will assume greater importance in determining decisions regarding work than will social considerations.

The relative influence of husbands and wives in determining female labor force participation must also be considered within the cultural context and sex-role orientation variable. Husbands and wives differ in their attitudes toward female employment. A 1977 survey of Mexican middle- and lower-class couples showed significant sex differentials on approved roles for women. Only about one-third of the men, in comparison to 60 percent of the women, approved of women working outside the home. Attitudes restricting the role of women to sexual partner, housewife, and mother were especially common among men at lower socioeconomic levels and those in semi-rural and rural areas (PROFAM-PIACT de Mexico, 1979). A study of Mexican-Americans indicates that husbands and wives also differ in their perceptions of the potential wages to be gained by female employment. Husbands perceive such wages (and hence foregone income) as lower than do their wives (Cochrane & Bean, 1976).

In patriarchal societies, husbands typically have greater authority in determining their wives' employment (Elu de Leñero). Therefore, male attitudes regarding appropriate female sex roles and male perceptions of the social, economic, and psychological opportunity costs of economic activity would no doubt have greater weight than the perceptions of their wives. Social support for employment from family members as well as wider normative support have been reported as the major determinants of work commitment in Hong Kong, Singapore, and the Peoples Republic of China as well (Salaff & Wong, 1977).
It should not be assumed, however, that women who do work necessarily approve of employment. Hass (1971) noted that disapproval of outside employment was more prevalent among less-educated women workers with high fertility. Their employment was motivated by the need for income rather than any intrinsic work satisfaction or work commitment.

**Proximate determinants of opportunity costs of activity and inactivity.** Together, age at union, knowledge, availability and acceptability of fertility regulation, and perceived costs and benefits of childbearing determine fertility. The stage of the family life cycle (number and age of children) will be the major determinant of the perceived opportunity costs of economic inactivity. The trade-off between work commitment and the child care constraint will be the major determinant of the perceived opportunity costs of economic activity. Final consideration of the economic, social, and psychological opportunity costs of activity vs. inactivity will determine female labor force participation. Female labor force participation should be causally related to fertility when both work commitment and the child care constraint are strong.

**Data Sets**

I know of no data sets from developing nations which adequately address all the issues raised in this paper. An integration of macro- and micro-data, similar to Oppenheimer's investigation of female employment in the U.S., is obviously required. Although subject to undercounting, census data are needed to assess the structure of female employment opportunities. Results of cross-sectional surveys may offer in-depth analyses of the determinants of female
employment and fertility. Examination of data in nations which are currently undergoing changes in the female employment structure would be especially useful in discriminating the factors encouraging employment and possible interrelationships with fertility behavior.

In this connection, I am currently involved in research on the determinants of female labor force participation in Cuba during the post-Revolutionary period, 1959-1979. The Cuban situation is instructive in that concerted but non-coercive efforts have been undertaken by the government to incorporate women into the labor force through specific policies changing the variables in Figure 2. A paper on this topic, incorporating both census and survey data, will be presented at the PAA meeting in Denver.

Three additional countries worth investigating are Chile, Thailand, and Puerto Rico. For Chile, a number of good macro- and micro-data sets are available, including analysis of 1960 Chilean census data (DaVanzo, 1972; Elizaga, 1974) and micro-data from a 1965 Chilean survey (Peek, 1975a, 1975b, 1976). Similarly, a number of Thai data sets are available (Cook & Leoprapai, 1977; Goldstein, 1972), although they differ greatly in time period. Time-series data on Puerto Rico are also abundant (Jaffe & Azumi, 1960; Nerlove & Shultz, 1970; Weller, 1967, 1968; and Weller & Sakoda, 1970). Ordinary least squares regression and simultaneous equation models seem the most appropriate techniques of analysis.
Figure 1.

Hypothetical schema of the behavioural relationship between fertility and female labour force participation.

Figure 2. Revised Model of the Relationship between Fertility and Female Labor Force Participation (Hollerbach)
Although the research reported relates primarily to low-income countries, a number of cross-cultural analyses are included which compare data in developed and developing nations.

In labor force statistics, the distinctions between employed and unemployed, on one hand, and employed and underemployed, on the other, are ambiguous. This situation is attributable to the integration of household and economic activities in the subsistence farming sector of the economy and the loose configuration of the labor market. In contrast, within the commercialized sectors of agriculture and the industrial urban setting, unpaid family labor diminishes, and employment for wages and salaries predominates. The labor force becomes more definitive, and hence labor force concepts assume greater comparability and standardization and, therefore, greater precision (United Nations, 1960).

With regard to female employment, labor statistics and census categories in developing nations usually underreport women's participation in production. Home production activities, activities in the informal sector, and part-time and seasonal employment, in all of which women are heavily overrepresented, are often not recorded in labor statistics. Second, the cultural bias of married respondents against reporting work, as well as that of census interviewers to record or probe on employment, encourages the misclassification of married women with some economic activity as "housewives" and therefore economically inactive (Youssef & Buvinic, 1979). Finally, the category of "unpaid family worker" is deleted in a number of national censuses, resulting in serious underreporting of women's participation in non-salaried agriculture (López de Rodríguez & Leon de Leal, 1977).

In a review of income-generating projects for women in the Muslim world, Dixon (1978) suggests that employment for women, although useful for other reasons, may have little impact on fertility unless combined with other changes and supporting services. She recommends that efforts be concentrated on young, preferably unmarried women, and that employment opportunities be located away from traditional home and agricultural settings and in work places located in villages or small towns. Producer cooperatives owned and operated by women are recommended. In addition, employment should co-exist with supporting services such as job training and functional literacy classes, family planning, health and child care facilities; and in some instances, it may be important to provide living quarters for female workers and incentives to encourage delayed marriage and use of family planning.
Taking Latin America as an example, statistics analyzed by CEPAL-UNICEF as part of their project on stratification and social mobility in Latin America indicate substantially little change between 1960 and 1970 in the proportion of the female labor force employed in the lowest-level service sector activities, predominantly domestic and other personal services. These activities occupied one-quarter to one-third of the economically active female population in Argentina, Chile, Guatemala, Costa Rica, and Panama, and 15 percent in Mexico. While there has been improvement in the proportion of women employed in higher-level positions as professionals, technicians, and sales personnel, it is the sustained ability of the service sector to absorb female workers which is the most noteworthy characteristic of the female employment picture (Hollerbach, 1979).
REFERENCES


