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FEMALE EMPLOYMENT AND FERTILITY IN PENINSULAR MALAYSIA:  
THE MATERNAL ROLE INCOMPATIBILITY HYPOTHESIS RECONSIDERED\*

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This paper is concerned with the relationship between wives' gainful employment<sup>1</sup> and fertility in Peninsular Malaysia. As has been known for some time, the manner in which female employment and fertility are related varies across and within countries (Mason, et al., 1971; Piepmeier and Adkins, 1973; Standing, 1978:Ch. 7). Typically, in the industrial nations and the industrial sectors of some developing nations, the amount a wife works is inversely related to the number of children she bears. In the rural Third World, however, her work is often unrelated to her fertility or is positively related to it. Exceptions to this pattern occur, however, which is one reason to study the employment-fertility relationship further. Other reasons to study this relationship further, especially with regard to Malaysia, are the relative paucity of information on this topic for Malaysia, and the potential impact that a clearer understanding of the relationship may have for Malaysian population policy. Malaysia has experienced a significant fertility decline since the end of the 1950s but still has a relatively high birth rate (Cho, et al., 1968; Cho and Retherford, 1974; Palmore, et al., 1975; Hirschman, 1980). The age at which most women marry, moreover, is now high enough to make further increases in marriage age and the declines in fertility traditionally associated with them unlikely (Cho and Retherford, 1975). These conditions have led the Malaysian government to establish a national family planning program in the hopes of lowering population growth (Nortman and Hofstatter, 1978:24). Malaysian policy makers and planners are thus likely to be interested in the extent to which changes in women's employment activities might or might not affect fertility levels. In this paper, we hope to shed light on this question.<sup>2</sup>

Aside from benefitting Malaysia, study of the employment-fertility relationship in Malaysia is also likely to prove useful for testing general ideas about the causes of variation in this relationship. There are three reasons why Malaysia currently provides a desirable case for study of the employment-fertility relationship. First, the activity rate of Malaysian women, including wives, is relatively high (Hawley, et al., 1974). This means that in contrasting gainfully employed wives with other wives, we are able to compare broad segments of the female population rather than atypical minorities or elites. Second, Malaysia is a multiethnic society and has experienced rapid but unevenly distributed economic development since the end of World War II (Shaplen, 1977). In consequence, it today displays considerable internal variation in the conditions that are likely to affect the relationship between women's work and fertility. Thus, genuine comparative analysis focusing on the conditions that promote a negative employment-fertility relationship is not only possible in Malaysia, but is likely to prove instructive. The final reason Malaysia currently provides a propitious case for further study of the employment-fertility relationship is the availability of an unusually rich data set collected by the Malaysian government in association with the World Fertility Survey. This data set, consisting of the 1974 Malaysian Fertility and Family Survey (MFFS) and a linked community-level survey, provides the empirical base for the analysis presented in this paper.

In the remainder of the paper, we first give a brief overview of Peninsular Malaysia, and then discuss the theory underlying our analysis. Next, after describing our data, models and measures, we present the results of the analysis. The paper ends with suggestions for revising prevailing

ideas about women's work and fertility, and briefly discusses implications for Malaysian population policy.

### Peninsular Malaysia

Located south of Thailand and across the Straights of Malacca from Indonesia, Peninsular Malaysia is the main portion of a nation formed in 1963 after many centuries of colonial control, most recently under the British (Vreeland, et al., 1977). Malaysia's population reflects several historical waves of in-migration, the first consisting of Malays arriving from Indonesia and the Philippines more than four centuries ago, and the later waves--primarily occurring between 1850 and 1930--consisting of Chinese and Indians who were brought by the British largely to staff, respectively, the peninsula's tin mines and rubber estates. Malaysia's economy historically has been dominated by the primary sector and remains so dominated today; a substantial portion of output, however, is oriented towards world export markets. In addition to tin mining and rubber tapping, the export economy rests on the production of palm oil and subsidiary products such as copra; the subsistence economy rests primarily on paddy (rice) farming and fishing. Malaysia is virtually self-sufficient in food production and enjoys one of the highest income levels in Southeast Asia. Income, however, is unevenly distributed among the three ethnic communities that together constitute the vast bulk of the peninsula's population.

These three groups--the Malays, Chinese and Indians--are distinct culturally, linguistically and religiously, and also occupy separate niches in the nation's economy and political system (Hirschman, 1975). The Malays, who are Muslims and who constituted approximately 53 percent of the

peninsula's population in 1970 (Chander, et al., 1977), form the peasant core of the population. Typically, Malays are villagers who support themselves through small-scale paddy farming (Kuchiba, et al., 1979), rubber tapping (Wilson, 1967) or fishing (Raymond Firth, 1966); very few work as wage laborers in the mines or on the estates, and relatively few are engaged in commerce or trade (Ariès, 1971). Associated with the occupational position of Malays are relatively low levels of formal schooling and low incomes. Malays, however, control the country politically, both through the traditional sultanates that retain certain powers at the state level, and through control of the majority coalition in the democratically-elected parliament. Indeed, under the present Malaysian constitution, Malays enjoy a number of privileges as "sons of the soil" that are denied to Chinese and Indian citizens of Malaysia (Vreeland, et al., 1977).

The Chinese, who in 1970 were approximately 35 percent of the peninsula's population (Chander, et al., 1977) and hence its largest minority group, contrast with the Malays in a number of respects. They are predominantly urban, are concentrated in commerce and trade rather than subsistence agriculture, have relatively high levels of schooling and unusually high levels of income (Ariès, 1971), and espouse an achievement- and group-oriented system of values that is said by most observers to contrast sharply with the traditional Malay emphasis on harmonious living and individualism (Wilson, 1967; Raybeck, 1974; Swift, 1965). Conflict between the politically dominant Malays and the economically advantaged Chinese has been endemic in Malaysia since the Second World War and continues to play an important though muted role in the society. Conflict between Malays and the predominantly Hindu Indians is much less important, partly because the Indians

are a relatively small group (approximately 11 percent of the peninsula's population in 1970) and also because they are less often perceived to support communist guerrillas than are the Chinese. Rural and urban Indians in Malaysia are economically distinct, even if religiously and linguistically similar (aside from sharing Hinduism, most Indians in Malaysia speak Tamil). A majority of rural Indians work on the rubber estates--they originally migrated to Malaysia to do so--and in consequence tend to be poor and poorly educated. In contrast, urban Indians, many of whom are the descendents of Chettiar merchants or of clerks and professionals brought to Malaysia by the British, tend to work in commercial, white collar and professional occupations; they consequently tend to be well educated and to have high levels of income (Arasaratnam, 1970; Sandhu, 1969; Netto, 1961). These differences among Malays, Chinese and Indians, both urban and rural, are basic to Malaysia's social fabric and have important implications for women's work and fertility. For this reason, our analysis is performed separately for the three ethnic communities, and where sensible, separately for urban and rural residents as well.

#### Theoretical Background

The predominant explanation for variation in the relationship between female employment and fertility found in the demographic literature is the so-called maternal role incompatibility hypothesis (Jaffe and Azumi, 1960; Stycos and Weller, 1967; Weller, 1968). Stated briefly, this hypothesis posits that inverse relationships between women's work and fertility occur only when the roles of worker and mother conflict, this being a situation in which women are forced to make trade-offs between their long-term

participation in productive employment and the number of children they bear. In this section of the paper, we first describe this hypothesis further and then suggest some problems associated with past tests of it.

In most specifications of the role incompatibility hypothesis, two institutions are said to determine the level of conflict between working and mothering. These are, first, the organization of production, and second, the organization of childcare, in particular, the availability to women of inexpensive and reliable parental surrogates. Inverse employment-fertility relationships are found in industrial settings, it is argued, first because the industrial organization of production removes work from the home and organizes labor in terms of efficiency rather than compatibility with childcare. This means that to contribute to family income, most women in industrialized societies must sell their labor to nonkin employers who require that they work in a factory, office or store where children are unwelcome and do so on a relatively inflexible schedule (Jaffe and Azumi, 1960; Stycos and Weller, 1967; Weller, 1968 and 1969; Kasarda, 1971; Goldstein, 1972; Hass, 1972). Thus, most industrial workers cannot be close to their children while working and cannot remove themselves from the work place at short notice.

The organization of production in the rural Third World, on the other hand, remains largely kin- and household-based. Here, women typically work on the family's farm or in a family-run business, grow or make goods at home for sale elsewhere, or do occasional work as domestic servants, laborers, spice grinders, seamstresses, etc. Because of this, rural Third World women tend to enjoy closer proximity to their children while they work and greater flexibility of scheduling than their industrial counterparts do. This

difference is one factor said to underlie the relative infrequency of inverse employment-fertility relationships in the Third World.

The other factor is the greater availability in the Third World than in most industrial countries of parental surrogates (primarily servants and nonnuclear kin), especially in women's own households. Because Third World women, whether poor or rich, often have a female relative or servant living with them, they tend to enjoy inexpensive, reliable babysitting help to a much greater extent than do women in industrial settings. Thus, regardless of whether their work combines easily with caring for children, these women can work without having to reduce their fertility and can bear children without having to curtail their productive activities (Safilios-Rothschild, 1977). Indeed, in some Third World settings, conflicts between working and caring for children are not only minimal, but fertility itself may be an important incentive for wives' gainful employment. This, at least, is one explanation for the positive employment-fertility relationships observed in a number of developing countries (Peek, 1975).

That both the type of work available to women and the composition of households would affect the degree to which working and childcare conflict--and hence the statistical nature of the employment-fertility relationship--makes a good deal of sense. Type of work and composition of households, however, are not the only factors that might affect role compatibility, nor is role compatibility the only possible explanation for the employment-fertility relationship. Role incompatibility, for example, may be influenced by a society's educational institutions as well as by its predominant forms of production and household structure. Where formal schooling is widely available and is important for individual welfare, parents are likely to

keep children in school rather than at home helping to care for their younger siblings; mothers may also spend more time actively caring for infants and toddlers out of the belief that their inputs are critical for the child's cognitive development and hence success in school and in later life. In this way, then, the development of the formal educational system in an agrarian society is likely to create conflicts between maternal employment and childcare where they did not formerly exist.<sup>3</sup>

In addition, inverse employment-fertility relationships may exist in some settings not so much because of conflicts between working and mothering as because of the general structure of opportunities for upward social and economic mobility. For example, in a traditional agrarian setting where income is generated by a family-run enterprise, both high fertility and a high level of economic activity on the part of the wife may be seen as enhancing the family's position because both effectively increase the family's labor force. In contrast, in a modernized setting where the establishment of children in professional or bureaucratic careers is the primary avenue to economic and social success, families may continue to regard a high level of economic activity on the part of the wife as contributing to success because of the benefits her earnings can bring, but they no longer are likely to regard high fertility in this way. In the language of economists, they are likely to substitute "child quality" for "child quantity" (DeTray, 1973). Thus, in modern settings, variation across families in mobility aspirations may give rise to an inverse relationship between wives' work and fertility, whereas in the traditional settings, these aspirations seem more likely to give rise to a nonnegative relationship. The important point, however, is that in neither of these examples

is the sheer ease or difficulty of working while caring for children the primary factor that produces a particular kind of employment-fertility relationship.

Regardless of whether either education or the structure of economic opportunities in fact accounts for variation in the employment-fertility relationship, that they might do so requires empirical tests of the role incompatibility hypothesis to measure the supposed determinants of role incompatibility precisely enough for empirical results to have unambiguous implications for the hypothesis. Unfortunately, most past investigations have been unable to measure either the organization of work or the structure of households directly and have consequently produced ambiguous results. Probably the most common way in which role incompatibility has been measured is through use of an urban-rural dichotomy, the presumption being that conflicts between working and mothering are greater in urban areas than in most rural ones (Bindary, et al., 1973; Concepción, 1974; Goldstein, 1972; Jaffe and Azumi, 1960; Miro and Mertens, 1968; Speare, et al., 1973; Stycos and Weller, 1967). Although this assumption seems reasonable, residence may be associated with educational institutions and with mobility opportunities as much as it is associated with women's occupations or with household composition. Thus, even when these studies find inverse employment-fertility relationships among urban women--and they often do not (e.g., Hass, 1972; Stycos and Weller, 1967)--the implications for the role incompatibility hypothesis are unclear.

A number of studies (Gendell, et al., 1970; Hass, 1972; Jaffe and Azumi, 1960; Kasarda, 1971) have also used women's occupations or location of work (at home vs. away) to measure role incompatibility, a procedure

that obviously taps the work organization factor far more precisely than does residence, although ignoring the availability of parental surrogates entirely. These studies also, however, have left less than entirely clear the extent to which work organization explains the employment-fertility relationship. Even when the results have seemed consistent with the role incompatibility hypothesis, the categorization of women's occupations has usually been so crude--and control variables so limited--that underlying socioeconomic factors rather than an occupation's compatibility with childcare may be what produces the observed variation in fertility (an exception is Smith, 1977). Moreover, not all studies using occupation to index role incompatibility have found the interoccupational pattern of childbearing the role incompatibility hypothesis predicts, something that may reflect a failure to incorporate information on household structure into the analysis (Peek, 1975), a misunderstanding of which occupations in fact are most compatible with childcare (Gendell, et al., 1970; DaVanzo and Lee, 1978), or the simple irrelevance of work organization to the employment-fertility relationship. The results of these studies have thus often been as ambiguous as those from studies using the urban-rural distinction to measure role incompatibility

Thus, to understand whether work organization or household composition affects the employment-fertility relationship requires fuller and more precise measurement of these variables than most past analyses have been able to use. Although the present study is unable to measure all possible determinants of the employment-fertility relationship directly, it offers the advantage of considering several relatively specific measures of women's employment opportunities and the availability of babysitting help in their households. The data we use contain the usual information on residence and

women's current occupations. In addition, they also include attitude items directly tapping women's perceptions of role incompatibility, an unusual feature that permits a straightforward test of the role incompatibility hypothesis. As we explain below, this information turns out to be somewhat problematic; nevertheless, its inclusion in our data constitutes one of their advantages.

The Malaysian data are also unusual and desirable in providing a complete roster of all household residents, with information on their age, sex and marital status. This information permits direct measurement of household composition. Furthermore, because of detailed information on husbands' occupations and employment, and via the community-level survey, on the economic makeup of communities, the Malaysian data permit us to measure women's employment opportunities, not just their current occupations. Specifically, we can learn whether they have opportunities to work in occupations that are likely to conflict with childcare.<sup>4</sup> This information is important insofar as the role incompatibility hypothesis--and our analysis--concerns long-term patterns of employment and childbearing, not just the short-term ones captured by a comparison of women currently employed in distinct occupations. Finally, the Malaysian data also permit us to refine the urban-rural dichotomy, not only by breaking out estates from villages within the rural category--a distinction that is quite important for women's work and fertility in Malaysia--but also by creating a detailed rural-urban continuum on which all women can be arrayed.<sup>5</sup>

To summarize our discussion thus far, we have suggested that the role incompatibility hypothesis is sensible but is by no means the only possible explanation for variation in the employment-fertility relationship. For

this reason, precise measurement of the factors said to determine the employment-fertility relationship is important. Most past studies, however, have used relatively crude measures and have thereby left unclear the extent to which the organization of work and the composition of households influence the employment-fertility relationship. The data we use contain several relatively direct measures of women's employment opportunities and household compositions, along with direct measures of perceived role incompatibility. In the section that follows, we describe these data further and present the models and measures on which our analysis is based.

### Data, Models and Measures

#### Data

The Malaysian Fertility and Family Survey (MFFS) was conducted in late 1974 and early 1975 by the Malaysian Department of Statistics with the support of the World Fertility Survey. Based on a peninsula-wide probability sample of approximately 6,400 ever-married women under the age of 50, the MFFS probed respondents primarily about reproductive matters, but collected additional information on residential background, work history, the husband's socioeconomic characteristics and certain attitudes (Chander, et al., 1977). Each interview was also preceded by a household screening in which information on all household members was collected. In addition, concurrent with the MFFS a community-level survey that was intended to cover all kampongs (villages) containing one or more MFFS respondents was conducted. In this survey, information about the kampong's social, economic and population characteristics was supplied by an informant, typically the village headman or some other official. Estates, towns and cities were excluded from this

survey, something that forces us to impute values to MFFS respondents who reside in such units when constructing measures from the community-level data (see the appendix). As was noted earlier, we perform all analyses separately for Malays, for Chinese and for other women (almost all of whom are Indians); the respective number of cases in these groups is approximately 3,600, 2,100 and 625. In many instances, we further subdivide these groups according to rural vs. urban residence. The former category includes estates and kampongs while the latter includes towns and cities. Relatively few urban women reside in towns--most are city dwellers--and among Malays and Chinese, very few rural women reside on estates. Almost 60 percent of the rural Indian respondents, however, are estate dwellers.

### Models

The conceptual model underlying our analysis is concerned with the long-term, per-unit-of-time relationship between women's work and fertility; in other words, with how the total supply of time devoted to productive or remunerative labor over a post-married life span of some given length is related to the total number of children born in that period. Obviously, data from a cross-sectional survey of ever-married women under the age of 50 fail to provide information on either life-time labor supply or, for most women, on completed fertility. Moreover, the women in such a sample do not have equal exposure times to events such as working or bearing children. Hence, it is important to adjust our data statistically in such a way as to approximate the variables of interest.

The method we have chosen to use is to estimate single equation regression models in which the relationship between (i) total amount of time

worked since first marrying and (ii) total number of children born is statistically adjusted both for marital exposure time (i.e., the number of years spent in the married state) and total exposure time (i.e., age). In effect, this approach produces a weighted average of the relationship between cumulative work experience and cumulative fertility over groups of women differing in age and marriage duration. While this is not necessarily the same as the relationship between life-time labor supply and completed fertility in any given marriage cohort, it is time adjusted and hence more readily interpreted in terms of the conceptual model than an unadjusted relationship would be. Indeed, as we shall see below, exposure time has such a strong effect on both fertility and women's employment experience that the unadjusted relationship between work and childbearing is in most groups radically different from the time-adjusted one.

In our models, we have chosen to make fertility the dependent variable and women's employment experience the independent variable, a decision that reflects our primary interest in fertility. Unfortunately, because our measures of women's employment and fertility cover an identical time span, causal interpretation of the results is difficult. It should be kept in mind then, that even though we would like to know whether women's employment actually influences their fertility behavior, our analysis is generally only able to ascertain the statistical interrelation of these two variables, not their causal relationship.

The basic idea of the role incompatibility hypothesis is that the sign of the employment-fertility relationship varies with the degree of incompatibility between the worker and mother roles. This idea is appropriately tested by an analysis of covariance model, a fact to which past

analyses have been insensitive.<sup>6</sup> In other words, if we measure the degree of role incompatibility by a single variable--perhaps a composite constructed from several other variables--then we wish to estimate models of the following form:

$$F = \beta_0 + \beta_1 W + \beta_2 R + \beta_3 (W \cdot R) + \sum_{i=1}^m \gamma_j X_i + \epsilon , \quad (i)$$

where F is fertility, W is the wife's employment experience, R is the degree of role incompatibility, W·R is the multiplicative interaction of employment experience and role incompatibility,  $X_i$  is a vector of control variables, including age and marriage duration, and the remaining terms are the structural parameters of the model, including a stochastic disturbance,  $\epsilon$ . In this model, we are especially interested in the relationship of W to F which, as the partial derivative of F with respect to W makes clear, varies with the level of R:

$$\frac{\partial F}{\partial W} = \hat{\beta}_1 + \hat{\beta}_3 R .$$

Assuming we have measured R so that high values represent high degrees of role incompatibility and low values, low degrees, the basic expectation of the role incompatibility hypothesis is:

$$\hat{\beta}_1 + \hat{\beta}_3 (\max R) < 0 ,$$

and

$$\hat{\beta}_1 + \hat{\beta}_3 (\min R) \geq 0 .$$

In other words, we expect the implied slope relating work to fertility to be negative at high levels of role incompatibility, but positive or zero at low incompatibility levels. Most of the role incompatibility measures we use are dichotomies, and in this case, the sum of  $\hat{\beta}_1$  and  $\hat{\beta}_3$  gives the estimated work-fertility relationship within the "high" role incompatibility group while  $\hat{\beta}_1$  alone gives the estimated relationship in the "low" group, i.e., the interaction slope estimates the difference in the work-fertility relationship between the high and low incompatibility groups (Goldberger, 1964:218-227). We use this result in presenting our estimates. Instead of showing the original additive and interaction coefficients,  $\hat{\beta}_1$  and  $\hat{\beta}_3$ , our tables show the within-incompatibility-group slopes these coefficients imply.

Although model (i) seems the most straight-forward way in which to test the role incompatibility hypothesis, it becomes problematic when the measure of role incompatibility is based on women's occupational or employment characteristics; these characteristics obviously are undefined for women without employment experience. In addition, when using occupation to index role incompatibility conditions, most past analyses have failed to use models of form (i); instead, they have implicitly used additive models in which fertility is compared across occupational and employment categories. In our own analysis, then, we have chosen to consider this type of additive model as well, both because it allows us to handle occupational variables more easily than does model (i) and also because it more closely parallels past analyses. Specifically, we estimate models of the following form:

$$F = \alpha + \beta E + \sum_{i=1}^{n-1} \gamma_i' O_i + \sum_{j=1}^{p-1} \delta_j L_j + \sum_{k=1}^{s-1} \lambda_k C_k + \sum_{m=1}^t \mu_m X_m + \epsilon' \quad , \quad (ii)$$

where  $F$  is again fertility,  $E$  is a zero-one "dummy" variable measuring whether the respondent has ever worked since first marrying, the  $O_i$  form a dummy variable classification of ever-employed women's occupations, the  $L_j$  form a dummy variable classification of ever-employed women's usual location of work (home vs. away), the  $C_k$  form a classification of ever-employed women's employment class (employee, employer, self-employed or family worker), the  $X_m$  are again a vector of control variables and the remaining terms are the structural coefficients, including a disturbance term,  $\epsilon'$ . This model allows us to make two comparisons, one between women who have never worked and those who have, and another between those working in compatible vs. incompatible occupations or locations. Our expectation here is that the "incompatible" workers will have fewer children than either the "compatible" workers or the nonworkers, while the compatible workers will have at least as many children as the nonworkers have.

### Measures

Throughout most of the analysis we use two dependent variables, the number of children ever born to the respondent and the number she eventually expects to have (the appendix gives a more precise description of these variables and others).<sup>7</sup> The latter is of unknown validity and reliability as an indicator of completed fertility (one of its obvious shortcomings is that it fails to incorporate the husband's fertility goals); we use it, however, in an attempt to compensate for the truncation effects caused by the cross-sectional design of the survey. In one part of the analysis where we study women married for five years or less, we drop children ever born and instead examine women's personal family size ideals.

In all estimates of model (i), the independent variable is the number of years worked by the respondent since first marrying. This variable was reported by the respondent about half way through the employment history section of the interview. At the start of that section, respondents were read the following definitional statement:

As you know, many women work--aside from their own housework, some take up jobs for which they are paid in cash or in kind, others may run a shop or small business, or work on the family farm.

Women were then asked if they had worked before marrying, and if so, the type of work they had performed, its location, etc. They then were asked if they had worked since first marrying, and if they responded yes, they were next asked: "About how many years in all have you worked since you were first married?" The responses to this question constitute our independent variable.

Although this is the best measure of women's post-marital employment experience available in the MFPS, it has two obvious shortcomings. The first is its failure to measure the amount worked within any given year. This means that if intra-annual, but not inter-annual, variation in women's work is inversely correlated with their fertility, our analysis will fail to detect the inverse correlation. The second shortcoming involves the reliance upon women's subjective assessments of whether their activities indeed constitute "work," something that is likely to result in unevenly distributed random measurement error. Especially problematic is the likelihood that women employed in the traditional (nonwage) economic sector will find the work-housework distinction ambiguous and hence will report their employment experience with more error than will women who have worked

in the wage sector. Because error attenuates correlation, this will result in weaker work-fertility correlations among traditionally employed women than among wage workers, precisely the pattern the role incompatibility hypothesis predicts. Thus, the manner in which employment experience is measured in the MFFS is not only crude, but is also capable of producing results misleading consistent with our hypothesis. Unfortunately, there is no way in which we can ascertain the presence or seriousness of measurement errors, except perhaps by finding results clearly at odds with the role incompatibility hypothesis.

The remaining variables in our analysis are the role incompatibility measures. Described in more detail in the appendix, these measures can be grouped into five categories: (1) attitudinal measures, (2) alternative measures of household composition, all of them dichotomies assessing the presence of particular kinds of women or girls in the household, (3) employment opportunity measures based on the husband's occupation and employment, (4) employment opportunity measures based on the community's economic characteristics, and (5) generalized measures of the urban-rural continuum. These variables were initially used one at a time. In some instances, we have also experimented with summary measures based on several of the original variables. The latter, however, do not produce results that differ importantly from the results using single role incompatibility indicators, and we therefore restrict our attention to the results for the single indicators in this paper.

### Results

With one or two exceptions, our estimates of models (i) and (ii) offer little direct confirmation for the role incompatibility hypothesis.

Contrary to expectations, we do not find more negative employment-fertility relationships in all urban groups than in all rural groups, although this pattern is observed among Chinese and Indian women. Nor do we find less negative relationships among women who have adult female relatives in the home than among other women. Likewise, we do not observe less negative relationships among women whose own or whose husband's occupations are traditional or agrarian. Indeed, working at home as an unpaid family worker is, if anything, associated with unusually low fertility, not unusually high fertility. The only pattern that conforms to our initial expectations is a tendency towards less negative employment-fertility relationships in households containing girls 10-15 years of age than in other households. Although this result is consistent with ethnographic reports of childcare in rural Malaysia, it may be partly or wholly an artifact of measurement. Thus, we are left with very few results that provide strong confirmation for the role incompatibility hypothesis. Variation in role incompatibility may explain the results we observe, but if it does, then our ideas about who faces the greatest and least conflicts between working and mothering need to be revised.

Let us begin by examining the basic relationship between women's employment experience and fertility within the six ethnic and residence groups on which our analysis is based. Regression slopes for the six groups are shown in Table 1.<sup>8</sup> The first two lines in each panel of this table make clear the importance of controlling for marriage duration and age in our analysis. Before these controls are introduced, the employment-fertility relationship is strongly positive in all groups except among urban Indians. After the controls are added, however, most of these relationships either

disappear or become negative. Given the dependence of both employment and fertility experience on exposure time, this is not surprising. What is more surprising is the lack of importance controlling for women's education and the family's socioeconomic status has. Introduction of these variables leaves the regression slopes in Table 1 virtually unchanged. Thus, socioeconomic variables play little role in explaining the relationship between women's work and fertility in Malaysia.<sup>9</sup>

[Table 1 about here]

The pattern of results in Table 1 across ethnic and residence groups is also somewhat surprising. Among urban women, only the Indians display an inverse employment-fertility relationship, although the urban Chinese relationship is closer to being inverse than is the one for rural Chinese women. Among rural women, moreover, although both the Chinese and Indians show a nonnegative relationship, the Malays show a negative one, albeit weak. These results seem inconsistent with the role incompatibility hypothesis. If urban living makes caring for children while working relatively difficult, then why is it only the urban Indian women who display an inverse relationship? Likewise, if small-scale farming and other traditional forms of rural employment combine readily with childcare, then why does the group that is most heavily involved in these occupations, the rural Malays, display a weak but robust inverse relationship between the wife's work and fertility?

One answer to the first of these questions may be the presence of many women in the urban Malay and Chinese populations who are unable to effectively control their fertility.<sup>10</sup> As Stycos and Weller (1967) have

argued, inverse employment-fertility relationships are likely to occur only when two conditions are met: when the roles of mother and worker conflict, and when women have enough ability to control their fertility so that child-bearing can be molded to their employment. This argument assumes, of course, that inverse employment-fertility relationships reflect the impact of work on fertility, rather than the impact of fertility on work, an assumption that may be false. Nevertheless, it is worth asking whether the employment-fertility relationship among urban Malay and Chinese women is altered when attention is restricted to only those women who have the ability to control their fertility. If the employment-fertility relationship is negative among these women, then it will not only suggest why the relationship failed to be negative among all women, but will also provide prima facie evidence that urban women's employment causally affects their reproductive patterns. In the last line of each part of Table 1, then, we show the basic employment-fertility relationship reestimated only for women who have used an efficient contraceptive method.<sup>11</sup>

The results here provide little evidence for the idea that ignorance about contraception explains the lack of an employment-fertility relationship in the urban Malay and Chinese groups. Among the urban Malays, the slope for contraceptors is slightly more negative than was the original urban Malay slope, but the contraceptors' slope is weak and statistically insignificant. Moreover, the slope for urban Chinese contraceptors is identical to the slope for all urban Chinese women. Thus, although substantial portions of these groups have never used an efficient form of contraception, there is little evidence that this accounts for the lack of an employment-fertility relationship in these groups.

Furthermore, the results for urban Indian contraceptors suggest that when work is inversely related to childbearing in Malaysia, it is because childbearing affects work, not the reverse. For what happens among urban Indian women when attention is restricted to the experienced contraceptors is that the original, negative employment-fertility relationship almost disappears. In other words, it is among the very women who are most able to control their fertility that the relationship between employment experience and fertility is weakest. This suggests that the original inverse employment-fertility relationship among urban Indian women probably does not reflect the impact of women's work on their fertility. Thus, in Malaysia, not only is an inverse employment-fertility relationship found in only a tiny segment of the population, but even where it is found the predominant causal process accounting for its existence is probably one in which fertility affects women's work, not vice versa.<sup>12</sup> This suggests that any policy designed to lower Malaysian fertility by increasing women's employment is likely to fail unless accompanied by substantial change in Malaysian social and economic institutions.

If ignorance about fertility control does not explain the absence of inverse employment-fertility relationships among urban Malay and Chinese women, then what does? To try to answer this question, we turn to our estimates of model (i) using the role incompatibility indicators outlined earlier. We first consider the three attitudinal items that tap women's perceptions of role incompatibility. The first of these items asks the respondent whether she thinks it is all right for a woman to work away from home if her children are adequately cared for. Thus, this question seemingly taps an extreme form of role incompatibility, namely, a belief that mothers

should stay close to home even if there are adequate parental surrogates available. The second item, although less extreme in character, is somewhat tangential as a measure of role incompatibility. It asks whether the respondent's family approves of her working away from home. Thus, it taps perceptions of family pressures for remaining at home rather than perceptions of the difficulties that combining work with childcare may involve. As a measure of these latter perceptions, the third item clearly seems the best. It asks whether children make working difficult for the mother. To the extent the role incompatibility hypothesis is correct, it is with this last item that we most expect to see variation in the employment-fertility relationship according to women's responses.

Unfortunately, all three attitudinal items suffer a problem of timing. For most women in the sample, they are asked after the woman has borne most or all of her children, rather than being asked during the period when she is in the process of accumulating her experience both as a worker and mother. Since attitudes can change over time, these measures may seriously misrepresent women's perceptions about role conflict during the prime childbearing years. Indeed, for the third item, there is evidence that this is the case in our data. Specifically, the correlation between affirmative responses to this item and women's fertility is positive, which is just the reverse of what we would expect were the item measuring pre-childbearing role incompatibility perceptions. For this reason, we have chosen to analyze the attitudinal measures of role incompatibility only for newly married women, women for whom these items provide a pre hoc rather than post hoc evaluation of role incompatibility. Thus, in Table 2 we show

slopes relating the employment experience of newly married women to their fertility expectations and ideals, according to their responses to each of the three attitudinal items.<sup>13</sup>

[Table 2 about here]

The slopes in Table 2 provide little substantiation for the role incompatibility hypothesis. In only seven of 18 regressions is there a more negative employment-fertility slope among the conflict perceivers than among other women, and in none of these seven cases is the difference between the conflict perceivers and others statistically significant. These results do not rule out the possibility that, when levels of perceived role incompatibility are high, an inverse employment-fertility relationship develops later in women's married lives, something that may occur, for example, if women's childbearing influences their employment but not vice versa. The results seen in Table 2 do suggest, however, that whether women perceive working and mothering to conflict early in marriage has little impact on the relationship of their early marital employment experience to their fertility expectations and ideals at that time.

If attitudes are unimportant for the employment-fertility relationship, at least early in marriage, are women's objective situations any more important? To answer this question, we turn to our measures of household composition and employment opportunities. Before examining the results for these measures, we point out a methodological problem in our data. This is that it is easier for us to identify women for whom the roles of worker and mother do not conflict than to identify those for whom they conflict.<sup>14</sup> Because of this, it is unrealistic to expect inverse relationships in the

groups that supposedly face relatively high levels of role incompatibility, for many women in these groups may in fact find it easy to combine working with childcare. About all we can expect, then, is to find more negative employment-fertility relationships in the "incompatible" groups than in the "compatible" ones, something that renders our tests of the role incompatibility hypothesis relatively weak. With this in mind, let us turn to our measures of household composition first.

Table 3 displays only a few of the measures of household composition used in our analysis. These results, however, adequately represent those obtained with alternative measures. The first aspect of household composition we consider is whether there are girls ages 10-15 present in the home. This measure has an impact on the employment-fertility relationship very close to what the role incompatibility hypothesis predicts. In every ethnic and residence group, with the exception of the rural Chinese, households with early adolescent girls show a significantly less negative employment-fertility relationship than households without these girls. This does not mean that households without these girls necessarily display inverse relationships; most in fact do not. The reasons why many do not are, however, understandable. For example, rural Indian women tend to live on rubber estates where their work at rubber tapping combines fairly easily with childcare because it is done very early in the morning. Also, many households currently without girls 10-15 contained such girls in the past, and when they did so may have relied on them for childcare help. Thus, even though we observe a strong inverse employment-fertility relationship only in urban Indian homes without early adolescent daughters, the fact that almost all homes without daughters show less negative relationships than

is found in the homes with daughters suggests that daughters indeed serve as parental surrogates in Malaysia. Certainly, this is highly consistent with ethnographic reports for Malays and Indians in Malaysia (Djamour, 1959:106; Rosemary Firth, 1966:108; Wilson, 1967:130; Provencher, 1968:158; Jain, 1970:52f).

[Table 3 about here]

Unfortunately, although these results are sensible, they may be an artifact of measurement, specifically, of the dependency between the role incompatibility measure and the dependent variable. Obviously, when considering a wide age range of women, as is the case in Table 3, the presence of daughters in the home will not be a simple linear function of women's fertility. It will, however, be influenced by fertility, as positive correlations between the girls 10-15 variable and the number of children born in all ethnic and residence groups attest (these correlations range between .31 and .41). We are unable to say precisely how the dependency between fertility and our measure of role incompatibility may influence the results in Table 3; indeed, it is not even clear that it necessarily does so. Nonetheless, because women with low fertility are less likely to have early adolescent daughters at home than are women with high fertility, we must recognize that the more negative employment-fertility relationships observed in households without daughters than in those containing them may reflect this fact.

If there is some, albeit questionable, evidence that girls 10-15 in the household influence the employment-fertility relationship, there is almost none that the presence of adult women does so, especially when these

adult women are themselves married (see Table 3). Several things may account for the lack of variation in the employment-fertility relationship according to the presence of adult women in the household. In the case of other married women in the home, the relationship may fail to vary simply because wives do not tend to care for each other's children, something for which there is evidence in the literature on Taiwanese joint households (Wolf, 1970). More generally, the presence of adult women in the household may have little impact on the employment-fertility relationship because extended-kin households in Malaysia tend to be short lived (Kuchiba, et al., 1979; Maeda, 1967; Freedman, 1957). This means that our measures of household composition may misrepresent women's situations during the prime child-bearing years. The temporary nature of extended-kin households, however, may also affect women's plans. In other words, although a woman may be able to count on her daughter being available for babysitting for a predictable number of years, she is less able to plan on her mother, sister-in-law or maiden aunt remaining in the household. Her work and fertility decisions may therefore reflect the availability of a daughter more than they reflect the (temporary) availability of other female relatives. Thus, the relatively fleeting existence of most extended-kin households may provide a substantive as well as a methodological explanation for the results seen in Table 3.

A final reason the presence of girls, but not that of adult women, may affect the employment-fertility relationship is that adult women are more likely than early adolescent daughters to live outside of the household but close to it. There may, in other words, be less difference between households with and without adult female relatives in the availability of parental surrogates than there is between households with and without early

adolescent daughters. Unfortunately, we have no way of ascertaining which of these explanations, if any, accounts for the results for adult women in Table 3. Thus, while Table 3 provides little evidence in support of the role incompatibility hypothesis when the presence of adult women is considered, it does not rule out the possibility that the availability of adult parental surrogates is important for the employment-fertility relationship in Malaysia.

When we turn from the organization of childcare to the organization of production, the evidence in support of the role incompatibility hypothesis becomes even weaker. In Table 4 we first consider variation in the employment-fertility relationship associated with the husband's employment. The assumption here is that wives of self-employed men or men engaged in family-based enterprises, such as farming, are less likely to work at tasks incompatible with childcare than are other wives.<sup>15</sup> In Table 4, however, there are very few cases where farm wives show a significantly less negative employment-fertility relationship than other wives, and no case where wives of self-employed men show a significantly less negative relationship than the wives of employees. The husband's employment situation may not, of course, determine the wife's occupation or location of work completely. Nonetheless, it is likely to influence it. Thus, unless we have seriously misunderstood which occupations involve the fewest conflicts between working and caring for children, the results in Table 4 suggest the compatibility of women's work with their childcare responsibilities has few implications for the employment-fertility relationship in Malaysia.

[Table 4 about here]

Tables 5 and 6, which show community-level measures of employment opportunities and the general degree of urbanness, suggest a similar conclusion. Although the employment-fertility relationship is significantly more negative in urban than in rural areas among both the Chinese and Indians (see the top two lines in Table 5), this difference does not appear to reflect the employment opportunities that cities and towns as opposed to villages or estates offer to women. The evidence for this can be seen by comparing the results obtained when women are classified according to specific economic features of the community, such as the presence of a factory, with the results obtained when they are classified according to the general urbanness or ruralness of the community. In no case does the specific economic measure have a stronger influence on the employment-fertility relationship than the general urban-rural measure. For example, among Indian women in Table 5, whether or not the community has "many" people doing factory work produces a difference in slopes of .075, while the simple urban-rural dichotomy produces a difference of .095. The employment-fertility relationship among urban Indians, moreover, is more strongly negative than is the employment-fertility relationship for Indians living in communities with "many" factory workers (-.059 vs. -.033). Since all urban women are assumed to live in communities with "many" factory workers, this suggests that it is something other than the availability of factory jobs for women that accounts for the negative employment-fertility relationship observed among urban Indians. Thus, while there is no denying that among Chinese and Indian women, although not among Malays, urban residence is associated with a tendency towards an inverse employment-fertility relationship, the results in Tables 5 and 6 leave in question whether it is

the jobs available to women in urban communities that accounts for the urban-rural difference.<sup>16</sup>

[Tables 5 and 6 about here]

One other pattern, shown at the bottom of Table 5, is worthy of note. This is the tendency for estate dwellers to display positive employment-fertility relationships regardless of ethnicity. There are very few Malay and Chinese women who live on estates, but the few who do so show the same strong positive relationship between employment experience and fertility that is seen for the Indian women. Estate living thus is associated not just with nonnegative employment-fertility relationships, but specifically with positive ones. Why this may be so--for it cannot reflect the mere lack of conflict between working and mothering on estates, which is just as consistent with a zero relationship between work and fertility as with a positive one--will be discussed below.

The data based on husband's occupation and the community's economic characteristics may fail to confirm the role incompatibility hypothesis because of the lack of a one-to-one fit between the wife's occupation and either her husband's or the community's economic characteristics. By considering women's own occupations, our second model overcomes this problem. Thus, if the organization of work in Malaysia indeed has implications for the employment-fertility relationship, we should observe these implications in the second model.<sup>17</sup> We therefore turn to our estimates of how women's fertility varies according to their occupation, location of work and employment class. These results are shown in Table 7.<sup>18</sup>

[Table 7 about here]

In order to be able to distinguish the socioeconomic vs. role incompatibility effects of occupation on fertility we have used a relatively detailed occupational classification in Table 7. The first seven categories of this classification belong to the modern occupational sector, while the remaining three--which comprise cottage industry, vending and other traditional sales occupations, the running of small services enterprises and agricultural work--belong to the traditional sector (the final category, "other occupations," pertains only to Indian women for whom several occupations had to be combined because of the small numbers of women working in these occupations). If our preconception that traditional occupations combine more readily with childcare than modern occupations do is correct, then we should observe consistently higher fertility levels in the traditional categories than in the modern ones.

This is indeed what we observe among the Malays. Although there is some variation in children born within both the modern and traditional groupings, almost all the modern occupations are associated with below average fertility while the traditional ones are associated with average or higher fertility (as expected, nonworking women also have relatively high fertility). Among Chinese women, however, the results look quite different and conflict with a role incompatibility interpretation. To be sure, here again the higher status modern occupations have relatively low fertility, and the farming category has relatively high fertility. But the lower status modern occupations have unexpectedly high fertility, while the traditional nonfarm occupations have unexpectedly low fertility.<sup>19</sup> The results for Chinese women thus cast doubt on the idea that it is the occupation's compatibility with childcare that accounts for the fertility

level in that occupation. Unless there are special conditions faced by Chinese women engaged in traditional nonfarm occupations that create unusual conflicts between work and childcare, the data for Chinese women in Table 7 suggest that work organization does not influence women's work and fertility in Malaysia in the manner the role incompatibility hypothesis predicts.<sup>20</sup>

The results in Table 7 for the location of work and for type of worker also support this conclusion. Contrary to expectation, there is no case in which women who work at home have higher fertility than those who work away from the home; indeed, among the Malays, the reverse is the case. Neither is there any case in which self-employed and unpaid family workers have distinctly higher fertility than other women. Thus, there is no more evidence from model (ii) than from model (i) that the kind of work Malaysian women engage in, the location where it occurs, or the flexibility with which it is performed, influences the relationship between female employment experience and fertility. The employment-fertility relationship in Malaysia does vary, but the compatibility between worker and mother roles determined by work organization does not appear to influence this variation. In the next section of the paper, we take up the question of what does influence variation in the employment-fertility relationship in Malaysia.

### Discussion

Assuming that our results are not simply an artifact of measurement error,<sup>21</sup> we are left with three major questions. The first is why rural Malay women display a weak but fairly robust inverse relationship between employment experience and fertility. This pattern is surprising given the heavy concentration of Malays in settings where the worker and mother

roles are compatible. The second question that remains unanswered is why urban Chinese and Malay women do not show the same inverse relationship between work and fertility that urban Indian women display. We have seen that contraceptive use cannot explain this difference, but have yet to understand what can. The final question in need of further discussion is why rural Indians--in fact, all estate dwellers--show a strong positive relationship between work and fertility, unlike kampong dwellers who show no relationship. As we noted earlier, the supposed compatibility of work and childcare on rubber estates cannot alone explain why the employment-fertility relationship is positive in these settings and not just nonnegative. We discuss the first question in the next section and take up the second and third questions in a later section.

#### The Fertility of Rural Malay Women

In order to examine the data underlying the negative work-fertility regression coefficient for rural Malays, we have tabulated the number of children born to these women according to their employment experience and marriage durations. A graph of this tabulation is shown in Figure 1. This graph makes two things clear: first, that the inverse employment-fertility relationship exists only among women married 15 years or longer; and second, that in this group it exists largely because of the fertility of the longest-working women. Indeed, among women married between 15 and 24 years, it is women who have worked for more years than they have been married who alone are almost entirely responsible for the existence of a negative employment-fertility relationship. Figure 1 thus suggests that any explanation for the inverse employment-fertility relationship must focus on older

women, especially on those who have worked the most.

[Figure 1 about here]

We can think of three fairly plausible explanations for this pattern.<sup>22</sup> The first is the relatively high divorce rate found among Malay women, especially the older ones (the Malay divorce rate has declined over time; see, e.g., Tsubouchi, 1975). Divorced women tend to work, some even after remarrying. Divorcees may also have lower than average fertility if during the breakdown of the marriage they cease having sexual relations with their husbands, or in anticipation of the divorce deliberately stop bearing children. Thus, even when controlling for marriage duration, divorced women may have higher than average employment experience and lower than average fertility, a pattern that should be strongest in the oldest cohorts of women where the incidence of divorce is greatest.

If this explanation is correct, then removing divorced and remarried women from the analysis should cause the inverse employment-fertility relationship among rural Malays to disappear. This is not, however, what happens. To the contrary, when the analysis is restricted to women currently in their first marriage (74 percent of all rural Malay women), the regression slopes relating employment experience to fertility are actually somewhat stronger than they are in the total sample. The slope for number of children born increases in absolute value from  $-.021$  to  $-.036$  and the slope for children expected goes from  $-.018$  to  $-.021$  (all slopes are significantly different from zero; differences between slopes have not been tested). It would seem, then, that the greater prevalence of divorce among Malays than in other groups does not explain why rural Malays display an inverse employment-fertility relationship.

The second possible explanation for this relationship is long-term fecundity impairments among older Malay women. We have no direct evidence that the incidence of subfecundity is especially high in this group. However, because older Malay women grew up during the Japanese occupation of the Peninsula, a time of great privation for the rural population, they may have experienced a deterioration in their ability to bear children. In turn, having had relatively few children may have led them to occupy their time with remunerative activities or, alternatively, may have led them to think of themselves of working and hence to report having worked for an extended period of time. There are three things, however, that argue against this explanation. The first is the rather small impact that poor nutrition and a high incidence of (non-venereal) disease seem to have on fecundability (Bongaarts, 1980), especially after nutritional levels have improved (almost all of the older women in the MFFS bore their children subsequent to the Japanese occupation). Second, the fact that the inverse employment-fertility relationship is actually somewhat stronger among women married 15-19 years than among those married 20 or more years also contravenes the fecundity impairments explanation (see Figure 1). The women married 15-19 years were less affected by the occupation than were longer-married women. Finally, the fecundity impairments explanation is also contravened by the absence of any inverse employment fertility relationship among rural Chinese or Indian women, groups who were adversely affected by the Japanese occupation as much as were rural Malays. Thus, although the fecundity impairments explanation is in some ways plausible, it is not convincing.

The final explanation we offer--also less than fully supported by the data--is that the underreporting of child-bearing among older Malay women

accounts for the pattern seen in Figure 1. It is frequently speculated that women who bear many children may fail to remember or report those who die shortly after birth, especially when a large number of years separates the report from the birth. Because poverty is usually accompanied by a relatively high incidence of infant and child mortality, and in Malaysia is associated with a relatively high rate of female labor force participation, older Malays with extensive employment experience may have lower than average fertility only because they underreport their childbearing, not because they in fact have had relatively few children. Although this explanation seems plausible, there are at least two things inconsistent with it. First, since there is nothing unique to Malay culture about the underreporting of births, it is again unclear why an inverse relationship resulting from such underreporting occurs only for rural Malays. Second, insofar as socioeconomic status is the cause of older women's employment levels and their fertility reports, as is being argued, statistical controls for socioeconomic status should significantly reduce the inverse employment-fertility relationship observed among rural Malays. As the reader will recall, however, this is not the case in these data (see Table 1).

In sum, then, why rural Malays display a weak but robust inverse employment-fertility relationship remains unclear. The inverse relationship does not reflect the high incidence of divorce among Malays and probably does not reflect fecundity impairments either (although the latter remains more of a possibility than the former). It also does not seem to be wholly the product of measurement error. About all we can conclude, then, is that the relationship probably does not reflect role incompatibility, and is also quite weak. Most rural Malay women, like most other kampong dwellers, do not make trade-offs between the amount that they work and the number of children

they bear.

### Opportunity Structures and the Employment-Fertility Relationship

To answer the second and third questions, we return to the concept of opportunity structure introduced earlier in this paper.<sup>23</sup> This concept refers to the paths to economic success that parents perceive to be available to themselves and their children, including the relative opportunities that mothers vs. children have to earn money, the importance to the family's well-being of individual earning vs. a cooperative economic venture, and the importance of formal education for the maintenance of the family's economic status. We suggest there are three distinct opportunity structures in Malaysia whose conditions can explain the variation in the employment-fertility relationship we have observed. At one extreme is the structure of economic opportunities found on rubber estates, and at the other extreme is the so-called modern opportunity structure that we suspect operates most heavily for urban Indians. Intermediate between these two is the traditional agrarian-commercial opportunity structure in which both Malays and Chinese are heavily involved. We next describe each of these structures and how they affect women's employment and fertility behaviors.

In the period since the Second World War, the rubber estate in Malaysia has for its Indian laborers been a total institution in many respects.<sup>24</sup> The estate not only provides laborers with their major source of income in the form of wage employment, but also provides them with housing, sells them food stuffs and other daily necessities in a company-owned or controlled store, provides schooling for their children, and traditionally--although not today--guarantees eventual employment to these children as well. Thus, although some estate laborers have maintained aspirations to return to India

upon retirement, their aspirations have traditionally been formed largely in terms of the estate and the opportunities it offers. These opportunities are family-based. Estates typically provide housing according to a man's family size and composition, and although they treat wives as separate employees, they have traditionally paid a woman's wages to her husband. At the same time, although often providing children with some primary schooling, estates have not traditionally offered children wage-earning opportunities until their adolescence.

Together, we suggest, these conditions had the following implications for women's employment and childbearing. The incentives for childbearing on estates were generally high; at the least, the virtual guarantee (no longer in operation) that grown children could find work on the estate, the provision of housing according to family needs, albeit at a generally low standard, and the provision of some free schooling, all meant that laborers and their families had few incentives to limit their childbearing significantly. At the same time, when fertility was high, it tended to increase the need for cash income, since few estate families achieved anything close to self-sufficiency in food; the staple food, rice, always had to be purchased since estate families had only small garden plots on which to grow chilies or vegetables. Children themselves, however, were unable to provide additional cash incomes until they were fairly old; but since most estates were glad to offer wives employment and their doing so was acceptable to husbands because they, not the wives, were the recipients of wives' wages, it was wives who tended to go to work (or to continue to work) when fertility was high. Probably the most common way in which women managed both to work and care for their children was to employ older children, especially daughters,

in the household's work, including care of infants and younger children. (The ability of husbands and wives to work in different parts of the day may have also contributed to wives' working, although ethnographic sources do not suggest husbands took a heavy hand in childcare.) This, we suggest, explains why positive employment-fertility relationships are found for estate dwellers, regardless of ethnicity. A combination of limited employment opportunities for women outside of the estate or at any activity other than rubber tapping within it, the lack of opportunities for children's wage employment, plus the lack of major disincentives for childbearing combined to make women increase their employment as their families grew.

At the opposite extreme is the typical modern, industrial-bureaucratic opportunity structure that we suspect operates most strongly for urban Indian families in Malaysia. This structure is characterized by a lack of inherited productive resources, such as land, boats or machines, and the dependence of families upon formal schooling and social know-how for economic success. Such a system generally discourages high fertility, unless the family is extremely wealthy, since the provision of extensive schooling and its precludes is costly, both in terms of money and parental time. More important, however, are the conflicts between maternal employment and childcare such a system tends to set up. First, to the extent that formal education become important for children of both sexes--and it tends to, if for no other reason than as a device to maintain class distinctions--parents are deprived of extensive babysitting help from their school-age children. In addition, as formal schooling becomes more important, parents are also likely to place increased importance on intensive, consistent adult inputs to infants and toddlers, for it is through these consistent inputs that children acquire both the cognitive skills and personality traits that permit them to perform well in

school. This, then, is likely to create conflicts between maternal employment--especially since that employment will probably take women outside of the home--and what they perceive to be their children's needs for care in the preschool years. It is thus the childcare standards that arise in modern opportunity structures, both for school-age children and for younger ones, that we suggest creates the basic conflict in these situations between maternal employment and childbearing. In this situation, a woman who has borne relatively many children is likely to try to reduce her labor supply, if at all possible, while one who feels her employment is critical to the family's well-being is likely to try to restrict her fertility.

We suggest that urban Indians are, more than any other group in Malaysia, embedded in this type of opportunity structure not only because they are modern, but also because they are especially likely to be employed in professional and bureaucratic occupations (Table 8). To be sure, not all urban Indians are found in the professional or clerical classes, which may explain why even among urban Indian families, the presence of a daughter aged 10-15 in the household exerts an important effect on the relationship between mothers' employment and fertility. More so than any other group, however, urban Indians have moved into the parts of the occupational structure where formal schooling is critical to occupational success, and having had more schooling, have probably adopted Western values about work and childrearing as well.

[Table 8 about here]

The final opportunity structure, we suggest, is the traditional agrarian-commercial one characteristic of the Malay and Chinese populations in Malaysia. In this structure, opportunities are shaped largely by the

family's productive economic resources and the individual's standing in the community is consequently determined strongly by inheritance. Formal schooling is not very important for the success of the next generation, and the emphasis on direct parental socialization of children and avoiding the use of daughters as babysitters is consequently minimal. In this setting, we suggest, a wife's employment is probably determined largely by the family's economic status and type of income source. More important, because families usually supply themselves with a substantial part of their food needs, and can employ children in the family's work at a relatively young age, fertility is not necessarily a strong force determining the wife's employment, as it is on the rubber estate. Thus, the agrarian opportunity structure neither entails a conflict between maternal employment and childcare arising from an emphasis on formal schooling, nor requires increased employment on the part of the wife as a response to increased family size. For this reason, we suspect, groups heavily involved in family-run farms or businesses--mainly the Malays and Chinese--fail to display any statistical relationship between the wife's employment and her fertility.

If the above speculations are correct, then we ought to find some combination of parents' educational levels, their educational aspirations for children, their place of residence and their occupations influencing the kind of relationship that women's work has to their fertility. Although we are unable to pursue a thorough empirical test of this speculation, we briefly examine the impact that, first, the respondent's own schooling has on the employment-fertility relationship, and second, the impact that her perceptions of how much schooling sons and daughters must acquire have on this relationship. Within-education group slopes relating women's employment experience to their fertility that have been estimated from regressions similar in form

to model (i) are shown in Table 9. If our speculations are correct, we should, we believe, find negative employment-fertility relationships primarily among highly-educated women and women who have high educational aspirations for their children.

[Table 9 about here]

This expectation is not well borne out by the data in Table 9. The patterns observed are, however, not entirely inconsistent with our speculations. To be sure, among Malays, substantial inverse employment-fertility relationships do not occur at all, regardless of education or educational aspirations and regardless of residence. In no Malay group is there much of a relationship between wife's employment experience and fertility, with the exception of well-educated women; these women display a marked positive relationship between years worked and number of children born (but not number expected). We have no explanation for this particular pattern, although given the small numbers of well-educated Malay women, it may be largely accidental. Among Chinese women, however, we indeed observe the expected pattern when the variable used to differentiate women is their own level of schooling rather than the level they perceive to be necessary for a son's and daughter's success. Well-educated Chinese women display a substantial negative relationship between work and fertility; poorly educated Chinese women do not. That this pattern holds for fertility expectations as well as for children ever born is especially interesting; it suggests that among well-educated Chinese women, a two-way causal path between work and fertility occurs, something we see as quite consistent with our notion that women who operate in the modern opportunity structure are likely to have disincentives for high

fertility, including those involving their own labor force participation.

What is perhaps most surprising and disturbing in Table 9 is the absence of the expected pattern among urban Indian women. That a significant, positive employment-fertility relationship occurs only among poorly-educated rural Indians seems unsurprising; the better-educated rural Indians are probably not estate dwellers and consequently are likely to operate in the agrarian opportunity structure. Why inverse employment-fertility relationships occur for both well and poorly educated urban Indians, however, is more surprising, especially given that it is women who perceive their children to require relatively little schooling who are most likely to display an inverse relationship here. Does this disconfirm the idea that participation in the modern opportunity structure explains why urban Indian women are the only group to show an inverse employment-fertility relationship? Perhaps it does. On the other hand, the lack of variation in the employment-fertility relationship across educational categories of urban Indian women may simply indicate that most of these women, well educated or not, are indeed deeply imbedded in such a system.

Thus, although the data in Table 9 do not at first sight provide confirmation for our ideas, they are not entirely inconsistent with them. We suggest, then, that studies of the employment-fertility relationship need to take a considerably broader view of what determines this relationship than has traditionally been embodied in the role incompatibility hypothesis. To be sure, the institutional factors traditionally identified as determining the relationship may have some importance. But because "childcare" is not a fixed concept and can be defined as requiring a wide range of inputs from caretakers, to say that a given set of institutional conditions necessarily

produces conflicts between working and caring for children makes little sense. What seems much more important for the ultimate form of the employment-fertility relationship than household composition or women's occupations, then, are the institutional and individual conditions that lead parents to define adequate or acceptable childcare and child development in alternative ways. We have suggested that the opportunity structure within which parents operate is one important determinant of this; cultural traditions and individual economic circumstances may also be important. We leave our analysis, then, with the suggestion that future studies pay more attention to the conditions that lead parents to see children as needing intensive adult care-taking and less attention to the traditionally-defined concept of role incompatibility per se.

#### Some Comments on Population Policy in Malaysia

Although not definitive, this study has nonetheless suggested that a simple increase in women's employment would have little effect on fertility in Peninsular Malaysia. Whether a major shift in the female occupational distribution would lead to fertility decline is also questionable, at least if women's occupations are viewed as determining fertility through the role incompatibility route. In other words, if occupational shifts influence fertility, it will not be because more women come to work at occupations conflicting with "childcare"--an ill-defined concept anyway--but will instead be because these shifts are likely to involve the growth of the modern opportunity structure and hence the number of Malaysian parents who find it unacceptable to use daughters as babysitters and who view children as requiring intensive and attentive adult care. From a policy point of view, this may say little more than that economic development is indeed likely

to lower fertility. We can, however, make a somewhat more pointed suggestion than this. This is that investments in schooling on the part of the society may pay unexpected dividends. Another analysis we have performed suggests that female education in Malaysia directly affects fertility in the very groups most involved in the modern opportunity structure; urban Indians and the Chinese population. In these groups, although not among Malays or rural Indians, better educated women have fewer children than less educated women have. To the extent that the emphasis on formal schooling increases, and educational opportunities improve, especially for females, fertility is thus likely to decline.

But an increase in schooling, we suggest, is also likely to involve a kind of multiplier effect via female employment. If increased schooling means that an increasing portion of the population enters the modern opportunity structure, then so long as wives continue to have incentives for working, their work is likely to have an increasing depressive effect on fertility. While simply building schools and requiring children to attend them will not, of course, recruit people to the modern opportunity structure, it is probably one important element in achieving this goal. Thus, in addition to certain direct benefits that state investments in schooling may have in Malaysia, these investments, we suggest, are ultimately likely to have indirect pay-offs as well from the point of view of stemming population growth. Thus, although the most immediate and obvious manner in which to influence population growth is the one the Malaysian government is currently pursuing, namely, the provision of family planning services, we suggest an important secondary path to population control involves the growth of educational institutions. The improvements in schooling that Malaysia is currently providing her citizens

are thus likely to be important from the point of view of population policy as well as from other viewpoints.

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<sup>1</sup>In this paper, we use the terms "gainful employment," "employment" and "work" interchangeably to refer to any income-producing activity in which women engage, be it performed for cash or in-kind payments, at home or away from home, as a family worker, employee, employer or own-account worker.

<sup>2</sup>We do so only by showing whether or not women's work has a negative relationship to their fertility in Malaysia. A negative relationship is usually considered a necessary condition for induced increases in female employment to have any chance of resulting in lowered fertility. However, as has been noted elsewhere (McCabe and Rosenzweig, 1976), the existence of a negative employment-fertility relationship in no way guarantees that increases in female employment will result in lowered fertility. The existence of a negative relationship may be a necessary condition for this to occur, but it is not a sufficient condition.

<sup>3</sup>The role incompatibility literature occasionally mentions the use of children as parental surrogates (e.g., Safilios-Rothschild, 1977). There is little apparent recognition, however, that the use of children as baby-sitters is influenced by a society's educational institutions.

<sup>4</sup>Peek (1975) has also used husband's occupation to index the wife's employment and its compatibility with childcare. Peek's logic in doing so was, "if the household head is self-employed, his wife is unlikely to have or to look for employment outside the home" (1975:213). Our rationale is similar. It should be noted that the Malaysian community-level survey provides more specific information about the economic composition of the

respondent's community than is indicated by the urban-rural classification alone.

<sup>5</sup>The Malaysian data also contain one question on the perceived importance of formal schooling for children's success, a measure that we use towards the end of the paper to explore the impact of educational institutions on the employment-fertility relationship.

<sup>6</sup>This largely reflects the lack of explicit modeling in most analyses of women's work and fertility, at least in the demographic literature. In fact, past studies have entertained the possibility of interaction effects implicitly, even if not explicitly, when examining cross-tabulations of women's fertility, employment experience and place of residence.

<sup>7</sup>Because out-of-wedlock births are extremely rare in Malaysia, the number of children ever born to most women is identical to the number born since first marrying. This is, in other words, a measure of marital fertility.

<sup>8</sup>In this table and all subsequent ones, we show only the slopes for the work variables, not those associated with the controls or the measures of role incompatibility. Also, we show slopes from more than one regression in each table. In interpreting regression slopes, although we pay heed to statistical significance (particularly the significance of the interaction terms in model [1]), we also take into account the slope's absolute size. Generally, in model (1) we feel that slopes much below .05 are not very interesting from a substantive point of view. A .05 slope implies an

increase--or decrease--in family size of half a child for each decade the wife has worked, but a slope of, say, .02 implies only a fifth of a child change per decade of work. Given an average family size of over four children in Malaysia, and an average duration of work experience below one decade, we do not find the latter substantively significant, even if it may be statistically significant in some samples.

<sup>9</sup>In Table 1, and in most later tables as well, women's work has basically the same relationship with children expected as it does with children born, an understandable result given the strong correlation between the two fertility measures in most ethnic and residence groups. In most cases, however, work's relationship to children born is somewhat stronger than its relationship to children expected. This may reflect greater error in the measurement of children expected than in the measurement of children born, a distinct possibility given that the one derives from a single abstract question about additional children "wanted" while the other derives from a detailed pregnancy history. However, this pattern may also tell us something about the causal process relating women's work to their fertility; either, that fertility has more impact on work than work has on fertility, or that work has more impact on the timing of births than on their total number.

<sup>10</sup>Approximately two-thirds of urban Malay women have never used an efficient form of contraception and approximately two-fifths of urban Chinese women have never done so. Thus, substantial portions of both of these groups have not used modern forms of birth control in the past. Somewhat problematic for this argument, however, is the fact that only half of the urban Indian

women in our sample have used efficient contraception in the past. Thus, the rate of contraceptive use is actually higher among urban Chinese women than among urban Indians.

<sup>12</sup>Work affecting fertility and fertility affecting women's work are not, of course, the only two possible causal processes that could give rise to an inverse relationship between women's work and fertility. For a fuller exposition of the possibilities here, see Terry, 1974.

<sup>13</sup>As would be expected, the work experience of women married five years or less falls within a fairly narrow range. In all three ethnic groups, the mean number of years worked since first marrying is slightly over one, with a standard deviation between two and three years. Thus, the independent variable in this part of the analysis, although still technically a scaled measure of employment experience, has a distribution closer to a dichotomous measure than to a continuous one. There is nevertheless more than sufficient variance in newly married women's employment experience for this variable to remain a meaningful independent variable. Between one third and two fifths of the newly married women in each of the three ethnic groups has worked since first marrying.

<sup>14</sup>For example, our household composition measures identify women who have potential parental surrogates available in the home. The women who have no female relatives or servants at home, however, may nonetheless face relatively low levels of role incompatibility, either because they have parental surrogates living close by or because they are able to work at jobs that combine readily with childcare.

<sup>15</sup>This assumption may be incorrect. DaVanzo and Lee (1978), for example, report that women engaged in agricultural occupations are far less likely to be accompanied by their children when working than are women in sales and service occupations, something that may indicate less compatibility between farm work and childcare than has traditionally been assumed. The data we use in this paper, however, indirectly suggest that farm work may nonetheless be compatible with childcare. For example, in the model (ii) results we present below, women engaged in farm work have at least as many children as most other groups of women, and in some cases they have more. Thus, despite DaVanzo and Lee's evidence to the contrary, our assumption that agricultural work is compatible with childcare is probably correct.

<sup>16</sup>Urban-rural differences in household composition cannot explain the greater tendency towards inverse employment-fertility relationships in urban than in rural areas. The urban households in our sample more frequently contain early adolescent daughters and other female relatives than do the rural households. Thus, contrary to the common stereotype, there is no evidence that parental surrogates are less available in Malaysian cities and towns than in kampongs or on estates.

<sup>17</sup>This assumes, of course, that these implications will be observed when we examine women's current or most recent jobs only, since it is these jobs that we analyze in model (ii). This seems a reasonable assumption, however, especially given the evidence so far observed that if anything, it is fertility that influences women's work in Malaysia, not the reverse.

<sup>18</sup>All of the slopes shown in Table 7 are estimated net of controls for urban-rural residence, marriage duration, age and education. It should be noted that the results for each of the employment classifications is unaltered when only that classification is included in the regression (along with the control variables); i.e., the results in Table 7 do not reflect the fact that we have included occupation, location of work and class of work together in each regression equation.

<sup>19</sup>It should be noted that had we grouped occupations into traditional vs. modern categories before running our regressions, the results for Chinese women would have seemed entirely consistent with the role incompatibility hypothesis, primarily because the farm workers would have swamped the other traditional workers to produce an above average fertility level in the traditional category. These results thereby illustrate the dangers of using simple occupational categorizations like those most past analyses have employed.

<sup>20</sup>Unfortunately, the results for Indian women neither support or deny the role incompatibility hypothesis because there are too few occupational categories available in this group. It should be noted that in all three ethnic groups, occupation appears to be more strongly associated with children born than with children expected. This is again indirect evidence that where women's work and fertility are interrelated in Malaysia, it is probably because of the impact of childbearing on work rather than vice versa.

<sup>21</sup>There are two respects in which they may be, at least in part. First, the zero relationships between women's work and fertility observed among urban Malays and Chinese might result from a high level of error in the measurement of these women's employment experience, something that would reflect the ambiguity of the work-housework distinction when women work outside of the wage sector (far more urban Malays and Chinese work outside of the wage sector than do urban Indians). Second, the failure to observe the expected interaction effects when using most measures of role incompatibility may reflect the inaccuracy with which role incompatibility during the prime childbearing years is measured when variables that refer to the time of the interview are used. Our "objective" role incompatibility measures may, in other words, suffer a similar problem of timing that the subjective ones suffer, although given the stability of such things as the husband's occupation, probably less so than was the case for the subjective measures.

<sup>22</sup>We initially speculated that the inverse relationship might reflect a culturally-induced incompatibility between working and mothering reflecting traditional Malay values towards children and economic accumulation. Many ethnographies of kampong Malays (e.g., Djamour, 1959; Rosemary Firth, 1966; Swift, 1965; Wilson, 1967) describe Malay parents as being especially indulgent and attentive towards infants and toddlers. Djamour (1959:101), for example, goes so far as to state that "a man might be urgently called away from the wedding of a close kinsman in another district and asked to return home at once because his child was fretting for him." Similarly, both Rosemary Firth (1966) and Swift (1965) report that parents are willing to

spend a substantial portion of their income on sweets and other snacks for their children. At the same time that Malays are described as indulging and petting their babies, they are also described as being relatively uninterested in long-term economic accumulation. In contrast to their Chinese neighbors, Malays choose leisure over work; having satisfied his family's immediate cash needs, the typical kampong Malay will supposedly knock off work for the rest of the afternoon rather than take the opportunity to bring in extra money. Together, these cultural traditions may mean that parents are willing to forego remunerative activities in order to be with their children. Malay women may therefore choose to avoid working when their fertility is high, so they can give their undivided attention to their children. Contravening this idea, however, are clear statements in the same ethnographic sources that Malay mothers do not in fact give their babies their undivided attention (nor, seemingly, do they feel it is important to do so). Djamour (1959:100), for example, is unequivocal in stating that "the baby's existence [is] not centered around his mother's physical presence. He spen[ds] several hours a day being carried in the arms, or across the hip, of other members of the household, of young neighbors, of visiting relatives and friends." For this reason, we dropped the idea that Malay cultural traditions could explain the inverse employment-fertility relationship found among rural Malays, a step that seemed especially reasonable given the cultural similarities between rural and urban Malays (Provencher, 1968).

23

The difference in the employment-fertility relationship between urban Indians and other urban women might at first sight seem explicable in terms of differences between these groups in role incompatibility levels. Upon

closer examination, however, this turns out not to be the case. First, urban Indians are no more deprived of parental surrogates than are urban Malays or Chinese women. To the contrary, the percentage of urban Indian households with girls 10-15 in them is slightly higher (50%) than the percentages of urban Malay and Chinese households with girls (45% and 46% respectively). Second, although it is true that urban Indians are more likely to work as employees and professionals than are other urban women (see Table 8 in text), we lack any evidence from our analysis that this results in an inverse employment-fertility relationship. For this reason, then, we turn to the concept of opportunity structure in seeking an explanation for the Indian-other difference.

<sup>24</sup>This discussion relies heavily on the only ethnography of a Malaysian rubber estate in existence (Jain, 1970), supplemented, however, with information from several other sources, including Arasaratnam (1970), Netto (1961) and Sandhu (1969).

## APPENDIX

Definition of Variables Used in the Analysis

Children Ever Born (CEB). This is the number of live-born children had by the respondent, as reported in a pregnancy history.

Total Children Expected (TCE). This was created by summing the number of additional children wanted (a number generated by a question asked of all women except those not currently married) and the number of own children currently alive. Additional children wanted refers only to the wife's desires, not her husband's.

Years Worked Since Marrying. The approximate number of years in which the respondent has done any kind of "work" since first marrying, including any years worked between marriages or since her last marriage was terminated. "Work" refers to any activity other than "normal housework," whether performed for cash or in-kind payments, as an employee, employer, own-account worker or unpaid family worker, in the woman's own home or elsewhere.

Rural-Urban. Rural includes all kampongs (villages, a legal category rather than one defined by population size) and estates. Urban includes towns and cities.

Marriage Duration. The total number of years spent in the married state, not counting years between marriages or since the last marriage was terminated.

Education. The number of years of formal schooling completed by the respondent.

Working Away from Home. Based on responses to the question, "Whether you have worked in the past or not, do you think that it is all right for a mother to work away from home, if her children can be adequately cared for?"

Unqualified yes responses were scored 0; all other responses were scored 1.

Family's Attitude. Based on responses to the question, "And how would your family members [sic] feel about your working away from home? Would they be against it or wouldn't they mind?" Unqualified responses of "wouldn't mind" were scored 0; all other responses were scored 1.

Children Impede Working. Based on responses to the question, "Some women find that having children makes it difficult for them to work, to earn some living as much as they want [sic]--whether on the family farm, in the family business, at home or elsewhere. In your case, would having children make it difficult for you to work as much as you want or not?" Unqualified responses that children would not make working difficult were scored 0; all other responses were scored 1.

Girls 10-15 Years Old. A variable scored 1 if there is any female between the ages of 10 and 15, inclusive, in the respondent's household and that is otherwise scored 0. The girl need not be the respondent's daughter.

Married Women 16+ Years Old. A variable scored 1 if there is any woman 16 years of age or older in the respondent's household other than the respondent herself who is currently married and that is otherwise scored 0.

Nonmarried Women 16+ Years Old. A variable scored 1 if there is any woman 16 years of age or older in the respondent's household other than the respondent herself who is currently never-married, widowed or divorced, and that is otherwise scored 0.

Women 16 Years Old or Older. A variable scored 1 if there is any woman 16 years old or older in the respondent's household other than the respondent herself and that is otherwise scored 0.

Farm versus Nonfarm. A variable scored 1 if the husband's occupation is

farmer or farm worker and that is otherwise scored 0.

Compatible vs. Incompatible Occupation. A variable scored 1 if the husband's occupation is farmer, farm worker or working proprietor of a sales or service establishment and that is otherwise scored 0.

Employment Type. A variable scored 1 if the husband is an employee or an unpaid family worker and that is scored 0 if he is an employer or own-account worker.

Occupation and Employment Type. A variable that is scored 1 if both of the above variables referring to the husband's employment are scored 1 and that is otherwise scored 0.

Urban-Rural Trichotomy. This classification distinguishes kampongs from estates; otherwise, it is defined as is the urban-rural variable described earlier.

Presence of a Factory. Based on information from the community-level survey concerning the presence in the kampong of a mechanically-powered establishment employing ten or more people.

Proportion of Population Doing Factory Work. Based on a community-level survey item that asked whether there were "many" people in the kampong working in mechanically-powered establishments employing ten or more people, or were instead only "some" or "none."

Urbanization Scale. The urbanization scale, which has values between -1.27 (least urban) and +1.00 (most urban), was created by taking the weighted sum of 13 standardized variables, using as weights the factor loadings from an unrotated principle components factor analysis. The 13 variables are: (1) log of the distance to the nearest large town, (2) log of the number of paved roads in the community, (3) whether near a motorable road, (4) log of

the distance to the nearest telephone, (5) whether there is a post office in the community, (6) whether there is a qualified doctor in the community, (7) whether the most common source of water in the community is pipe water (rather than well or stream water), (8) whether there is a system of public drains for waste removal in the community, (9) whether there is a central garbage collection agency in the community, (10) log of the distance to the nearest secondary school, (11) whether the community has electricity, (12) log of the community's population size, and (13) log of the distance to the nearest police station. These variables were measured in the community-level survey only for women residing in kampongs. For other women, values were imputed according to type of place of residence: metropolitan was given a value of 1.0, small town a value of .95 and rural a value of -.05, this last being the average value among all rural residents with nonimputed scores.

Distance to Nearest Factory. This is the natural log of the quantity,  $[-1 (\text{distance to the nearest factory}) + \text{maximum distance}]$ .

Proportion of Population Nonagricultural. Based on a community-level survey question about the proportion of the community's population employed in agriculture. The reported proportion--converted to a percentage--was subtracted from 100.5, and the natural log of the result was taken.

Employment Opportunities Scale. This is a linear combination of the above two variables.

Occupation. A classification referring to women's current or most recent job since first marrying. The first seven categories (professional through laborer) refer to the modern occupational sector, while the last three refer to the traditional one.

Place of Work. Location (home vs. away) where woman worked most of the time on her current or most recently held job since first marrying.

Type of Worker. Again refers to women's current or most recent job since first marrying.

Minimum Education for a Boy/Girl. Based on the following questions: "Now I would like to ask you your opinion about what families like your own can expect of their children. First of all, in your opinion what is the least amount of education that a boy needs to make a satisfactory living these days?... And what do you think is the least amount of education that a girl needs to make a satisfactory living these days?" Respondents not giving a numerical response to either question were given the mean value among those who did give a numerical response.

Amenities Scales. These are scales measuring the number of sanitary facilities and the number of modern amenities and consumer goods found in the respondent's household.

Family Income. The family's monthly income from all sources.

Age. The respondent's age, in years.

Table 1. Metric regression slopes relating years worked since first marrying to number of children ever born and a total number of children expected, by ethnicity and residence.<sup>a</sup>

Control variables	Malays		Chinese		Others	
	Rural	Urban	Rural	Urban	Rural	Urban
	<u>Children ever born</u>					
No controls (zero-order slope)	.091 <sup>b</sup>	.066 <sup>b</sup>	.175 <sup>b</sup>	.109 <sup>b</sup>	.193 <sup>b</sup>	.009
Controlling for marriage duration and age	-.023 <sup>b</sup>	.004	.025 <sup>b</sup>	.003	.045 <sup>b</sup>	-.056 <sup>b</sup>
Controlling for marriage duration, age, education, amenities scales and family income	-.021 <sup>b</sup>	.003	.018 <sup>b</sup>	-.003	.041 <sup>b</sup>	-.053 <sup>b</sup>
Controlling for marriage duration and age; contraceptors only <sup>c</sup>	-.011	-.030	.024 <sup>b</sup>	.005	.032	-.014
	<u>Total children expected</u>					
No controls (zero-order slope)	.030 <sup>b</sup>	.015	.106 <sup>b</sup>	.057 <sup>b</sup>	.124 <sup>b</sup>	-.017
Controlling for marriage duration and age	-.018 <sup>b</sup>	-.001	.017 <sup>b</sup>	-.005	.037 <sup>b</sup>	-.054 <sup>b</sup>
Controlling for marriage duration, age, education, amenities scales and family income	-.016 <sup>b</sup>	-.003	.012	-.010	.032 <sup>b</sup>	-.050 <sup>b</sup>
Controlling for marriage duration and age; contraceptors only <sup>c</sup>	-.004	-.021	.016	-.002	.035	-.021
Total number of cases	2941	565	932	1122	382	238
Number of contraceptors <sup>c</sup>	682	203	524	661	165	122

<sup>a</sup>Each slope in this table is from a different regression equation; see table stubs for the other predictors included in these equations.

<sup>b</sup>Significantly different from zero. .05 level, two-tailed test.

<sup>c</sup>Contraceptors refers to couples who have used a modern chemical or mechanical method of contraception or who have been sterilized for contraceptive purposes.

Table 2. Metric partial regression slopes relating years worked since first marrying to total number of children expected (TCE) and ideal number of children wanted (ICW), by perceived role incompatibility and ethnicity: women married five years or less.<sup>a</sup>

Perceived role incompatibility	Malays		Chinese		Others	
	TCE	ICW	TCE	ICW	TCE	ICW
<u>Working away from home</u>						
R believes it is not OK for a wife to work away from home	-.010	-.024	-.110	.033	.163	.030
R believes otherwise	-.068 <sup>b</sup>	.030	-.066 <sup>b</sup>	.012	-.027	.034
<u>Family's attitude</u>						
R says her family is against her working away from home	-.136	-.011	-.078	-.004	-.061	-.055
R says otherwise	-.058 <sup>b</sup>	.025	-.058 <sup>b</sup>	.022	-.031	.036
<u>Children impede working</u>						
R believes children make working difficult	-.067	.018	-.063	.010	-.088	.079
R believes otherwise	-.054 <sup>b</sup>	.035	-.099	.017	-.021	.003
Number of cases:	847	844	549	549	138	138

<sup>a</sup>Table shows slopes from 18 different regression equations; see text for explanation. All slopes are estimated net of marriage duration, age and education.

<sup>b</sup>Significantly different from zero, .05 level, two-tailed test.

Table 3. Metric partial regression slopes relating years worked since first marrying  
 + number of children ever born and total number of children expected, by  
 household composition, ethnicity and residence.<sup>a</sup>

Household composition	Malays		Chinese		Others	
	Rural	Urban	Rural	Urban	Rural	Urban
<u>Children ever born</u>						
<u>Girls 10-15 years old</u>						
No girls 10-15 in the household	-.034 <sup>b</sup>	-.036	.007	-.018	.004	-.085 <sup>b</sup>
Girls 10-15 in the household	-.007 <sup>c</sup>	.033 <sup>c</sup>	.033	.015 <sup>c</sup>	.057 <sup>c</sup>	.022 <sup>c</sup>
<u>Married women 16+ years old</u>						
No currently married woman 16+ in HH	-.021 <sup>b</sup>	.016	.022 <sup>b</sup>	.002	.038 <sup>b</sup>	-.049
Currently married woman 16+ in HH	-.023	-.066	.027	.005	-.001	-.049
<u>Nonmarried women 16+ years old</u>						
No nonmarried woman 16+ in HH	-.032 <sup>b</sup>	-.008	.019	-.006	.006	-.062
Married woman 16+ in HH	-.007 <sup>c</sup>	.012	.026	.007	.054 <sup>c</sup>	-.034
<u>Women 16 years old or older</u>						
No woman 16+ in household	-.027 <sup>b</sup>	.025	.026	.002	.008	-.019
Woman 16+ in household	-.018	-.009	.023	.004	.051	-.062
<u>Total children expected</u>						
<u>Girls 10-15 years old</u>						
No girls 10-15 in household	-.031 <sup>b</sup>	-.029	.000	-.028 <sup>b</sup>	-.003	-.084 <sup>b</sup>
Girls 10-15 in household	-.002 <sup>c</sup>	.026	.024	.007 <sup>c</sup>	.048 <sup>c</sup>	.027 <sup>c</sup>
<u>Married women 16+ years old</u>						
No currently married woman 16+ in HH	-.017 <sup>b</sup>	.010	.017	-.001	.031 <sup>b</sup>	-.044
Currently married woman 16+ in HH	-.020	-.041	.012	-.013	-.010	-.053
<u>Nonmarried women 16+ years old</u>						
No nonmarried woman 16+ in HH	-.028 <sup>b</sup>	-.013	.004	-.014	-.006	-.066 <sup>b</sup>
Nonmarried woman 16+ in HH	-.004 <sup>c</sup>	.016	.021	-.003	.049 <sup>c</sup>	-.029
<u>Women 16 years old or older</u>						
No woman 16+ in household	-.024 <sup>b</sup>	.009	.017	.003	-.006	-.023
Woman 16+ in household	-.013	-.001	.013	-.008	.046 <sup>c</sup>	-.059
Number of cases	2807	544	919	1105	369	233

<sup>a</sup>Table shows slopes from 48 different regression equations; see text for explanation. All slopes are estimated controlling for age, marriage duration and education.

<sup>b</sup>Significantly different from zero, .05 level, two-tailed test.

<sup>c</sup>Slope significantly different from the slope for the top category of this measure, .05 level, two-tailed test.

Table 4. Metric partial regression slopes relating years worked since first marrying to number of children ever born and total number of children expected, by family economic role incompatibility measures, ethnicity and residence.<sup>a</sup>

Family economic role incompatibility measures	Malays		Chinese		Others	
	Rural	Urban	Rural	Urban	Rural	Urban
<u>Children ever born</u>						
<u>Farm versus nonfarm</u>						
Husband's occupation nonfarm	-.015	-.002	.010	-.008 <sup>c</sup>	.051	-.027
Husband's occupation farm	-.024 <sup>b</sup>	.008	.031 <sup>b</sup>	.070 <sup>b</sup>	.047 <sup>b</sup>	-.095
<u>Compatible vs. incompatible occ.</u>						
Husband's occupation incompatible	-.018	-.002	.020	-.000	.054	-.027
Husband's occupation compatible	-.023 <sup>b</sup>	.017	.023 <sup>b</sup>	.016	.041 <sup>b</sup>	-.117 <sup>b</sup>
<u>Employment type</u>						
Husband not self-employed	.000 <sup>c</sup>	.010	.043 <sup>c</sup>	.023 <sup>c</sup>	.056 <sup>c</sup>	-.066
Husband is self-employed	-.037 <sup>b</sup>	.005	-.001	-.020	-.044	.027
<u>Occupation and employment type</u>						
Incompatible occ. and employment	-.009	.026	.018	.004	.051	-.044
Compatible occ. or employment	-.027 <sup>b</sup>	-.017	.026 <sup>b</sup>	.006	.046 <sup>b</sup>	-.040
<u>Total children expected</u>						
<u>Farm versus nonfarm</u>						
Husband's occupation nonfarm	-.012	.002	-.003 <sup>c</sup>	-.013 <sup>c</sup>	.032	-.020
Husband's occupation farm	-.021 <sup>b</sup>	-.025	.027 <sup>b</sup>	.038	.040 <sup>b</sup>	-.113 <sup>b</sup>
<u>Compatible vs. incompatible occ.</u>						
Husband's occupation incompatible	-.012	.001	.005	-.010	.038	-.020 <sup>c</sup>
Husband's occupation compatible	-.021 <sup>b</sup>	-.007	.019	.008	.034 <sup>b</sup>	-.128 <sup>b</sup>
<u>Employment type</u>						
Husband not self-employed	-.001 <sup>c</sup>	.001	.025	.007	.044 <sup>c</sup>	-.063
Husband is self-employed	-.032 <sup>b</sup>	.006	.005	-.018	-.031	.023
<u>Occupation and employment type</u>						
Incompatible occ. and employment	-.004 <sup>c</sup>	.017	-.003	-.010	.026	-.035
Compatible occ. or employment	-.024 <sup>b</sup>	-.015	.024 <sup>b</sup>	.002	.040 <sup>b</sup>	-.053
Number of cases	2920	563	930	1117	382	237

<sup>a</sup>Table shows slopes from 48 different regression equations; see text for explanation. All slopes are estimated controlling for marriage duration, wife's age and education.

<sup>b</sup>Significantly different from zero, .05 level, two-tailed test.

<sup>c</sup>Slope significantly different from the slope for the bottom category of this measure, .05 level, two-tailed test.

Table 5. Metric partial regression slopes relating years worked since first marrying to number of children ever born (CEB) and total number of children expected (TCE), by community economic role incompatibility measures and ethnicity.<sup>a</sup>

Community economic role incompatibility measure	Malays		Chinese		Others	
	CEB	TCE	CEB	TCE	CEB	TCE
<u>Urban-rural dichotomy</u>						
Urban residence	-.011	-.004	-.002 <sup>c</sup>	-.008 <sup>c</sup>	-.059 <sup>c</sup>	-.052 <sup>c</sup>
Rural residence	-.021 <sup>b</sup>	-.018 <sup>b</sup>	.031 <sup>b</sup>	.018 <sup>b</sup>	.036 <sup>b</sup>	.021
<u>Presence of a factory</u>						
Community has a factory	-.012	-.003	.013	.007	-.006 <sup>c</sup>	-.009 <sup>c</sup>
Community does not have a factory	-.021 <sup>b</sup>	-.020 <sup>b</sup>	.025 <sup>b</sup>	.009	.051 <sup>b</sup>	.033 <sup>b</sup>
<u>Proportion of pop. doing factory work</u>						
"Many" residents work in factories	-.003	-.003	-.001 <sup>c</sup>	-.006 <sup>c</sup>	-.033 <sup>c</sup>	-.038 <sup>c</sup>
"Few" or no residents work in factories	-.021 <sup>b</sup>	-.018 <sup>b</sup>	.036 <sup>b</sup>	.020 <sup>b</sup>	.042 <sup>b</sup>	.029 <sup>b</sup>
<u>Urban-rural trichotomy</u>						
Urban residence	-.010	-.005	-.003 <sup>c</sup>	-.009	-.056 <sup>c</sup>	-.049 <sup>c</sup>
Estate residence	.063 <sup>c</sup>	.052 <sup>c</sup>	.112 <sup>c</sup>	.105 <sup>c</sup>	.065 <sup>c</sup>	.050 <sup>c</sup>
Kampong residence	-.024 <sup>b</sup>	-.020 <sup>b</sup>	.025 <sup>b</sup>	.012	.019	.004
Minimum number of cases <sup>d</sup>	3336	3336	2002	2002	599	599
Maximum number of cases	3365	3365	2037	2037	606	606

<sup>a</sup>Table contains slopes from 24 different regression equations; see text for explanation. All slopes are estimated net of respondent's age, marriage duration and education.

<sup>b</sup>Significantly different from zero, .05 level, two-tailed test.

<sup>c</sup>Significantly different from the slope for the bottom category of this measure, .05 level, two-tailed test.

<sup>d</sup>Case bases vary because of exclusions for missing data.

Table 6. Metric partial regression slopes relating years worked since first marrying and the interaction of years worked with community economic role incompatibility measures to number of children ever born (CEB) and total number of children expected (TCE), by ethnicity.<sup>a</sup>

Slope	Malays		Chinese		Others	
	CEB	TCE	CEB	TCE	CEB	TCE
<u>Urbanization scale</u>						
Years worked	-.016 <sup>b</sup>	-.014 <sup>b</sup>	.030 <sup>b</sup>	.018 <sup>b</sup>	.044 <sup>b</sup>	.028 <sup>b</sup>
Interaction between years worked and urbanization scale	.028 <sup>b</sup>	.019 <sup>b</sup>	-.023 <sup>b</sup>	-.018	-.064 <sup>b</sup>	-.049 <sup>b</sup>
<u>Distance to nearest factory</u>						
Years worked	-.017 <sup>b</sup>	-.016 <sup>b</sup>	.016 <sup>b</sup>	.009	.012	.005
Interaction between years worked and reverse of distance to factory	.002	.002	-.005	.003	-.025 <sup>b</sup>	-.015
<u>Proportion pop. nonagricultural</u>						
Years worked	-.013 <sup>b</sup>	-.011	.049 <sup>b</sup>	.020	.071 <sup>b</sup>	.050 <sup>b</sup>
Interaction between years worked and percent of pop. engaged in nonagricultural work	-.002	-.002	-.008 <sup>b</sup>	-.003	-.015 <sup>b</sup>	-.013 <sup>b</sup>
<u>Employment opportunities scale</u>						
Years worked	-.019 <sup>b</sup>	-.019 <sup>b</sup>	.021 <sup>b</sup>	.007	.027 <sup>b</sup>	.014
Interaction between years worked and employment opportunities scale	-.000	-.001	-.007	-.001	-.021 <sup>b</sup>	-.015 <sup>b</sup>
Number of cases	3359	3359	2033	2033	605	605

<sup>a</sup>Table contains slopes from 24 different regression equations; see text for explanation. All slopes are estimated net of respondent's age, marriage duration and education.

<sup>b</sup>Significantly different from zero, .05 level, two-tailed test.

Table 7. Net deviations from the grand mean of number of children ever born (CEB) and total number of children expected (TCE) associated with occupation, place of work and type of worker, by ethnicity.<sup>a</sup>

Independent variables	Malays		Chinese		Others	
	CEB <sup>b</sup>	TCE	CEB <sup>b</sup>	TCE <sup>b</sup>	CEB	TCE
<u>Occupation</u>						
Professional and administrative	-.742	.021	-.434 <sup>c</sup>	-.421 <sup>c</sup>	-.344	.001
Clerical	-1.079	-.683	-.496	-.361	-1.023	-.416
Sales	-.083	.034	-.391	-.547	-	-
Service	-.327	-.370	-.566	-.587	.020	.001
Factory operative	-.638	-.511	.019	.009	-	-
Extractive operative	-.479	.054	.059	-.052	-	-
Laborer (nonfarm)	-.395	-.264	-.068	-.082	.575	.874
Working proprietor	.206	.259	-.516	-.412	-	-
Home crafter	.244	.253	-.436	-.222	-	-
Farmer or farm laborer	-.059	-.037	.631	.670	.187	.182
Other occupations	-	-	-	-	-.125	-.174
Has not worked since marrying	.063	.066	-.076	-.022	-.176	-.087
<u>Place of work</u>						
Home	-.533	-.150	-.153	-.079	-	-
Away from home	-.353	.009	-.173	-.159	-	-
Has not worked since marrying	.063	.066	-.076	-.022	-	-
<u>Type of worker</u>						
Employee	.004 <sup>c</sup>	.130	-.190	-.290	.066	-.070
Employer or own-account worker	-.406	-.118	.045	-.043	-.111	.060
Unpaid family worker	-.501	-.043	-.198	-.072		
Has not worked since marrying	.063	.066	-.076	-.022	-.176	-.087
Number of cases	3523	3523	2073	2073	623	623

<sup>a</sup>Each column shows coefficients from one regression equation; each equation also controls for urban-rural residence, marriage duration, age and education.

<sup>b</sup>Significant (.05 level) increment to equation R<sup>2</sup> when occupation, place of work and type of worker added to an equation containing only the control variables.

<sup>c</sup>Significant (.05 level) increment to equation R<sup>2</sup> when this classification added to an equation containing all other employment variables and controls.

Table 8. Percentages employed since first marrying and working in different occupations, locations and employment classes, by residence and ethnicity.

Employment variables	Rural			Urban		
	Malays	Chinese	Others	Malays	Chinese	Others
Has worked since first marrying	60.3%	62.5%	65.8%	36.3%	51.2%	39.0%
<u>Employment class</u>						
Employee	32.8	63.1	94.0	63.3	63.8	95.7
Family worker	42.4	21.3	4.0	9.7	15.2	0.0
Self-employed	24.8	15.6	2.0	27.0	21.0	4.3
Works at home	30.4	26.1	2.4	30.0	27.0	5.3
<u>Occupation</u>						
White collar	8.5	15.2	4.8	40.6	32.4	39.4
Professional <sup>a</sup>	2.6	2.9	2.8	15.4	9.2	25.5
Blue collar	11.1	27.1	12.3	42.5	45.9	48.9
Traditional occupations <sup>b</sup>	8.0	12.1	0.8	20.3	20.8	6.4
Farm	80.4	57.7	82.9	16.9	21.7	11.7
Number of cases <sup>c</sup>	2968	946	383	571	1145	241

<sup>a</sup>Includes modern sector managerial and proprietor jobs as well as professional and technical occupations.

<sup>b</sup>Comprises working proprietors of traditional sales and service establishments (including vendors, peddlers and hawkers), and home manufacturers, i.e., those engaged in cottage industry.

<sup>c</sup>Refers to the total number of women in each residence and ethnic group, not to the number who have worked since marrying (the latter are the cases for all percentages except those shown in the first row of the table).

Table 9. Metric partial regression slopes relating years worked since first marrying to number of children ever born and total number of children expected, by education variables, ethnicity and residence.<sup>a</sup>

Education variables	Malays		Chinese		Others	
	Rural	Urban	Rural	Urban	Rural	Urban
<u>Children ever born</u>						
<u>Respondent's education</u>						
Seven or more years	.054 <sup>c</sup>	.061	-.086 <sup>c</sup>	-.057 <sup>c</sup>	.015	-.051
Fewer than seven years	-.023 <sup>b</sup>	-.001	.028 <sup>b</sup>	.014	.045 <sup>b</sup>	-.050
<u>Minimum education for boys</u>						
Twelve or more years	-.028	-.005	.000	-.005	.017	-.032
Fewer than twelve years	-.022 <sup>b</sup>	.005	.033 <sup>b</sup>	.008	.054 <sup>b</sup>	-.071 <sup>b</sup>
<u>Minimum education for girls</u>						
Twelve or more years	-.023	.010	-.003	-.007	.061	-.047
Fewer than twelve years	-.023 <sup>b</sup>	.001	.029 <sup>b</sup>	.006	.042 <sup>b</sup>	-.066 <sup>b</sup>
<u>Total children expected</u>						
<u>Respondent's education</u>						
Seven or more years	.033	.033	-.069 <sup>c</sup>	-.075 <sup>c</sup>	-.004	-.036
Fewer than seven years	-.019 <sup>b</sup>	-.006	.019 <sup>b</sup>	.006	.037 <sup>b</sup>	-.054 <sup>b</sup>
<u>Minimum education for boys</u>						
Twelve or more years	-.017	-.007	.002	-.006	.019	-.021
Fewer than twelve years	-.018 <sup>b</sup>	-.001	.023 <sup>b</sup>	-.005	.044 <sup>b</sup>	-.070 <sup>b</sup>
<u>Minimum education for girls</u>						
Twelve or more years	-.019	.003	.005	-.009	.029	-.033
Fewer than twelve years	-.018 <sup>b</sup>	-.004	.019 <sup>b</sup>	-.004	.036 <sup>b</sup>	-.067 <sup>b</sup>
Number of cases, R & boys	2941	565	932	1122	382	238
Number of cases, girls	2953	565	941	1128	382	241

<sup>a</sup>Table shows slopes from 36 different regression equations; see text for explanation. All slopes are estimated net of controls for marriage duration and age.

<sup>b</sup>Significantly different from zero, 0.5 level, two-tailed test.

<sup>c</sup>Slope significantly different from the slope for the bottom category of this measure, .05 level, two-tailed test.



Figure 1.--Mean number of children ever born by number of years worked since first marrying and marriage duration.

\* Number of cases.

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