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SOCIAL AND ECONOMIC CORRELATES OF FEMALE LABOR  
FORCE PARTICIPATION IN WEST MALAYSIA.

University of Hawaii, Ph.D., 1974  
Sociology, demography

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SOCIAL AND ECONOMIC CORRELATES OF FEMALE LABOR  
FORCE PARTICIPATION IN WEST MALAYSIA

A DISSERTATION SUBMITTED TO THE GRADUATE DIVISION OF  
THE UNIVERSITY OF HAWAII IN PARTIAL FULFILLMENT  
OF THE REQUIREMENTS FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

IN SOCIOLOGY

MAY 1974

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## ABSTRACT

This paper is an investigation of the labor force participation of women in West Malaysia. It consists of two parts. 1) A study of female labor force participation over time, calculating the rates and explaining their relationship to other social and economic indicators on the societal level. This part of the study employs data from the censuses of Malaya and Singapore from 1921 to 1957. 2) A study of the work patterns of married women aged 15-44, with individual data gathered by interviews in a sample survey. This study isolates individual social and economic characteristics of the working married women and the effect of these on work in a multivariate analysis. The data source is the National Family Survey 1966-1967, done by the National Family Planning Board of Malaysia.

The principal results are as follows. Female labor force participation rates in West Malaysia declined in the period 1921-1957 for each of the major racial groups: Malays, Chinese and Indians. This decline is associated with 1) a decrease in the proportion of working women employed in agriculture, 2) a decrease in male labor force participation rates, and 3) for Malays and Indians, a decrease in the sex ratio.

In the study of factors associated with the work of married women on the individual level, age, race, and

geographical area are consistently powerful in explaining different rates of work since marriage and different rates of current work. Of the socio-economic variables tested, the strongest influence on both work after marriage and current work is consistently exercised by work before marriage. Women who work before marriage are more likely to work after marriage than women who do not. Education of the woman and her husband, and the informal education of the woman are less influential. In urban areas, increased formal education of the woman exerts a negative, then a positive, influence on work. In rural areas the influence of education on work is negative. Contrary to the situation in the developed world, fertility is positively associated with work, except for a small group of urban women and educated women, where the relationship is negative.

The usefulness of promoting female employment as a means of fertility reduction is thus considerably diminished. It is only under very limited circumstances, namely in the most modernized strata of Malaysian society, that the association between employment and fertility is negative.

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## CHAPTER I

### INTRODUCTION

The present study examines the work of women in West Malaysia. It concentrates on two aspects: 1) a study of aggregate female work rates over time and their relationship to structural components of the society and economy; 2) a study of social and economic correlates of work in a contemporary setting, based on individual data.

The work of women is of special interest at the present time in terms of economic, demographic and social terms. It is increasingly being suggested as a means of economic development. Boserup (1970) suggests that increased female labor force participation, particularly in urban areas, will lead to more rapid economic development--not via the route of slower population growth, but as a means of utilizing the educational resources of educated women, and as a means of reducing the cost per worker of the urban-industrial infra-structure required for development of the economy.

In a demographic context, female labor force participation has been presented as a policy instrument for reducing fertility or population growth, through several different means: 1) by increasing the age at marriage; 2) by increasing the proportion not marrying (Dixon, 1970); 3) by increased childlessness among those

who do marry (Sklar, 1971); 4) by reducing the completed fertility of married women (Blake, 1965, 1971; Davis, 1937, 1967; Heer, 1964) through the provision of alternative roles for women; and 5) by the creation of a conflict between the roles of mother and worker (Weller, 1968a).

Socially, the labor force participation of women is generally regarded as a major facilitator of the emancipation and liberation of women (e.g. Morgan, 1970). Economic equality, usually through equal pay for equal work, along with the freedom from reproduction, through access to contraception and abortion, is the main path to the achievement of equality for women.

Female labor force participation is also a useful means of studying the effect of economic development on social structure. It entails changes in the role and status of women, modifies the social stratification system and promotes social change. It is particularly helpful in investigating structural changes in society on a micro as well as a macro level. Whereas the present paper will not cover any of the far-reaching implications of female labor force participation in these terms, it can establish a demographic baseline, on which to judge such changes in future studies. The accurate measurement of trends in women's work and an assessment of the factors influencing it in a contemporary setting therefore assume prime importance.



While all points of view are relevant to this problem, the demographic one takes on special importance in countries characterized by rapid population growth. The evidence of a negative relationship between fertility and employment in the developed world is fairly well documented (e.g. Leroy, 1968; Bowen and Finegan, 1969; Sweet, 1970 and 1973; de Laval, 1970). Empirical investigations of this relationship in developing countries are few (see Chapter VI for a listing and review of these studies in developed as well as developing countries) and the findings do not suggest a uniform or consistent relationship between fertility and labor force participation.

Based on the relationship in developed countries, a number of authors strongly suggest the usefulness of female labor force participation as a means of fertility reduction in developing countries as well (Blake, 1965; Heer, 1964). Limitations to the transposition of this fertility reduction framework to a developing area have been suggested (Weller, 1968a, 1968b; Stycos and Weller, 1967), largely in terms of the social institutions for child care. However, this model does not encompass all cases (see Mueller et al.) and additional explanatory frameworks are needed. Before advocating female labor force participation as a fertility reduction policy for export to developing countries, a thorough understanding of both the determinants of female labor force participation and its relationship to fertility, if any,

within each country or group of countries, is called for.

The present study will investigate the relationship between work and fertility of women in West Malaysia, within a context of other determinants of women's work. It will delineate the causal connections and specify the conditions under which employment may have a negative effect on fertility, and those under which it may have a positive effect, or no effect at all, as part of its general consideration of the factors associated with labor force participation of women. West Malaysia is a suitable locale for such research. Rapid population growth has characterized Malaysia for more than 100 years (Palmore, 1974). Moreover, fertility as well as employment has become the subject of government policies. A national family planning program has been in existence since 1966. The government has been actively measuring and modifying employment and unemployment even longer. The area has been developing rapidly and is enjoying comparatively high per capita gross national product, compared to other Asian countries. Although, for instance Thailand has higher female work rates, the labor force participation of women in West Malaysia is nevertheless high by Asian standards (Durand, 1973). Evidence for this is provided inter alia by a cluster analysis of labor force participation patterns in different countries (Hartmann, 1970). Malaysia belongs to a small group of countries, including the United States,

Canada, France and Sweden, among others, where female activity rates are high.

A pluralistic society, West Malaysia unites cultural and ethnic as well as religious diversity and thus provides a felicitous multiple perspective on social phenomena. Part of the British colonial statistical system, Malaysia also offers data on population and labor force in historical series. Currently, West Malaysia is one of the statistically most advanced countries in Asia with a number of recent surveys on fertility as well as labor force participation available.

Major labor force surveys were done in 1962, 1965 and 1967-68 (Federation of Malaya, 1963; Malaysia, Department of Statistics, 1966, 1970). A number of secondary studies and projections are also available (Saw, 1966a, 1966b, 1968, 1970; Yeh, 1971; Jones, 1968; Vavra, 1972). None of these focuses on the labor force participation of women, however.

Several studies have indicated the importance of racial differences in West Malaysia (Hirschman, 1972; National Family Planning Board, Palmore, 1969; Cho, 1965; Mehmet, 1973). Hirschman, who has made a thorough study of economic differences, suggests a combination of historical tradition, dating back to the different labor markets for the different immigrant groups and the native Malays, and selective hiring practices based on ethnic

origin, in more recent years. Mehmet (op. cit.) similarly suggests different labor markets because of preference for familial and intra-ethnic recruitment to new jobs. The other studies pinpoint differences in fertility by ethnicity.

In West Malaysia a tradition of female work outside the home is in evidence for each of the three major racial groups. The comparative economic independence of Malay women and their high part time labor force participation has been documented in two small-scale intensive studies (Firth, Raymond, 1966, Ch. 7, and Firth, Rosemary, 1966, Ch. 2). From the censuses of Malaya it is apparent that a large fraction of the Indian women were employed in the rubber estates, where they, like the males, had migrated for the purpose of employment. Similarly, although less pronounced, high status and high labor force participation rates for Chinese women can be traced back to the history of immigrant labor. Following the legal restrictions on the migration of Chinese males instituted in 1933, Chinese women to some extent took the place of males as immigrants to Malaya for employment (Parmer, 1960).

### Measurements

The measurement of female labor force participation is fraught with problems (Boserup, 1970; Durand, 1973; United Nations, 1962, p. 1-10). It is among the most

variedly defined and interpreted concepts in population statistics. Not only is the concept of labor force participation in large part a Western concept, not easily transferable to an Asian context (Myrdal, 1968; Hauser, 1971), but the labor force participation of women in traditional societies is often more difficult to define than that of men. Of particular concern is the nearly impossible distinction between housewife, unpaid family worker and a woman working in agriculture. All three of these terms can easily be applied to a farmer's wife. Depending upon the classification scheme employed, she could either be counted as part of the labor force or not. This fluidity of definitions exists in all branches of economic activity, but is especially pertinent to agriculture.

The danger of drawing erroneous inferences from labor force data is considerably reduced when comparisons are confined in time or space. The focus here is strictly on Malaysia, although at different points in time, and the problem is considerably diminished.

The purpose and aim of this study also makes the Western concepts of labor force participation of women less inappropriate than in other studies. The major concern here is women's work outside the home, in accordance with the classic Western concept of labor force participation as work for remuneration, rather than total work, such

as house and farm work. It is work outside the home that suggests a new role in addition to that of wife and mother, and a role that is likely to have a positive impact upon the adoption of a "modern" ideology. In addition to its modernizing impact, work outside the physical limits of the home is also likely to conflict with childbearing and rearing and thereby provide motivation for the limitation of fertility. Thus, while subject to caution in the interpretation of the figures, the classic concept of labor force participation will make useful service in this study, despite its very real limitations. This does not mean, of course, that the existing data should be used without particular attention to changing quality of data and changing definitions of labor force participation over time.

In the measurement of female work rates and the clarification of its macro and micro socio-economic correlates the study will proceed as follows. A detailed presentation of the data and method of analysis used with special attention to their limitations follows in Chapter II. Chapter III contains the macro-level study of female work rates over time, with its societal correlates. Chapters IV, V, and VI investigate individual correlates of female work with regard to work and income, education and fertility of the women. In addition to dealing with fertility as an independent variable,

Chapter VI also deals with fertility as a dependent variable, affected by work characteristics of the women. Chapter VII considers simultaneously the influence of the economic, education, and fertility variables. Chapter VIII, finally recapitulates the findings and gives suggestions for further research.

CHAPTER II  
MEASURING THE WORK OF WOMEN:  
DATA AND METHODOLOGY

The Data

The two main sources of data to be employed are 1) the censuses of Malaya from 1921 to 1957 and 2) the West Malaysian Family Survey of 1966-1967. In lieu of cohort data, we will use a time series of period data, i.e. the census data to provide information on labor force participation as it changes over time. The survey will provide period data as well, providing information on differences in female work patterns at one point in time. In order to gain an understanding of women's work, it is necessary to explore both of these.

The study of women's work over time is particularly interesting when viewed in terms of female labor force participation and development. The usual hypothesis, most prominently discussed by Sinha (1965) and Durand (1973) is, simply put: in a traditional economy female labor force participation is on the same level as male. Limited economic development caters to males and tends to provide more new jobs for males, leading to a new division of labor and the gradual decline in female economic participation (Boserup, 1970). With further economic development more jobs are provided for females and their labor force



participation increases again. Plotted against economic development, or time, female labor force participation takes on a U-shaped curve. The U-curve hypothesis will be studied through the data from various points in time in the different censuses.

To what extent this hypothesis is also applicable to different levels of economic development in one country at one point in time will also be tested in a limited way with data representing different sectors of the economy, using the National Family Survey of 1966-67.

This U-shaped curve of female labor force participation when plotted against time or development is not to be confused with the U-shaped curve of female labor force participation when plotted against the age of the women, also found in many countries.

The censuses provide only aggregate data while the survey consists of individual records. The analysis for the two data sets will therefore be very different. The inferences drawn and the results obtained will cover both macro and microeconomic aspects of female labor force participation, although at different points in time.

While the definition and measurement of female labor force participation is subject with considerable difficulties, the focus of the present study allows the use of these admittedly imperfect data without major compromises on quality. It is really work in the traditional Western

definition that is relevant here, both from an economic and a demographic point of view.

At the same time it is important to bear in mind constantly the imperfect nature of the census data. The definition of economically active women varies in the different censuses from 1921 to 1957, used in this study. Fluctuations must therefore be carefully examined to determine true changes. In addition, there is likely to be a certain variation among enumerators and districts during any one census.

The other major data source, The National Family Survey of 1966-67, devotes comparatively little detail to female labor force participation. The measures of female work in this survey are very different from those in the census. They are only a proxy for labor force participation and cannot be said to measure it directly. Furthermore, the census provides information on all women age ten and above, whereas the survey samples only married women age 15-44. Therefore, the two data sets will not provide comparisons between each other.

The censuses cover Malaya and Singapore for the years 1911, 1921, 1931, 1947 and 1957. As will be shown in greater detail later, it is possible to extract information for female work rates for all of these years. This is not possible with the first census, i.e. 1901, and for this reason they are not included in the present analysis.

Naturally, the early census is also likely subject to greater errors due to the greater difficulties in census taking, and on that count alone, its usefulness is doubtful.

The second data base, the West Malaysian Family Survey 1966-1967, consists of a stratified sample containing 5457 intensive fertility interviews of currently married women age 15-45 available as a computer tape.

The response rate is a high 94.1 percent, with no stratum showing a lower response rate than 90 percent. The interviews cover:

- 1) household composition
- 2) attitudes to childbearing cum pregnancy history
- 3) fecundity
- 4) family size
- 5) attitudes towards and practice of family planning
- 6) communication channels and modernity
- 7) extended family relations and marriages
- 8) wife's background variables, including questions on education and labor force participation
- 9) husband's background characteristics
- 10) household facilities.

Specific questions on labor force participation are:

- 1) Before you were married did you ever work for money?
- 2) Was this work at home or somewhere else?

- 3) How about since you were married? Apart from housekeeping have you ever worked for money?
- 4) Since you were married how many years have you worked?
- 5) Are you working now or have you stopped working?
- 6) Is this work at home or somewhere else?

More detailed questions on husband's occupation and income, plus total family income were also asked. Details on sampling, interviewing and survey operations are found in the published report The National Family Survey 1966-67 (Malaysia, National Family Planning Board, 1968).

This survey shares with many others the limitation of referring only to current events. Thus, it provides information on premarital work, work since marriage and number of years worked since marriage, but these variables refer to the past, whereas social and economic variables such as income, occupation and socio-economic status refer to the present. This limitation must be kept in mind when relating work to these variables. Current socio-economic status or income cannot be used to infer a causal relationship between status and income and work before marriage, since status and work may have changed in the time passed since premarital work, possibly even as an effect of this work variable.

### The Methodology

The aggregate data in the study of labor force participation over time are close enough to interval form to permit the use of standard multiple regression techniques.

The individual data in the study of labor force participation of different ages at a single point in time, however, are in many different forms. Some of the variables such as education or number of children may approach an interval scale, whereas others such as media use are ordinal and others like race and area are only nominal. In order to accommodate all the different forms of the variables Multiple Classification Analysis (MCA) is used (Andrews, Morgan and Sonquist). The MCA analysis is a multivariate analysis similar to multiple regression analysis using dummy variables. It differs from standard multiple regression, however, not only in its easy accommodation of different types of variables, but also in its control on all the independent variables simultaneously. It uses deviations from the grand mean for all variables together rather than deviations from a single class as in dummy variable regression.

In addition, MCA analysis does not presuppose a linear relationship among the variables. This is of particular advantage in the present analysis which reveals a number of apparently curvilinear relationships, notably for education.

MCA analysis is also a frequently used technique in the analysis of fertility as well as the analysis of female labor force participation. It is easily understood and as far as technique goes easily comparable to other studies. For example, two recent studies of female labor force participation of particular interest (Mueller et al. and Speare et al.) employ just this technique.

Its popularity in research has resulted in or perhaps from MCA being available as a "canned" computer program, convenient to use. It provides the following measurements used in the present analysis: means and standard deviations for each variable, as well as deviations from the grand mean, expressed both as net effect and gross effect; an adjusted mean when all the other variables are held constant is also calculated. This is of particular advantage in illustrating the effect of a variable alone and combined with the other variables. This will also reveal percentage differences among categories that may be unimportant in explaining the variable because of the small number of cases involved in one category, but that are nevertheless illustrative of important differences. For each independent variable MCA also gives  $\eta$  and  $\eta^2$ , the correlation ratio and its square, which measure the variation in the dependent variable and the total sum of squares by each independent variable explained, respectively. A multiple correlation coefficient,  $R^2$  adjusted for the

degrees of freedom is also calculated; this gives the proportion of the total variance explained by all the independent variables together.

The chief caveat about MCA analysis is the assumption of additivity. MCA presumes an additive model, i.e. the effect of one independent variable is added to that of another in order to get the combined effect. When interaction among the independent variables occurs, or if the basis form of the relationship is non-additive, this technique can therefore not be used without taking special steps. Interaction and non-additivity can be overcome in several ways. Interacting variables can be recoded into one variable incorporating all patterns of variation. Or they can, as will be done here, be separated out as control variables. This shows very simply and clearly what the separate effects are without interaction. As with recategorization or recoding, however, this technique is limited to relatively few interactions at a time.

Other techniques of data analysis more appropriate to interacting variables exist, e.g. the automatic interaction detection technique or AID (Sonquist and Morgan, 1964). Its reliability is, however, seriously hampered by non-linear relationships. The present set of data incorporates several patently non-linear relationships, and AID is therefore not appropriate. MCA, on the other hand, handles these well, although it is more awkward in handling

interaction effects. Tests of statistical significance are noticeably absent from the following analysis. This is not due to a disregard, or worse, an ignorance of, the importance of distinguishing random from regular or patterned occurrences. It is instead because of the rather hazardous statistical assumptions necessary to do such tests with the present technique and data set.

In essence, two sets of significance tests are possible in this kind of analysis: a) tests of significance for the various measures of correlation and b) tests of significance for differences between means. The stratified sample used in this survey necessitates the use of weights, which render the standard F-tests inappropriate. According to the originators of MCA

when using weighted data, the interpretation of the F-statistic becomes difficult. The formulas above are not applicable without introducing a correction for the effect of the weights on the sums of squares, and no ideal correction is available. Weights may be "normalized" so they sum to N. One rough approximation might be to divide each sum of squares term by the mean weight . . . . However, the user of even this approximation is warned that the assumption of independent random sampling, which underlies the F-test, is being violated when the data are "weighted up." Furthermore, if the weights themselves bear any relationship to either the dependent or predictor variables, this may affect the value of the F-statistic. There appears to be no easy general solution to this problem. (Andrews, Morgan and Sonquist, p. 98)

The differences between percentages and the differences in means, however, can be subjected to significance



tests. This is true for the unadjusted means; the same weighting problems exist for the adjusted means as for the tests of correlation. Appendix II reproduces tables from the West Malaysian Family Survey 1966-67, indicating confidence limits for the different areas, for percentages, differences in percentages, means and differences between means. They are of minor interest here, since our major focus is on the adjusted means. In addition, in many small groups, the differences in percentages do not exceed the sampling errors shown, yet follow a clear and consistent pattern when combined with other pairs of differences. According to strict rules these results should be rejected although the pattern visible in three or four groups may well be unlikely to occur on a random basis.

This lack of suitable significance tests for the findings of the study should not be cause for gleefully reporting all differences, spinning extensive generalization thereupon and arriving at grand--or even middle range--theories standing on clay feet. The problem posed by the lack of appropriate significance tests can be solved in at least three ways.

1. Statistics taking into account the limitations of the present data can be constructed. While this is undoubtedly a worthwhile task, it is clearly an end in itself and outside the scope of the present study as well as the abilities of the investigator.

2. Available statistical techniques can be used as they are, despite their inappropriateness. However, significance tests do, after all, only indicate to what extent the sample mirrors the values of the population and at a certain confidence level and not, as it sometimes appears, a test of some abstract truth of the data. The .05 level of significance only indicates that the results at hand would occur by chance five times out of 100. It is always possible that the results at hand are one of those five times. This is exacerbated by the fact that there are several hundred correlations and differences in the data analysis. It follows that five out of every 100 appear significant purely by chance. Which five?

In view of the violations to the assumptions of the tests involved, not strictly random sample and the large number of tests involved, many of these may appear significant purely by chance. Significance tests could easily constitute unnecessary frills that might mask the results of the study.

However, in order to alleviate the possible suspicion that the results discussed at length here are insignificant we have established a standard to judge the results against for the proportion of variance explained, by all the variables together,  $R^2$ , and the proportion explained by a single variable,  $\eta^2$ , the two most frequently used statistics in the ensuing analysis. We have chosen the .01 level of

significance as a criterion, adapting the standard significance test formulas (Andrews, Morgan and Sonquist, p. 99) to solving for the test variable instead of for F, as follows:

$$F = \frac{\tilde{R}^2/C-P}{1-\tilde{R}^2/N-C+P-1} \quad \text{for } R^2$$

and

$$F = \frac{\eta^2/c_i-1}{1-\eta^2/N-c_i} \quad \text{for } \eta^2$$

where

$R^2$  = the proportion of variance explained by all variables together

$C$  = number of categories for all independent variables together

$c_i$  = number of categories in independent variable  $i$

$N$  = total number of cases

$P$  = number of predictors or independent variables

$\eta^2$  = the proportion of variance explained by the independent variable by itself

We insert the following values for these variables in a standard run of MCA:

$C = 36$

$c_i = 3$

$P = 12$

$N = 5457$

$F = 1.79$  for  $24/\infty$  degrees of freedom and get an  $R^2$  as low as .0078 and an  $\eta^2$  as low as .0017 significant at the .01 level.

The above tests assume a random sample. In order to allow for the clustering used in the present sample, the rule of thumb suggested is to double this figure. A very conservative estimate would be four times these figures, namely .03 for  $R^2$  and .007 for  $\eta^2$ . Nearly all of the  $R^2$  and  $\eta^2$  in the analysis and all of the ones discussed in the following exceed these values several times. However, a proportion of the total variance explained of .03 or an  $\eta^2$  of .007 remain uninteresting and of little explanatory of predictive value, regardless of their significance at the .01 level.

3. Instead of using significance tests as a criterion, we have attempted a third technique, namely a careful, common sense approach to the data, a deliberate conservatism in assigning importance to results, a cautious attention to fitting the results into a meaningful context and a deliberate search for consistency across subgroups. For lack of a more rigorous technique, this is what we have adopted here.

CHAPTER III  
TRENDS IN FEMALE LABOR FORCE PARTICIPATION  
SINCE 1921: MALAYA AND SINGAPORE

Trends in female labor force participation in West Malaysia can be related to several explanatory models. Our objectives in this chapter are to test the changes in female labor force participation rates and their relationship to the following hypotheses.

1. The U-shaped curve of female labor force participation, already discussed in the introduction, which hypothesizes a decrease and then an increase in female labor force participation with increasing economic development due, respectively, to a decrease in agricultural work and an increased demand for labor in the industrial sector of the economy. While Sinha (1965) found support for this hypothesis both with regional data at one point in time and with data from several points in time, Durand (1973) suggests that the U-shaped curve may, in part, also be explained as the result of the aggregation of different regions and different age patterns, and may not hold for all individual countries. Here the hypothesis is tested with data for the three major ethnic groups in West Malaysia. Our findings give only partial support to Durand's hypothesis, inasmuch as a shallow U-curve can be discerned for Chinese women. Malay and Indian women show

no such pattern in their labor force participation rates.

2. According to previous studies (Long, 1958) male and female labor force participation rates are complementary. When male labor force participation rates decline, female rates tend to increase. We test to what extent this is true in a developing area such as West Malaysia. As will be detailed in the main body of the chapter, this hypothesis turns out to be entirely inappropriate, for male and female rates decline together.

3. Because of the peculiar age-sex structure in West Malaysia, due to migration after the turn of the century, there is good reason to believe that labor force participation rates for females are not only related to the rates for males, as in the above hypothesis, but also to the sex ratio, here measured as the number of males per 100 females. The higher the sex ratio, or the smaller the proportion of women in the population of working age, it would seem, the more likely that women would not be active outside the home or in the labor force. This argument is supported not only by a not very convincing ontological argument that the few females in such a society would have to be engaged exclusively in reproduction, or the society would not survive, but also by an exchange theory argument that the women would be so scarce as to be able to set their own terms, assuming then that these terms did not involve a preference for manual labor, or even by a status type argument that

women were so rare as to be status symbols, maybe even conspicuously displayed in idleness. Quite contrary to expectations we find that the relationship holds for Indian and Malay females, but not for Chinese.

With these main objectives in mind, the statistics and the three hypotheses, we will examine the historical trends in female labor force participation in West Malaysia through the censuses. Although, understandably, the labor force participation of women was not a matter of major interest to the British census takers, data on the labor force, by sex, exist in all the censuses. Here the analysis will be limited to the censuses of 1921, 1931, 1947 and 1957 which have adequate data on the work of women from the entire country. The age classification of the census of 1901 makes it impossible to get work rates comparable to those of the other censuses. The census of 1911 provides such a classification only for four states (Table 4).

In these early censuses of Malaya the participation or non-participation in the labor force was asked and tabulated for the entire population regardless of age. While this method avoids the not uncommon error of totally excluding child-labor, where such exists, it presents problems in the present analysis of the labor force participation of women.

Clearly, taking the rate of labor force participation

on the basis of the entire population, by sex, not only includes child labor which is of no interest in this investigation, and which inflates the numerator of the labor force/population calculation. It also reflects strongly the age structure of the population and inflates or deflates the denominator according to the number of children in the population. Such crude rates would be particularly misleading in Malaysia of this period, when the age structure of the immigrant Indian and Chinese populations was at first highly irregular, then changed to a more normal one.

Arbitrarily taking 15 years of age as a cut-off point and declaring everyone below this age to be 1) a child and 2) not in the labor force would also be unsatisfactory. It eliminates, in some part, the problems of the age structure, but underestimates child and youth labor, thus artificially inflating the labor force participation rates of adults.<sup>1</sup>

In order to obviate this problem, 10 years of age has been chosen as a cut-off point. Arbitrarily, everyone below this age is assumed to be outside the labor force, and

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<sup>1</sup>Employing this definition, for instance, labor force participation for adult males of Chinese origin in the Unfederated Malay States in the census of 1931 is in excess of 100 percent. This problem does not arise for the female population, but pinpoints a definition that does violence to the data.



everyone above to be capable of entering the labor force. This limit is lower than customarily assumed in the West, but, as pointed out by Hauser (1971) a limit with a factual basis in developing countries.

Unfortunately, this cut-off point allows the influence of the age structure as well as that of child labor, if traditionally and rigidly defined as under age 15, to influence labor force participation rates for adults. At the same time this definition, although problematic, makes considerable progress toward comparability.

For purposes of comparison, standardization of one form or another is useful, although infrequent in analyses of labor force data. (For a discussion on standardization see Kitagawa, 1964.) Unfortunately, the data on labor force participation from the early Malayan censuses permit only indirect standardization, i.e. the age specific rates have to be taken as a standard from another population. This method preserves rather than eliminates the influence of the age structure, and is therefore of little use here.

The definition of labor force participation varies among the censuses. The censuses up to and including 1947 all employ the usual occupation, i.e. the gainful worker approach. This means that inclusion in the labor force is determined by a person's usual occupation. The 1957 census, in contrast, adopted the labor force approach, by which someone who had worked four months out of the preceding

twelve or who had been looking for work for six out of the preceding twelve was included in the labor force. Whether the 1957 definition is broader or narrower in scope is difficult to tell. Data required to test this rigorously do not exist. The 1957 classification includes only a small number of women in the labor force but not classifiable by occupation: one percent of the female labor force for Malays and Indians and two percent for Chinese. It therefore seems likely that the gainful worker approach does not exclude a significant proportion of the persons classified in the labor force by the labor force approach. While the labor force approach adopted is not a very restrictive one, it is not possible to tell whether it excluded persons from the labor force who would have been included in the gainful worker approach, or how many. It seems plausible from Figure 1 that no hiatus was created by the change. This, in conjunction with the broad labor force definition in the 1957 census, delineates the trends well enough to make the data comparable enough for the present purpose.

Thus, what remains are data on labor force participation for all females age 10 and above, approximately comparable, with as few extraneous factors as possible within the limitations of existing data.

Labor force data are computed for this segment of the female population. The format of the data requires an indirect definition of labor force participation, according

to the following formula:<sup>2</sup>

$$1 - ((F^0 - F_{0-9})/F_{10+})$$

where

$F^0$  = females with no occupation for the censuses  
prior to 1957, females not in the labor force  
for 1957

$F_{0-9}$  = females age 0-9

$F_{10+}$  = females age 10 and above

These calculations are done separately for each major ethnic group: Malays, Chinese, and Indians.<sup>3</sup>

These ethnic groups are specified for each state in the Straits Settlements and in the Federated and Unfederated Malay States. Since new states are included with the passage of time, these totals cannot be meaningfully compared, however.

As discussed in the introduction, additional problems are introduced by the sometimes arbitrary inclusion or

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<sup>2</sup>This approximation can be used only because the number of workers below age 10 is negligible. A large number in this age group would invalidate the approximation altogether.

<sup>3</sup>Europeans and Eurasians are of little interest in the present study, constituting a small number and an alien group. The aborigines, or Sakai, are also being excluded from the present study, also being a small group and outside the mainstream of Malay culture. Where necessary, the figure for Malays is obtained by combining Malays and immigrant Malaysians.

exclusion of a person in the labor force category, particularly females engaged in agriculture. A preliminary investigation of labor force participation of women in the censuses of 1921 and 1931 for Malaya, by race and by area, showed sufficient interclass differences to suggest factors other than chance as determinants of the size of the female labor force, however. Thus while chance cannot be eliminated as a determinant of inclusion or non-inclusion in the labor force category, it appears to be one of several factors and not the most important one of these.

#### Labor Force Participation Rates for Women

A glance at the data will reveal that labor force participation rates have declined from previously very high levels for both sexes (Figure 1, Tables 1, 2, 3, 4). In part this reflects improved data collection and a more stringent definition of labor force participation, i.e. the quality of the data, in part it reflects changes in the age structure with more people in the age groups 10-14 and 15-19 where activity rates are lower, in part it also reflects a structural change in the economy. This change will be discussed in the later sections of this chapter.

It also becomes readily apparent that rates of female labor force participation have undergone greater change than male rates, absolutely as well as proportionately. While the decline in male labor force participation is in

all but four cases monotonic, female labor force participation except for Malay women do not change in a uniform pattern. With poor quality data, including problems of definition, discussed above, an irregular decline is more likely to occur. The most remarkable change is for Chinese women, for whom the mean rate declines and then rises again. The same is true of the individual state rates for Chinese women, except in Kedah and Perlis, where a pattern of decline similar to that of Malays appears. A simple measure of percentage change between 1921 and 1957 shows an irregular pattern for Chinese women, with declines in some states, increases in others (Table 5). Moreover, these differences are not readily explained by similarities among the states with increasing rates of female labor force participation or those with decreasing rates.

Looking at racial differences, the highest rates for males are shown by Indians, then Chinese and Malays. For females, Indians also show the highest rates, followed by Malays and then Chinese. In the last census tabulated here, the work rates of Chinese females slightly exceed those of Malay women. The rates for Chinese women have decreased and then increased a little, whereas those for Malay women have declined substantially. The mean, although not all the individual state rates, of labor force participation for Chinese women takes an upward turn at the same time as the definition of labor force participation changes, namely in

1957. The new definition of employment for six out of the preceding twelve months or an active search for employment for four months may affect the number of Chinese women included in the labor force more than Malay and Indian women, because of their different position in the economy. Chinese women are participating more proportionately in the urban-industrial as opposed to the agricultural sector of the economy, where such a definition is likely to have greater effect.

It is also apparent that the work pattern of Chinese and Malay women is converging. The rates are nearly the same in 1957, reflecting a homogenization of society. Indian women do not appear to be included in this trend to convergence, for the percentage differences between Indian and Malay women are nearly the same in 1921 and 1957, about 20 percentage points, although both rates declined. Proportionately, the difference actually increased; the rate for Indian women was 39 percent higher than that of Malay women in 1921, 92 percent higher in 1957.

The changes in labor force participation just cited can be viewed more meaningfully in terms of the three hypotheses regarding the change, namely the influence of the proportion of women in agriculture, the male labor force participation levels, and the sex ratio, on female work rates. These three factors are studied in a multiple regression analysis, and their detailed influence assessed.

Female Labor Force Participation as a Function of the  
Proportion of Women in Agriculture

The proportion of all women workers in agriculture (Tables 6, 7, 8) including both traditional agriculture and rubber cultivation show a positive relationship to female labor force participation in the censuses of 1921, 1931, 1947 and 1957. The correlation is fairly strong; correlation coefficients are .53 for Malay, .69 for Chinese and .69 for Indian women. Whereas we cannot infer a direct causal relationship, an imputation of causation would be strengthened by the fact that male labor force participation rates are not correlated very strongly with the proportion of females in agriculture (.03, .01 and .13 for Malays, Chinese and Indians) nor very strongly correlated with the proportion of males in agriculture (.23, .31 and .03). If the proportion of females in agriculture were only a proxy variable for time, the work rates can be expected to vary the same way as female work rates, but they do not. The proportion of males in agriculture is, however, correlated with female work rates: for Malays  $r = .86$ , for Chinese .42 and for Indians .86. Thus the proportion of males in the labor force who are in agriculture as well as the proportion of females has a positive influence on female labor force participation rates: the more agricultural the society, the more women work. The hypothesis is confirmed and the fraction of variance in female labor force participation

explained by the proportion of women workers in agriculture is large: .48 for Indian women, .43 for Chinese women and .28 for Malay women (Table 10).

Of particular interest are the work rates for Chinese women for which the proportion of males in agriculture explains little variance (.17) but the proportion of females more (.43) (Table 10). The number of Chinese males in agriculture is small--it never exceeds 37 percent of the labor force (Table 7). Changes in these low percentages have relatively little influence on the work rates of females. This influence may be traced to the low proportion of Chinese females in agriculture.

The proportion of women in agriculture also illustrates nicely the racial differences in female labor force participation rates. For Malays and Indians, who are concentrated in agricultural work--the proportion in agriculture is in excess of .80--a continuous decline is shown in mean work rates (Tables 6, 8). For Chinese women, who are employed in agriculture at about half the mean rate of Indian and Malay women (Table 7), there is no continuous decline in agricultural jobs and no decline in mean labor force participation rates. Although the individual state rates of female labor force participation and of proportion of women employed in agriculture show considerable change over time also for Chinese women, the mean rates show fairly little change. The mean rate of labor force participation



increases in 1957, but this is also when the definition of labor force participation changes.

#### Complementarity of Male and Female Labor Force Participation Rates

The complementarity of male and female labor force participation rates as hypothesized on the basis of Long's (1958) study is not true for West Malaysia in this time period. On the contrary, the relationship between male and female labor force participation is a positive one (Table 14) by race, by area and by time. The relationship is strongest for Malays where  $r = .51$ ; for Chinese and Indians it is .29 and .28. Malays also have the highest proportion in agriculture for both sexes. For Chinese and Indians, where the proportion in agriculture is both smaller and differs more by sex, the correlation between male and female labor force participation rates is smaller (Table 14).

An even clearer illustration of the differences by sex are provided by the ratio of male to female labor force participation rates (Tables 15, 16, 17). The highest ratio is for the Chinese with a mean of 3.85 and a standard deviation of 1.49 followed by Malays with a mean of 3.56 and a larger standard deviation, 2.76, and Indians with a mean and standard deviation of 2.78 and 2.95. The large standard deviations are caused by the high ratios for Singapore in

1947 and 1957 for the non-Chinese population.

Female Work Rates as a Function of the Sex Ratio

The predicted negative correlation between female work rates and the sex ratio is born out for Malay and Indian women but not for Chinese women (Table 14). Further illustration to support the hypothesis is also provided by the correlation of the sex ratio and a summary measure of male and female labor force participation relative to each other, namely the ratio of male to female labor force participation rates. As the sex ratio increases, so does this ratio. Conversely, the lower the sex ratio, the lower the ratio of male to female labor force participation. Whether this lower ratio is brought about by an increase in the denominator (female labor force participation) or a decrease in the numerator (male labor force participation) is of no import, for the female contribution to the manpower pool is still increased (Table 14).

This relationship is, however, not true for the Chinese. In part this may be accounted for by the irregular pattern of labor force participation for Chinese women already discussed. This pattern is particularly well illustrated by the percent change in labor force participation rates over time (Table 5). For Chinese females these rates show both positive and negative change, whereas the rates for the other age-sex groups show uniformly negative

change. This makes the mean change for Chinese females very small, and a less appropriate statistic than the correlation coefficient, when relating it to change in other variables. It also indicates fluctuations in the change over time. The sex ratio, on the other hand, tends to decline fairly uniformly over time.

As is also evident from Figure 1, the mean rates for Chinese females describe a very weak curvilinear pattern, for which the linear regression is an admittedly poor representation. While higher order equations improve the fit, the proportion of variance explained is not substantially increased (Table 18). A more probable explanation can be given in terms of the proportion of women employed in agriculture and in non-agricultural employment (Durand, 1973). The mix of agriculture and non-agriculture, as well as the proportion of males in each sector, then determine whether the labor force participation of women increases or decreases.

Male labor force participation, as a comparison, is positively related to the sex ratio (Table 14). In other words, a high sex ratio, showing an excess of males over females, is associated with high labor force participation of males. This is exactly what would be predicted in a society characterized by immigrant male labor, such as Malaya in the period under study. As the immigration ceases and the population becomes more balanced in terms

of sex, the sex ratio declines and a smaller percentage of males are engaged in agriculture. A direct causal connection between the proportion of males and their work rates is more difficult to establish.

#### Proportion of Variance Explained by All Variables

Taking all the variables together, a not insubstantial percent of the total variance in female as well as male labor force participation is explained--82 percent for Indian women, 79 percent for Malay women and 63 percent for Chinese women (Table 10). The greater variance explained for Indian and Malay women compared to Chinese women is due both to the greater explanatory power of the sex ratio and of the proportion males in agriculture.

In order to reach a more thorough understanding of Chinese female work rates an additional analysis incorporating literacy rates as an additional independent variable follows (Table 19). The data available limits the study to the years 1931, 1947 and 1957, and to literacy rates age 15 and above, a less than ideal data set since the work data refer to age ten and above and are available also for the earlier census. Literacy is positively related to labor force participation although the correlation is not large--.26. When added to the regression analysis it adds but 4 percent to the explained variance, from 58 percent without literacy for the years 1931, 1947 and 1957 and

62 percent with literacy. If we postulate a causal association, this would again indicate the importance of non-agricultural occupations for Chinese females whose work rates increase with literacy. The increase in work rates is, in any case, minor. It is also well to keep in mind the imperfect nature of the data.

### Summary

This survey of census data on female labor force participation in Malaya has shown high, but declining rates. Indian women, in particular, show very high rates, close to those of males. For Chinese women, on the other hand, the rates are low and show no uniform trend for the different states. A large part of this variation is explained by the proportion of female workers who are employed in agriculture: with a high proportion in agriculture, high rates of labor force participation prevail. Male and female work rates vary together; they both decline in the period under study. Thus, male work rates can hardly be said to be causally related to female rates; rather an antecedent variable, such as the general level of economic development, is more likely to cause the change in both rates.

The sex ratio is inversely related to the female labor force participation rates, but only for Malay and Indian women. The lack of such a relationship for Chinese women can be explained in terms of greater variation in rates

among different states, which may or may not be related to poor quality data, and to the lower proportion of Chinese women in agriculture, compared to the other racial groups.

TABLE 1. -- Labor force participation rates age 10 and above, 1921-1957, Malays

	1921	1931	1947	1957
Males				
Singapore	0.8645	0.8064	0.8242	0.7999
Penang	0.8034	0.7904	0.7594	0.7052
Malacca	0.8347	0.7709	0.7329	0.6814
Perak	0.869	0.7981	0.7734	0.7516
Selangor	0.8859	0.8345	0.781	0.7573
N. Sembilan	0.8482	0.7875	0.7599	0.7389
Pahang	0.8709	0.8422	0.7798	0.8041
Johore	0.8902	0.859	0.776	0.7412
Kedah	0.856	0.8734	0.7591	0.7684
Perlis	0.9048	0.8211	0.7749	0.7671
Kelantan	0.8688	0.8011	0.7575	0.75
Trengganu	0.8468	0.8147	0.7865	0.7697
Malaya	0.8620	0.8223	0.7707	0.7521
Females				
Singapore	0.1178	0.1625	0.0522	0.0629
Penang	0.3204	0.1989	0.1387	0.1148
Malacca	0.4332	0.1645	0.2513	0.1712
Perak	0.486	0.3109	0.2182	0.1894
Selangor	0.2852	0.1567	0.1289	0.1186
N. Sembilan	0.6563	0.4166	0.3768	0.2977
Pahang	0.6409	0.4896	0.2953	0.2759
Johore	0.271	0.1629	0.153	0.1928
Kedah	0.5822	0.4353	0.3349	0.2887
Perlis	0.7816	0.5637	0.4802	0.3249
Kelantan	0.6811	0.45	0.2898	0.368
Trengganu	0.6065	0.4041	0.277	0.2538
Malaya	0.5164	0.3382	0.2464	0.2409

TABLE 2. -- Labor force participation rates age 10 and above, 1921-1957, Chinese

	1921	1931	1947	1957
Males				
Singapore	0.8635	0.8476	0.7551	0.735
Penang	0.8538	0.8432	0.7248	0.6816
Malacca	0.9	0.9075	0.7298	0.7109
Perak	0.9282	0.8907	0.7366	0.6919
Selangor	0.9435	0.8918	0.729	0.7034
N. Sembilan	0.9509	0.9433	0.7897	0.7376
Pahang	0.9353	0.9296	0.7957	0.7564
Johore	0.9552	0.9845	0.7776	0.7209
Kedah	0.9479	0.947	0.7737	0.7292
Perlis	0.9299	0.917	0.8143	0.7642
Kelantan	0.9445	0.8908	0.7801	0.7244
Trengganu	0.9314	0.9047	0.7745	0.7616
Malaya	0.9106	0.8984	0.7528	0.7089
Females				
Singapore	0.1755	0.1271	0.1673	0.2182
Penang	0.1263	0.1133	0.1209	0.1209
Malacca	0.1256	0.1467	0.145	0.1833
Perak	0.363	0.2885	0.2544	0.2709
Selangor	0.3995	0.28	0.2473	0.2616
N. Sembilan	0.3451	0.319	0.3723	0.3957
Pahang	0.3013	0.3166	0.3608	0.4177
Johore	0.2391	0.179	0.2079	0.2777
Kedah	0.2491	0.1946	0.1729	0.1575
Perlis	0.459	0.3418	0.2699	0.1725
Kelantan	0.4688	0.3268	0.1829	0.2535
Trengganu	0.2376	0.1665	0.1736	0.1993
Malaya	0.2542	0.2027	0.2086	0.2492



TABLE 3. -- Labor force participation rates age 10 and above, 1921-1957, Indians

	1921	1931	1947	1957
Males				
Singapore	0.9445	0.9269	0.9092	0.8887
Penang	0.9091	0.9872	0.8315	0.8043
Malacca	0.9886	0.9412	0.8802	0.8278
Perak	0.976	0.9346	0.8538	0.8061
Selangor	0.9628	0.924	0.8681	0.8137
N. Sembilan	0.9708	0.9438	0.8898	0.839
Pahang	0.9574	0.9425	0.8971	0.8845
Johore	0.99	0.9615	0.9142	0.8609
Kedah	0.9481	0.831	0.889	0.8511
Perlis	0.9819	0.922	0.9142	0.8855
Kelantan	0.9866	0.7335	0.9118	0.8847
Trengganu	0.95	0.9756	0.9149	0.936
Malaya	0.9481	0.9287	0.8773	0.8254
Females				
Singapore	0.1173	0.1106	0.0617	0.0712
Penang	0.4637	0.297	0.1919	0.1489
Malacca	0.9368	0.6973	0.587	0.5064
Perak	0.7269	0.5626	0.5099	0.4534
Selangor	0.8223	0.6195	0.5502	0.4532
N. Sembilan	0.7659	0.6869	0.6423	0.5353
Pahang	0.6786	0.6173	0.5814	0.5743
Johore	0.7918	0.701	0.6497	0.5462
Kedah	0.8093	0.6525	0.6451	0.5682
Perlis	0.6036	0.4976	0.4202	0.1531
Kelantan	0.7616	0.5898	0.6022	0.5475
Trengganu	0.1111	0.3333	0.4076	0.2722
Malaya	0.7197	0.5715	0.4989	0.4551

TABLE 4. -- Labor force participation rates and sex ratios,  
Federated Malay States, 1911

	Malays	Chinese	Indians
Male			
Perak	.8697	.9674	.9707
Selangor	.8869	.9618	.9797
N. Sembilan	.8681	.9619	.9869
Pahang	.9063	.9656	.9780
Total	.8794	.9648	.9767
Female			
Perak	.7106	.5977	.6268
Selangor	.3648	.5709	.8844
N. Sembilan	.7029	.4347	.7960
Pahang	.7621	.4036	.6024
Total	.5631	.4390	.7421
Sex Ratios			
Perak	116	633	360
Selangor	159	563	380
N. Sembilan	101	1220	447
Pahang	104	1120	861
Total	117	709	388

TABLE 5. -- Percent change in labor force participation rates, by sex, 1921-1957

	Malays		Chinese		Indians	
	Male	Female	Male	Female	Male	Female
Singapore	- 7.47	-46.60	-14.88	+24.33	- 5.91	-39.30
Penang	-12.22	-64.17	-21.09	- 3.74	-11.53	-67.89
Malacca	-18.37	-60.48	-21.01	+45.94	-16.27	-45.94
Perak	-13.51	-61.03	-25.46	-25.37	-17.41	-36.25
Selangor	-14.52	-58.42	-25.45	-34.52	-15.49	-44.89
N. Sembilan	-12.89	-54.64	-22.43	+14.66	-13.58	-30.11
Pahang	- 7.67	-56.95	-19.13	+38.63	- 7.61	-15.37
Johore	-16.74	-28.86	-24.53	+16.14	-13.04	-31.02
Kedah	-10.23	-50.41	-23.07	-35.74	-10.23	-29.79
Perlis	-15.22	-58.43	-17.82	-62.42	- 9.82	-74.64
Kelantan	-13.67	-45.97	-19.02	-45.93	-10.33	-28.11
Trengganu	- 9.10	-58.15	-18.23	-16.12	- 1.47	+145.00
Malaya	-12.75	-53.35	-22.15	- 1.97	-12.94	-36.77

TABLE 6. -- Proportion of total labor force in agriculture:  
Malays

	1921	1931	1947	1957
Males				
Singapore	0.3062	0.2757	0.08	0.0474
Penang	0.712	0.6716	0.6385	0.5189
Malacca	0.6459	0.6654	0.6976	0.5518
Perak	0.8753	0.8324	0.7809	0.6879
Selangor	0.7627	0.7575	0.6887	0.5331
N. Sembilan	0.8483	0.7742	0.7613	0.5945
Pahang	0.8776	0.8694	0.8287	0.7169
Johore	0.8262	0.8214	0.7822	0.6789
Kedah	0.9034	0.828	0.8662	0.8212
Perlis	0.9575	0.9393	0.8963	0.8374
Kelantan	0.8868	0.8752	0.8352	0.7556
Trengganu	0.8463	0.7958	0.7571	0.7
Malaya	0.8209	0.7906	0.7432	0.6488
Females				
Singapore	0.4483	0.1493	0.1874	0.0823
Penang	0.7977	0.7672	0.7366	0.765
Malacca	0.7788	0.6313	0.5666	0.7177
Perak	0.8961	0.893	0.8679	0.8832
Selangor	0.8433	0.7245	0.7995	0.6956
N. Sembilan	0.9539	0.9244	0.9489	0.9111
Pahang	0.945	0.8921	0.9066	0.9015
Johore	0.8833	0.6655	0.8712	0.8685
Kedah	0.9543	0.9336	0.9499	0.9455
Perlis	0.9851	0.939	0.9761	0.9452
Kelantan	0.8669	0.8171	0.8205	0.8686
Trengganu	0.5785	0.6296	0.5415	0.7112
Malaya	0.8513	0.8164	0.8294	0.8517

TABLE 7. -- Proportion of total labor force in agriculture:  
Chinese

	1921	1931	1947	1957
Males				
Singapore	0.1273	0.1069	0.0992	0.0864
Penang	0.2697	0.2314	0.2243	0.1876
Malacca	0.4625	0.4021	0.3941	0.3617
Perak	0.308	0.3313	0.4401	0.3098
Selangor	0.3031	0.3191	0.3657	0.2405
N. Sembilan	0.6033	0.6384	0.5686	0.5106
Pahang	0.4494	0.5259	0.6209	0.5213
Johore	0.6048	0.5325	0.6406	0.5102
Kedah	0.5606	0.3661	0.3905	0.3355
Perlis	0.3657	0.2517	0.3737	0.3536
Kelantan	0.517	0.38	0.4148	0.3191
Trengganu	0.5589	0.2977	0.4131	0.2439
Malaya	0.3413	0.3670	0.3606	0.2649
Females				
Singapore	0.1579	0.0801	0.0714	0.1776
Penang	0.2474	0.2149	0.1824	0.1794
Malacca	0.2813	0.3954	0.5078	0.548
Perak	0.3759	0.4691	0.5869	0.5126
Selangor	0.4786	0.5882	0.5798	0.4532
N. Sembilan	0.5706	0.7405	0.8107	0.8051
Pahang	0.457	0.7012	0.86	0.8069
Johore	0.4493	0.5243	0.8189	0.7756
Kedah	0.5164	0.5432	0.6181	0.5507
Perlis	0.8604	0.634	0.6158	0.5838
Kelantan	0.7044	0.6307	0.602	0.5788
Trengganu	0.3033	0.1922	0.5997	0.5074
Malaya	0.3692	0.4424	0.5028	0.4614

TABLE 8. -- Proportion of total labor force in agriculture:  
Indians

	1921	1931	1947	1957
Males				
Singapore	0.0446	0.0439	0.013	0.0145
Penang	0.4479	0.2479	0.1954	0.1051
Malacca	0.7537	0.5833	0.5301	0.4976
Perak	0.6114	0.5174	0.4945	0.4652
Selangor	0.6363	0.5679	0.4847	0.4209
N. Sembilan	0.6346	0.6322	0.5904	0.5651
Pahang	0.3463	0.4224	0.4411	0.4631
Johore	0.5752	0.4594	0.5581	0.5629
Kedah	0.6626	0.5428	0.6304	0.5868
Perlis	0.2601	0.0432	0.2659	0.1491
Kelantan	0.3499	0.4249	0.3448	0.3249
Trengganu	0.1053	0.1345	0.1459	0.0972
Malaya	0.5539	0.4541	0.4213	0.3531
Females				
Singapore	0.3805	0.2614	0.0333	0.0291
Penang	0.7911	0.7237	0.7976	0.6489
Malacca	0.9408	0.9005	0.9245	0.9455
Perak	0.8757	0.8531	0.8838	0.87
Selangor	0.9032	0.8678	0.9045	0.8828
N. Sembilan	0.8793	0.9116	0.8851	0.8818
Pahang	0.6486	0.7652	0.7378	0.797
Johore	0.9238	0.6965	0.9093	0.9026
Kedah	0.9146	0.7936	0.9585	0.9455
Perlis	0.791	0.0196	0.8101	0.7111
Kelantan	0.939	0.8876	0.9238	0.9078
Trengganu	0	0.5333	0.8488	0.7041
Malaya	0.8816	0.8315	0.8955	0.8669

TABLE 9. -- Correlation coefficients for labor force participation rates and proportion in agriculture, by sex and race, West Malaysia, 1921-1957

	Malays	Chinese	Indians
Male labor force participation and proportion in agriculture	.23	.31	.03
Male labor force participation and proportion females in agriculture	.03	.01	.13
Female labor force participation and proportion of females in agriculture	.53	.69	.69
Female labor force participation and proportion of males in agriculture	.68	.42	.86

TABLE 10. -- Percent of variance explained ( $R^2$ ), by selected variables, for male and female labor force participation rates, West Malaysia, 1921-1957

	Malays	Chinese	Indians
Males			
Labor force participation of women	26.41	8.18	7.90
Sex ratio	31.39	67.92	10.94
Proportion of male labor force in agriculture	5.18	9.8	.1
Proportion of female labor force in agriculture	.1	.01	1.7
All of the above	83.13	69.85	40.19
Females			
Labor force participation of men	26.41	8.18	7.9
Sex ratio	7.29	5.51	8.88
Proportion of male labor force in agriculture	46.12	17.53	73.8
Proportion of female labor force in agriculture	27.61	43.44	47.66
All of the above	78.93	62.61	81.59



TABLE 11. -- Sex ratios age 10 and above for Malays

	1921	1931	1947	1957
Singapore	128	122	130	116
Penang	103	99.7	95.8	95.4
Malacca	92.7	90	80.6	80.1
Perak	110	107	96.3	99.5
Selangor	141	124	110.8	108
N. Sembilan	107	101	94.4	95.5
Pahang	106	101	97.9	102
Johore	129	123	104.9	102
Kedah	102	102	100.1	97.6
Perlis	99.3	97	97.3	96.5
Kelantan	96.2	97.2	97	95.4
Trengganu	91.4	93.7	93.6	93.7
Malaya	106.0	104.3	99.4	97.9

TABLE 12. -- Sex ratios age 10 and above for Chinese

	1921	1931	1947	1957
Singapore	242	183	115	102
Penang	209	167	132	99.3
Malacca	321	213	120	108
Perak	313	228	124	104
Selangor	287	198	120	105
N. Sembilan	572	342	139	114
Pahang	522	308	150	127
Johore	531	339	140	115
Kedah	505	266	138	116
Perlis	362	295	127	122
Kelantan	343	254	142	120
Trengganu	657	446	169	138
Malaya	295	248	181	155

TABLE 13. -- Sex ratios age 10 and above for Indians

	1921	1931	1947	1957
Singapore	636	707	395	319
Penang	274	255	192	186
Malacca	356	252	165	155
Perak	258	218	151	144
Selangor	254	203	154	147
N. Sembilan	322	237	161	149
Pahang	534	292	198	165
Johore	459	308	195	174
Kedah	261	200	155	148
Perlis	547	281	239	270
Kelantan	556	399	255	237
Trengganu	2000	2829	618	504
Malaya	388	295	181	155

TABLE 14. -- Correlations (R) for labor force participation and sex ratio, age 10 and above, West Malaysia, 1921-1957

	Malays	Chinese	Indians
Male labor force participation and sex ratio	.56	.82	.33
Female labor force participation and sex ratio	-.27	.23	-.30
Male and female labor force participation	.51	.29	.28
Ratio of male/female labor force participation and sex ratio	.47	-.03	.33

TABLE 15. -- Ratio of male to female labor force participation rates for Malays

	1921	1931	1947	1957
Singapore	7.3387	4.9625	15.7893	12.7170
Penang	2.5075	3.9739	5.4751	6.1429
Malacca	1.9268	4.6863	2.9164	3.9801
Perak	1.7881	2.5671	3.5445	3.9683
Selangor	3.1062	5.3255	6.0590	6.3853
N. Sembilan	1.2924	1.8903	2.0167	2.4820
Pahang	1.3589	1.7209	2.6407	2.9145
Johore	3.2849	5.2732	5.0719	3.8444
Kedah	1.4703	2.0064	2.2666	2.6616
Perlis	1.1576	1.4566	1.6137	2.3610
Kelantan	1.2756	1.7802	2.6139	2.0380
Trengganu	1.3962	2.0161	2.8394	3.0327
Malaya	1.6692	2.4314	3.1278	3.1220

TABLE 16. -- Ratio of male to female labor force participation rates for Chinese

	1921	1931	1947	1957
Singapore	4.9202	6.6688	4.5134	3.3685
Penang	6.7601	7.4422	5.9950	5.3377
Malacca	7.1656	6.1861	5.0331	3.8783
Perak	2.5570	3.0873	2.8954	2.5541
Selangor	2.3617	3.1850	2.9478	2.6888
N. Sembilan	2.7554	2.9571	2.1211	1.8640
Pahang	3.1042	2.9362	2.2054	1.8109
Johore	3.9950	5.5000	3.7403	2.5960
Kedah	3.8053	4.8664	4.4748	4.6298
Perlis	2.0259	2.6829	3.0170	4.4301
Kelantan	2.0147	2.7258	4.2652	2.8576
Trengganu	3.9200	5.4336	4.4614	3.8214
Malaya	3.5822	4.4322	3.6088	2.8447

TABLE 17. -- Ratio of male to female labor force participation rates for Indians

	1921	1931	1947	1957
Singapore	8.0520	8.3807	14.7358	12.4817
Penang	1.9605	3.3239	4.3330	5.4016
Malacca	1.0553	1.3498	1.4995	1.6347
Perak	1.3427	1.6612	1.6744	1.7779
Selangor	1.1709	1.4915	1.5778	1.7954
N. Sembilan	1.2675	1.3740	1.3853	1.7673
Pahang	1.4108	1.5268	1.5420	1.5401
Johore	1.2503	1.3716	1.4071	1.5761
Kedah	1.1715	1.4268	1.3781	1.4979
Perlis	1.6267	1.8529	2.1756	5.7838
Kelantan	1.2954	1.2436	1.5141	1.6159
Trengganu	8.5509	2.9271	2.2446	3.4386
Malaya	1.3174	1.6250	1.7585	1.8137

TABLE 18. -- Proportion of variance explained for labor force participation rates of I Chinese females, II Chinese males and III the ratio of male to female labor force participation rates for Chinese

		R	R <sup>2</sup> linear regression	R <sup>2</sup> 2nd order regression	R <sup>2</sup> 3rd order regression
Ia	Chinese females and sex ratio	.23	.06	.08	.09
Ib	Chinese females and Chinese males, sex ratio	.29	.08		
II	Chinese males and Chinese females, sex ratio	.83	.69		
III	Chinese males/ Chinese females and sex ratio	.30	.09	.17	.19

TABLE 19. -- Percent literate age 15 and above by sex, race and area, censuses of 1921, 1931, 1947 and 1957 for Malaya and Singapore

	Malays		Chinese		Indians	
	M	F	M	F	M	F
Malaya						
1921	36*	8*	46*	9*	42*	15*
1931	30	4	49	10	38	7
1947	49	11	64	22	60	20
1957	61	22	70	30	69	31
Singapore						
1921	33	4	45	6	35	5
1931	40	8	44	13	52	24
1947	68	20	61	19	75	40
1957	82	35	61	25	81	52

\*1921 rates are for selected towns only.

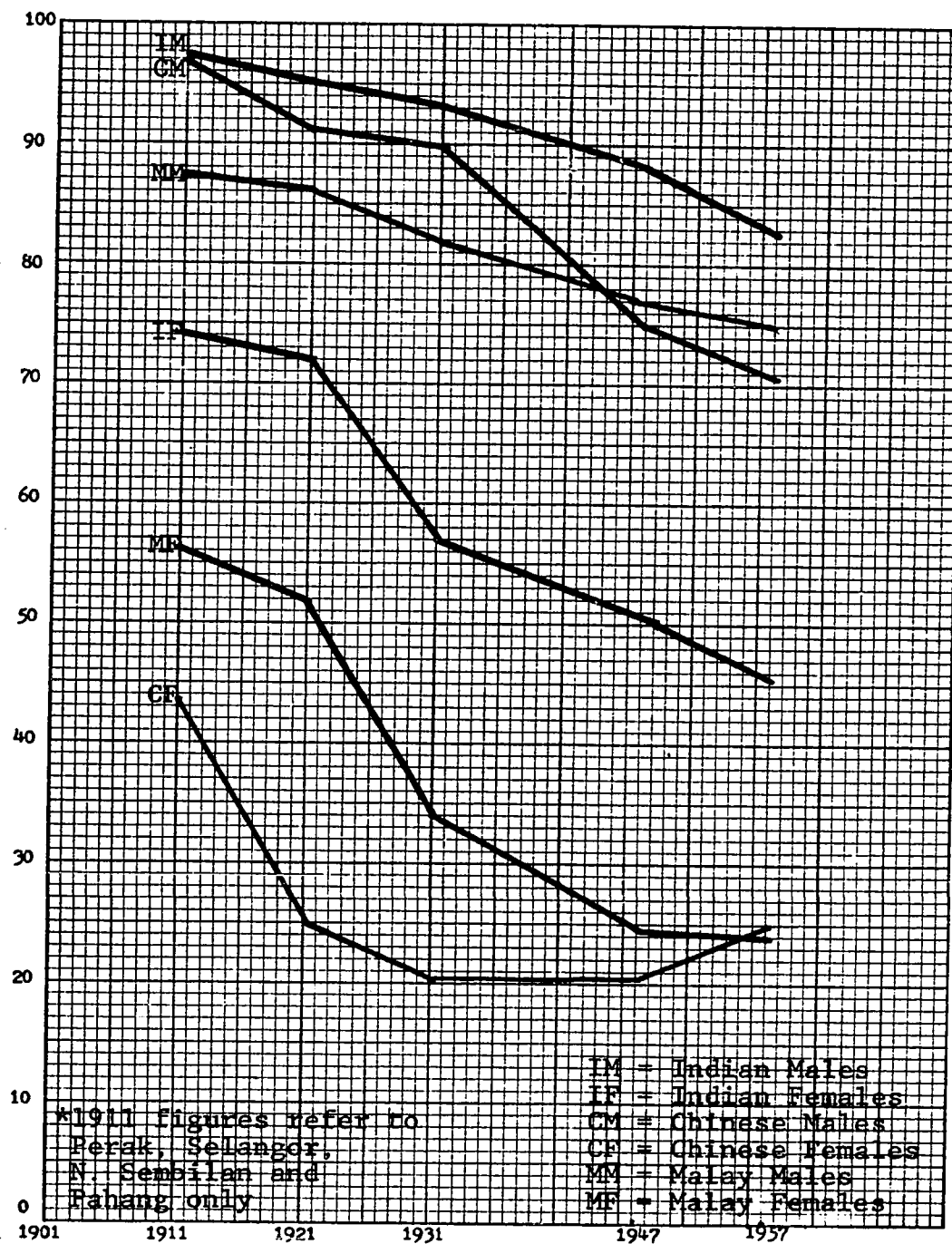


FIGURE 1. -- Mean labor force participation rates for 12 Malay states, 1911\* - 1957



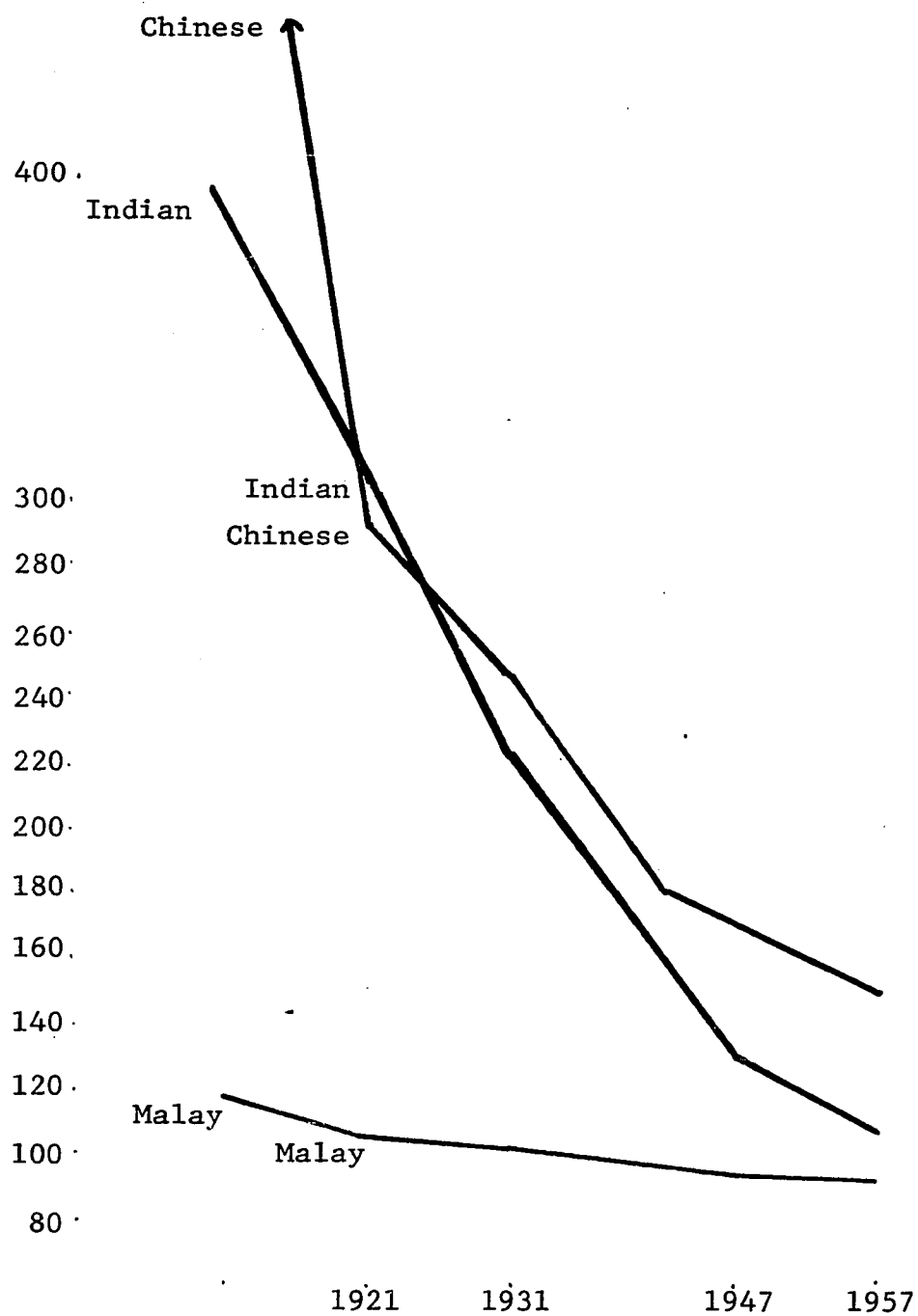


FIGURE 2. -- Mean sex ratio for 12 Malay states, 1911-1957, by race, for age 10 and over

CHAPTER IV  
WORK AND INCOME RELATED TO THE  
WORK OF MARRIED WOMEN

This chapter will provide the basis for the extended analysis of female labor force participation in the subsequent chapters. With varying refinement, as permitted by the data, the analysis will deal with the variables related to the work, income and employment of the women and their husbands. It will also assess urban-rural differences and, of course, differences between the three main racial groups, Malays, Chinese and Indians.

The analysis is divided into two parts, a descriptive statistical section, and a social and economic multivariate analysis. We find higher work rates in rural than in urban areas, as well as considerable differences in work rates by race. The multivariate analysis shows premarital work to be the most important predictor of both work since marriage and current work. Other important predictors are age, area, and race.

I Descriptive Statistics

The female labor force participation rate in West Malaysia is comparatively high. According to the census of 1957 (Malaysia, Department of Statistics, 1957), 25.9 percent of women age 10 and above were employed. In this

instance, employment was defined as being gainfully employed four out of the preceding twelve months. If the definition of being in the labor force is expanded--as it was in the census--to include persons looking for work for six or more of the preceding twelve months, the rate increases slightly, to 26.2 percent. Corresponding rates for males are 73.3 and 74.8 percent.

### Ethnic Differences

Great differences exist among ethnic groups. In the 1957 census the Malays and Chinese participated in the labor force at comparable rates, but Indians showed a much higher rate, especially for females (Table 1).

The West Malaysian Family Survey 1966-67 further documents the high labor force participation rates of Indian females compared to other races, in its survey of married women, age 15-44 (Table 2). Here the definition of labor force participation is much narrower, with respect to activity as well as to age. The question used here is whether the respondent, who is a married woman between the ages of 15 and 44, is currently working or has stopped. (See Malaysia, National Family Planning Board, 1968, for the English version of the questionnaire, Question H.19.) Indian women are the most active, followed by Malay women and Chinese women. The age classification shows that Chinese women of middle age work more than older women,

whereas for Indians and Malays labor force participation increases with age. This pattern is repeated in the tabulation of the percentage of women who ever worked since marriage (Table 2). This may indicate a cohort rather than a life-cycle phenomenon for Chinese women, but it may also be due to other factors such as age-related fertility and education, differentials to be investigated in the subsequent chapters.

The number of women who worked outside the home is quite substantial in all age and ethnic groups, ranging from 31.8 for young Chinese women, to 67.8 for older Indian women. The proportion currently working is smaller, but work rates are fairly high (Table 2).

From these data it is also possible to compute the proportion of women who worked after marriage but are not working at the time of interview (Table 2). Chinese women who worked after marriage are almost twice as likely not to be working currently, as women of the other two races. On the other hand, ten percent or fewer of Indian women who worked since marriage were not working at the time of the interview. Malay women also show about half the Chinese rates for discontinuation of work.

These figures could be taken to imply a greater work commitment on the part of Indian and Malay women, compared to Chinese women. This does, however, assume that whether the woman is currently working can be taken as a

representative sample of a longer period. The available data give no information on the number of times a woman has stopped working since marriage, nor how large a fraction of her married life she has spent working outside the home. An attempt at measuring the latter has been made by computing the proportion of married life worked for those who worked since marriage.

Table 3 shows the results by age, race and area. Unfortunately, the number of cases on which there is information both on years worked and years married is only about 20 percent of the total sample. There is no reason to believe that these 20 percent constitute a random subsample; on the contrary, they are quite unlikely to be. The subsample suggests differences by race and age that are not readily accountable, particularly in view of the biases involved.

#### Urban-Rural Differences

A subdivision into rural-urban-metropolitan areas does reveal substantial differences with respect to the residence of women who work (Table 4). In terms of current work as well as work since marriage, for all ages combined, the labor force participation rate is much higher in rural areas. Metropolitan areas show higher rates than towns. These findings would be consistent with the U-curve hypothesis of female labor force participation in relation

to economic development, a topic also investigated with census data in the preceding chapter. The theory hypothesizes a decreased availability of work for women as economic development occurs, as in the transition from an agricultural to a small town to a metropolitan area, with widened economic opportunities ensuing from industrialization (United Nations, 1962; Boserup, 1970; Sinha, 1965; Durand, 1973).

Upon closer examination, however, it becomes apparent that this finding is, in part, a result of the ethnic composition of the population under study. For Chinese women, this relationship holds, for all ages combined, but not for Indian or Malay women. Moreover, the relationship is not consistent over age, it holds for Malay women age 35-44, for Indian women age 25-34 and Chinese women age 25-34 and 35-44 only (Table 5). These findings corroborate those of Durand (1973) questioning the universality of the U-curve hypothesis.

To the extent that separate labor markets exist for the three major ethnic groups in Malaysia (Mehmet, 1972), the U-curve hypothesis need not be completely rejected, but it does certainly require a more detailed analysis than the present if applicable to the Malaysian case.

The rural-urban or the rural-metropolitan difference in female labor force participation rates is still robust when an ethnic subdivision is imposed. The urban-

metropolitan, however, is not (Table 5). All ethnic groups show considerably higher labor force participation rates in rural areas compared to towns: 3.3 times higher for Malays, 2.5 times for Chinese and 5.5 times higher for Indians. However, since the number of cases in each cell is very small, too much importance should not be attached to these specific figures. They only give an indication of the order and magnitudes involved.

The ethnic differences, on the other hand, appear to be heavily dependent upon residence, as evident from this subdivision. In rural areas, because of the large proportion of the total population living there, the ranking from high to low on labor force participation-- Indian, Malay and then Chinese--is maintained. In towns and metropolitan areas, however, Chinese women are more active than Malay or Indian women. This is not true at all ages, however. Again, since the numbers are small, random fluctuations in the sample may distort the results considerably. Again too much importance should not be attached to the absolute values.

### Summary

There is considerable variation in labor force participation depending upon age, area and race for both current work and work since marriage. Older women are more likely to work than younger women, but this is not entirely

consistent for Chinese women. Rural women are more active in the labor force than urban women; women in metropolitan areas fall in between these two categories.

There are also ethnic differences of some magnitude in the work of married women. Indian women are the most active, but this is in large part tied to their predominantly rural residence, where labor force participation is higher. In urban areas, on the other hand, Chinese women are more active.

It has been suggested (Mehmet, 1973; Ma et al., 1960) that there are three separate labor markets in West Malaysia, one for each major ethnic group. The evidence gathered here would seem to support rather than contradict this suggestion, although this is not a focus of this study.

## II Multivariate Analysis

### Review of the Literature

The existing literature on female labor force participation indicates the importance of economic variables (e.g. as prior work and income) in explaining the work of women, whether the analysis employs macro- or microlevel, period or cohort data and involves developing or developed economies. The influence of previous work is suggested inter alia by Mott (1972) who, using very strong data, namely longitudinal, individual records, found work at one stage of the life cycle to be strongly dependent upon work



at earlier stages. In his sample of Rhode Island women, work before marriage and after marriage prior to the birth of the first child resulted in a probability of work between the first and second child of .406, compared to .116 for women who had worked before marriage but not after.

This finding is amplified by Mason (Ch. 1, n.d.) who related not only work after marriage but also premarital work to fertility, suggesting that the mechanisms linking low fertility and pre- and postmarital work may be: 1) the development of a selfconcept as a worker rather than a mother; 2) seniority in work, and therefore higher actual and future earnings; 3) taste for work or the consumption made possible through work; 4) work regarded as a career. While fertility will be considered later, it is clear that these hypothetical influences are directly applicable to the intervening variable, continued labor force participation.

To what extent these mediating influences are applicable to the work of married women in a developing area like West Malaysia is a matter of some interest. A pioneering study in a developing country, Taiwan, was done by Mueller et al. (1972). In this study of the effects of female employment on fertility, no effect on fertility was found for premarital or other work. Mueller's explanation was that for the majority of women the jobs available are in the traditional sector

of the economy. Such jobs do not interfere with self-definitions of being primarily a mother, rather than a worker, or some combination of the two. Therefore work does not have a negative effect on fertility.

Mueller et al. did show the influence of the income, employment and occupation of the husband on the labor force participation of married women. The husband's type of employment was the most important factor in explaining the variance in married women's labor force participation, with farmers' wives working more than businessmen's wives, who in turn worked more than the wives of wage and salary earners.

In a separate analysis for wage and salary earners the husband's income also explained a significant amount of the variance in the labor force participation of women. Women in low income families were more likely to work. A similar analysis for farmers found that farmers' wives on the smaller farms were more likely to work than other farm wives. For the wives of businessmen, however, labor force participation varied inversely with the size of the business.

The influence of the husband's income and employment has also been established previously, in developed countries. In one of the earlier analyses of female labor force participation in the United States, Mincer (1962) showed the labor force participation of married women to be

inversely related to their husband's income. Wives were also likely to work during temporary lows in the husband's income, especially for the less educated. Cain (1966) also found a negative effect of income on the labor force participation of married women, as did Leroy (1968) using areal data from Belgium.

A further elaboration of the effects of income was also introduced by Sweet (1970), who used the somewhat more elaborate concept of income adequacy in measuring variation in labor force participation of married women. He defined income adequacy as family income minus wife's earnings per family member, and found, as predicted, an inverse relationship between income adequacy and labor force participation.

While the limited research done on the work and income correlates of married women's labor force participation suggests the fruitfulness of an exploration of these variables, it is also true that the evidence is by no means definitive.

This section will explore principally two sets of factors influencing female labor force participation, namely

1. the influence of pre-marital work, and
2. the influence of family income and husband's income, employment and occupation upon current work and work since marriage.

The following variables emerge as potential

facilitators or inhibitors of female labor force participation: age, premarital work, continued work, husband's income, employment and occupation, household income or income adequacy. In addition, race and residence are a priori relevant in the Malaysian context. These variables are used in a Multiple Classification Analysis, discussed in Chapter II, to assess the effect on current work, work since marriage and proportion of married life worked.

### Findings

The results indicate not only the importance of considering age in a study of female labor force participation in West Malaysia. They also confirm the importance of area and race. These two variables interact, area apparently exerting the stronger influence.

A strong relationship between work before marriage and work after marriage, as well as between work before marriage and current work emerges. Location of work (i.e. whether a woman is working at home or outside the home) before marriage is even more strongly related to whether she will do so after marriage than is the presence or absence of premarital work. This relationship may reflect tastes for work or it may reflect an economic situation that forces the woman to work both before and after marriage. The latter hypothesis is rendered more plausible

by the fact that the influence of premarital work is strongest in rural areas and considerably diminished in metropolitan areas. It should be noted, however, that there is much less than perfect correspondence for each of the variables, including work location, which shows the highest proportion of variance explained.

The findings also suggest that the labor force participation of married women in West Malaysia is not directly related to that of their husbands. None of the measures of husband's income, employment or occupation add much to the amount of variance explained by the other variables. Taken by themselves, on the other hand, they show moderately large effects, with  $\eta^2$  coefficients which are the percent of the total sum of squares explained by the variable of 4.8 and 6.5 for husband's income and husband's industry for work since marriage. Women with husbands who have low income or are employed as workers in agriculture are more likely to work than women whose husbands have higher level jobs and higher incomes.

#### Current Work

In attempting to explain current work we find for the total sample, all ages, that 28 percent of the variance is explained by the selected variables: premarital work, income of husband, income adequacy (here measured as income per family member, including wife's income), husband's

employment or unemployment, husband's industry, as well as race and area (Table 6).

In accordance with our earlier findings and the somewhat ambivalent suggestions from the literature, we find, when all other variables are controlled for that the following women are more likely to work:

1. women in rural areas,
2. women with premarital work experience,
3. women whose husbands have low income, and
4. Indian women.

Contrary to expectation, however, the following women were not more likely to work:

1. women with low income per family member. On the contrary, women with high income per family member were more likely to work. This may, in part, be explained by the impurity of measurement in the concept of income adequacy, which could not be measured without the wife's income included.

2. women whose husbands were not employed, who were less likely to work than women with employed husbands. The number of women with unemployed husbands is small--146 cases in the entire sample--so small as to make the dichotomy of little predictive value. It is, unfortunately, also too small to permit a meaningful distinction between the unemployed and those not employed but also not looking for work, in a further exploration of this apparently

anomalous finding.

The single most significant variable in this analysis is premarital work: whether respondent never worked before marriage, worked at home or partly at home, or outside the home;  $\eta^2$ , explaining the percent of the total sum of squares attributable to the variable is 19.1. When added to all the other variables, premarital work still accounts for 15.8 percent of the variance. By itself it contributes more than half to the total variance explained. Percentage differences are also large; of women who never worked prior to marriage 21.1 percent work after marriage; of women who worked at home or outside the home before marriage 67.1 and 59.5 percent, respectively, are currently working (Table 7).

Husband's industry, income and employment have  $\eta^2$  coefficients of 6.1, 4.1 and .03 respectively, and are of much less importance in explaining the variance. Together they add 3.8 percent to the total variance explained, net of age, race and area. Including these variables, but net of premarital work and income per family member, their importance is reduced by almost half. In either case, the additional variance explained is not large. The differences in means for husband's industry, when other variables are controlled for are nevertheless of some interest. Women whose husbands are in the professional and managerial class have a work rate of 32.2 percent, women whose husbands are in the white collar category 31.5 percent and women with

husbands in the blue collar category 40.5 percent (Table 7).

Area is also of interest. Alone, it explains 7.4 percent of the variance; added to all the other variables, this figure is considerably reduced, but area still adds 2.1 percent to the variance explained by all the other variables together. Women in rural areas are nearly twice as likely to work as are women in metropolitan or urban areas, whether the other variables are controlled for or not (Table 7).

Race adds about two percent to the variance explained by area, or by all the other variables. This is accounted for by the higher rates for current work shown by Indian women, 55 percent compared to 34 and 35 percent for Malay and Chinese women, when adjusted for the other variables.

Although current work increases with each age group, 15-24, 25-34, and 35-44, absolutely and when the other variables are controlled for, age adds very little to the variance explained by the other variables, and explains little by itself ( $\eta^2 = 0.3$ ). An examination of the same data for the individual age groups provides additional insights however (Tables 7, 8, 9). The total amount of variance explained by all the variables increases by age, from 20.6 percent for the youngest age group, 15-24, 30.3 percent for age 25-34, to 34.8 for age 35-44. This is partly due to the influence of premarital work;  $\eta^2$  is 13.0 for age 15-24, 19.9 for age 25-34 and 25.7 for



age 35-44. The second most important variable, area, also differs considerably in the three age groups. Husband's industry explains 5.4 percent of the variance by itself, his income only 2.3 percent, for age 15-24. These values are higher for women age 25-34 and highest in the oldest age group where husband's industry explains 7.9 percent of the variance, his income 5.4 percent. Evidently, for younger women, other factors are more important in determining labor force participation than the ones examined in this section. Education and fertility, to which we will turn later, account for some of the variance.

#### Work Since Marriage

A rather similar picture is presented by work since marriage (Table 10). A somewhat higher proportion of the overall variance is explained: 30.2 percent. The same age group variation exists: 36.7 percent for age 35-44, 32.7 for age 25-34 and 23.2 percent for age 15-24. Again the difference is largely due to a higher proportion of the variance explained by premarital work alone at the older ages:  $\eta^2$  is 17.7 for age 35-44, 22.3 for age 25-34, and 15.1 for age group 15-24. The differences in adjusted means are even greater than for current work: 25.9 percent of those who did not work before marriage compared to 72.3 and 67.8 percent of those who worked at home or outside, have worked since marriage (Table 10).

Work since marriage also mirrors current work in the low proportion of additional variance explained by husband's income, employment and industry. Together they add only 1.5 percent to the variance explained for all ages together. Taken alone, however, they are more powerful. The strongest factor is husband's industry and income, with  $\eta^2$  of 6.5 and 4.8 respectively. Husbands in blue collar and agriculture or with low income are associated with higher labor force participation for the wives. This relationship is stronger in the older age groups, as with current work. In the youngest age group the relationship is reversed (Table 10).

#### Proportion of Married Life Worked

Proportion of married life worked, another measure of interest in investigating the labor force participation of married women, shows a somewhat different picture. Irrespective of how the subsample is taken, or even if the entire sample is included--an obvious error, since many women did not work at all--the proportion of the variance explained is very low. Furthermore, it is evident from the variance explained for current work and work since marriage in every subsample, that the subsamples represent the whole sample poorly. Only one fifth of the variance explained in the total sample is explained from the subsample of those who have answered the pertinent questions.

Clearly, the selective information available for proportion of married life worked seriously biases the subsample and precludes any serious inferences from it.

#### Location of Current Work

A more detailed analysis of location of work for those currently working yields results of some interest. The fruitfulness of such an investigation was suggested by the hypothesized difference in fertility of women who work at home and outside the home (Jaffe and Azumi, 1960). In addition to the effect on fertility, with women working outside the home reducing their family size compared to women working at home, whose families are the same size or even larger than those of non-working women, the location of work is of interest in assessing economic development, the potential for adoption of different roles for women and the exposure to new ideas other than those relating to the role of women.

The very large majority of currently working women in the sample, 76.6 percent, are working outside the home (Table 8). Differences by race and area do, however, exist. It is in the towns that women are more likely to work at home; 41.5 percent in towns .2 percent in metropolitan areas and 22.2 percent of currently working women in rural areas work at home. These findings are consistent with the hypothesis of decreased economic opportunity for women in

the early stages of industrialization, but do not hold when race is controlled for.

Tabulations by race show 92.2 percent of currently working Indian women working outside the home, compared to 72.5 percent of the working Malay women and 77.7 percent of working Chinese women. These differences are, however, considerably diminished when other variables are controlled for (Table 8).

The same variables that are powerful in explaining the variance in current work and work since marriage explain location of work, but a larger proportion of the variance is explained for work location: 48 percent for all the variables together, for all ages. Again, by far the greatest variation is accounted for by premarital work, which in conjunction with area explains 46 percent of the variance. The more influential factor is clearly premarital work, with an  $\eta^2$  45 percent compared to one percent for area.

The occurrence and location of premarital work, then, is of overriding importance in determining work location after marriage. 86.7 percent of those who work at home after marriage were also working at home before marriage. Women who did not work prior to marriage are more likely to work outside the home than in the home after marriage: of women working after marriage but not before 80.1 percent are working outside the home, compared to 13.3 percent of

those who worked at home prior to marriage and 94 percent of those who worked outside the home before marriage. While this finding is in and of itself not especially surprising, it is nevertheless a useful predictor, particularly because of the strength of the association. In addition, if work at home or outside the home have differential effect on fertility, these findings can be very useful.

The effect of premarital work upon location of current work varies somewhat by age (see Table 8). Of working women, age 15-24, 85.4 percent work outside the home; of women age 25-34, 74.9 percent; and of women age 35-44, 72.0 percent. In other words, older women are more likely to work at home than are younger women, if they are working. The total variance of work location does not, however, follow the same pattern. More of the variance is explained for younger women, 54 percent, presumably because they are closer temporally and psychologically to their premarital work. Prior to an analysis of fertility, it is difficult to account for the higher proportion of variance, 51.2 percent, explained for the older women, compared to middle aged women, 43.2 percent (Table 8).

From this small digression it becomes clear that, while a large number of women do work prior to marriage and do so after marriage, the location of work before marriage strongly influences the location of work after marriage. Without deeper probing, unfortunately not possible with the

available data, we can only speculate as to the causes: economic opportunity depending on location, vocational skills, established working habits, continuing employment, etc.

#### Differences by Area of Residence

In an analysis by area, suggested by the rather large differences in means for different areas, the above findings were largely robust. Premarital work remained the single most influential variable in current work and work since marriage. The amount of variance explained does, however, differ considerably by area. A detailed analysis is given below.

#### Rural areas

In rural areas premarital work alone explains 21.5 percent of the variance in current work, and 23.5 percent for work since marriage for the total sample (Table 12). Husband's income adds little to this: 0.9 percent for current work and 1.5 percent to work since marriage. Race adds 3.2 percent to current work and 2.7 percent to work since marriage, making the total variance explained by these three major factors 25.6 percent and 27.8 percent respectively.

The difference due to age is increased when rural area is controlled for separately. 33.3 percent of the

variance is explained for current work and 34.6 percent for work since marriage in the oldest age group, 29.0 and 31.1 percent for the middle age group and 16.1 and 19.6 percent for the youngest age group.

#### Urban areas

In the towns considerably less variance is explained. Premarital work alone still explains the major portion of the variance in both current work and work since marriage: 13.5 percent for current work and 13.1 percent for work since marriage (Table 12). Husband's income and race, together and separately, add less than one percent to the variance explained in the total sample.

Here less variance is explained in the age group 35-44--a reversal from the previous analyses--only 9.4 percent for both current work and work since marriage is explained by premarital work. Again, husband's income and race add little. In fact, less variance is explained by the three variables combined than by premarital work alone. This is a statistical artifact due to the adjustment for degrees of freedom in the proportion of variance explained.

Control group two, ages 25-34 shows a similar pattern, but in the youngest age group the proportion of variance explained is increased to 19.3 percent of the variation in current work explained by premarital work and 17.3 for work

since marriage. Husband's income adds 1.2 and 1.0 percent respectively. Race, however, does not increase the explanatory power of the model, due to the adjustment for degrees of freedom.

Again, proportion of married life worked is not explained by any of these variables introduced here. The amount of variance explained is trivial for any or all of the variables in any one age group.

#### Metropolitan areas

Metropolitan areas provide a picture similar in many ways to urban areas (Table 13). Premarital work explains 11.9 and 17.4 percent of the variance in current work and work since marriage. Husband's income adds very little to the variance explained for the other variables. Race has no effect on any of them.

Here, also, relatively more of the variance is explained in age group 25-34 than at older or younger ages. Still the proportions are small: 12.8 percent of current work and 19.0 percent of work since marriage can be explained by race, husband's income and premarital work combined.

In some groups the number of cases is extremely small. This seriously limits the confidence in the conclusion and predictions that can be drawn from this part of the analysis. We feel it is better to refrain



from them entirely in the case of such small numbers in the sample.

### Agriculture

In an attempt to isolate the effect of agriculture as opposed to rural residence per se, the findings were consistent, in large part with the urban-rural-metropolitan differences.

A larger proportion of total variance was explained in agriculture, 24.1 for current work and 28.2 for work after marriage, compared to 20.2 and 22.5 for non-agriculture. This rather small difference is attributable to the higher variance explained in the oldest age group in agriculture--as high as 41.7 percent for work since marriage (Table 9). The proportions at older ages are about the same for the two areas of activity. However, the N's are again too small to make this more than a suggestion of what the true figures might be.

### Conclusion

From this analysis we see that premarital work is by far the strongest predictor for current work as well as for work since marriage. For those working, it also explains nearly half of the variance in work location.

Another important variable is area, which accounts for the second largest fraction of variance explained.

It also interacts with the other variables, so that they are better predictors in rural than in urban areas.

Age, which has consistently been used as a control variable also affects the dependent variable. Generally, it also interacts with the other variables, so that a larger fraction of variance is explained for older than for younger ages. This, however, is not without exception. Race similarly exerts some influence, indicating different patterns and habits of work for women in the three major ethnic groups.

Husband related variables--husband's income, employment, and industry--proved to add fairly little explained variance in any of the main analyses. In our sample of West Malaysian women, the husband related variables, as measured here, did not appear to have any decisive influence on the wife's labor force participation.

Income adequacy, which perforce had to be constructed as total family income per family member, showed a small but unexpected inverse relationship to a woman's work. This may be accounted for by the added income provided by working wives. It may, also, of course, be explained by smaller families for working wives, but this analysis will not be undertaken until a later section.

It would appear, then, that for women in urban and metropolitan areas, as well as for younger women, variables other than the ones under investigation here account for

more of the variance in the dependent variable. The major exception to this is location of work for those currently working, where premarital work accounts for a large fraction of the total variance as well as the proportion of the explained variance for young women. These other variables will be investigated in later sections to determine their influence on the labor force participation of married women.

TABLE 1. -- Labor force participation  
rates, age 10 and above, West Malaysia,  
1957

	Male	Female
Malay	73.6	23.9
Chinese	69.7	24.5
Indian	80.9	45.0
Other	83.5	17.8
Total	73.3	25.9

Source: 1957 Census of Population.

TABLE 2. -- Labor force participation of married women, West Malaysian Family Survey, 1966-67

	Currently working	Worked since marriage	Percent of those who worked since marriage not working
Malay			
15-24	33.6	38.4	12.5
25-34	36.8	41.6	11.5
35-44	44.0	50.9	13.6
Total	38.0	50.9	13.6
Chinese			
15-24	24.6	31.8	22.7
25-34	29.6	37.5	20.9
35-44	24.2	31.9	24.1
Total	27.0	34.7	24.1
Indian			
15-24	50.0	55.3	9.6
25-34	57.5	63.9	10.0
35-44	62.5	67.8	7.8
Total	56.4	67.1	9.2
Total	37.7	43.7	13.7

TABLE 3. -- Percentage of married life worked for married women, who worked since marriage, by age and race

Age	Malay	Chinese	Indian	Total
15-24	60.9	52.9	71.1	62.3
25-34	49.7	69.3	51.0	54.6
35-44	50.8	53.6	58.8	52.2
Total	52.2	62.2	58.5	54.9

TABLE 4. -- Labor force participation measures by area, West Malaysian Family Survey, 1966-67

	Currently working	Work after marriage	Number of cases
Metropolitan			
15-24	11.3	16.2	129
25-34	20.0	28.1	330
35-44	20.5	28.8	218
Total	18.5	26.1	677
Urban			
15-24	14.4	16.0	172
25-34	15.5	20.7	337
35-44	14.0	18.6	243
Total	14.8	18.9	752
Rural			
15-24	40.1	46.0	1101
25-34	45.7	51.0	1536
35-44	52.1	59.4	1071
Total	45.9	51.9	3708

TABLE 5. -- Labor force participation measures by age, race and area for married women, age 15-44, West Malaysian Family Survey, 1966-67

	A			B			C		
	Currently working			Work since marriage			Percent of B not working now		
	1	2	3	1	2	3	1	2	3
Malay									
15-24	36.6	11.0	9.9	41.7	13.2	15.5	12.2	16.7	36.1
25-34	41.0	15.0	10.0	45.8	19.0	14.3	10.5	21.1	30.1
35-44	49.5	11.5	15.0	56.8	15.0	23.5	12.9	23.3	36.2
Total	42.2	12.8	11.4	47.8	16.2	17.2	11.8	21.0	33.7
Chinese									
15-24	34.8	20.0	15.9	47.8	21.4	22.3	27.2	6.5	28.7
25-34	46.4	16.8	25.0	55.4	21.8	34.2	16.3	22.9	26.9
35-44	37.0	14.8	24.3	48.1	18.9	32.7	23.1	21.7	25.7
Total	41.5	16.7	23.5	51.9	20.8	32.0	20.1	19.7	26.6
Indian									
15-24	67.5	11.5	5.3	75.0	11.5	6.5	10.0	-	18.5
25-34	84.1	12.2	15.7	88.6	22.0	24.6	5.1	44.5	36.2
35-44	90.0	20.7	11.3	93.3	31.0	19.4	3.5	33.2	41.8
Total	79.8	14.6	11.6	85.1	21.9	18.1	6.2	33.3	35.9

1 = Rural  
2 = Towns  
3 = Metropolitan areas



TABLE 6. -- Proportion of variance explained by work variables for current work, by age

	15-24	25-34	35-44	Total
1,2	17.5	26.9	32.0	25.3
1,2,3	17.5	27.1	32.0	25.3
1,2,3,4,5,6	18.9	28.7	33.1	26.5
1,2,3,4,5,6,7	20.6	30.3	34.8	28.1

1 = Area  
 2 = Premarital work  
 3 = Income adequacy  
 4 = Husband's employment  
 5 = Husband's income  
 6 = Husband's industry  
 7 = Race

TABLE 7. -- Adjusted means by age for current work

	15-24	25-34	35-44	Total
Area				
Metropolitan	15.5	19.5	27.4	21.4
Urban	22.2	21.6	25.4	23.1
Rural	38.6	44.4	47.9	43.6
Premarital work				
Never worked	21.2	19.4	23.7	21.1
Worked at home	68.6	60.4	72.8	67.1
Worked outside	51.3	60.1	68.3	59.5
Income adequacy				
\$0-10 per person	32.7	30.7	39.2	34.6
\$11-20 per person	29.8	37.0	42.4	36.8
\$21-50 per person	36.9	40.5	40.8	38.9
\$51+ per person	43.7	51.2	50.3	47.6
Husband's employment				
Employed	34.5	37.6	41.8	37.9
Not employed	33.2	18.5	33.8	30.7
Husband's income				
\$1-99	37.7	42.1	44.1	41.0
\$100-199	30.3	35.6	42.8	36.6
\$200+	27.1	27.3	32.5	29.5
Husband's industry				
Professional/manag.	32.5	30.7	34.6	32.2
White collar	23.4	31.5	38.5	31.5
Blue collar	37.1	40.3	43.7	40.5
Race				
Malay	32.4	35.5	40.2	36.0
Chinese	29.8	33.9	36.4	34.0
Indian	50.8	55.7	60.8	55.2
Total	34.5	37.2	41.4	37.7
R <sup>2</sup>	20.6	30.3	34.8	28.1
N	1396	2193	1525	5114

TABLE 8. -- Percent working outside the home of those currently working by age, adjusted for all variables

	15-24	25-34	35-44	Total Adj.	Total Unadj.
Area					
Metropolitan	80.9	68.5	49.4	65.4	75.8
Urban	63.5	64.1	43.1	57.6	58.5
Rural	86.8	76.2	75.5	78.6	77.8
Premarital work					
Never worked	90.1	76.6	77.8	80.6	80.1
Worked at home	17.0	15.3	14.0	16.0	13.3
Worked outside	96.1	90.6	93.9	92.9	94.0
Income adequacy					
\$0-10 per person	84.1	73.8	73.3	76.2	77.1
\$11-20 per person	82.2	67.5	67.5	70.3	68.5
\$21-50 per person	89.3	81.9	72.4	80.8	81.6
\$51+ per person	88.9	84.0	77.1	85.3	94.4
Husband's employment					
Employed	85.3	74.7	72.7	76.7	76.6
Not employed	88.8	82.0	54.8	70.4	77.1
Husband's income					
\$1-99	84.9	76.1	71.6	76.9	77.0
\$100-199	84.5	68.2	74.7	73.6	72.9
\$200+	90.9	84.6	69.5	81.5	82.2
Husband's industry					
Professional/manag.	77.7	65.9	63.1	67.3	60.2
White collar	91.6	69.7	74.6	75.2	72.5
Blue collar	85.7	76.5	72.4	77.6	77.7
Race					
Malay	84.3	72.6	68.7	74.3	72.5
Chinese	84.2	76.0	87.6	80.5	77.7
Indian	90.1	82.2	74.5	82.3	92.2
Grand mean	85.4	74.9	72.0	76.6	
R <sup>2</sup>	54.0	43.2	51.2	47.7	
N	481	816	637	1929	

TABLE 9. -- Work since marriage, adjusted means and  $\eta^2$ , by age

Area	15-24			25-34			35-44			Total		
	$\eta^2$	$\bar{x}$	adj.	$\eta^2$	$\bar{x}$	adj.	$\eta^2$	$\bar{x}$	adj.	$\eta^2$	$\bar{x}$	adj.
Metropolitan	6	19.6		6	28.4		11	36.9		7	29.5	
Urban		23.5			28.4			30.5			28.0	
Rural		44.6			49.2			54.7			49.4	
Premarital work	15			22			28			21		
Never worked		24.8			24.0			29.7			25.9	
Worked at home		73.3			65.4			79.3			72.3	
Worked outside		59.6			67.8			77.6			67.8	
Income adequacy				1			32			1		
\$0-10 per person		38.3			33.9			46.6			40.0	
\$11-20 per person		35.5			44.4			50.7			44.2	
\$21-50 per person		41.5			47.4			46.7			44.8	
\$51+ per person		48.9			59.0			54.9			53.2	
Husband's employment	1											
Employed		39.7			43.0			48.3			43.6	
Not employed		43.2			36.7			49.6			45.6	

TABLE 9. (Continued) Work since marriage, adjusted means and  $\eta^2$ , by age

	15-24			25-34			35-44			Total	
	eta <sup>2</sup>	$\bar{x}$ adj.		eta <sup>2</sup>	$\bar{x}$ adj.		eta <sup>2</sup>	$\bar{x}$ adj.		eta <sup>2</sup>	$\bar{x}$ adj.
Husband's income	3			5			7			5	
\$1-99		45.1			49.5			51.6			48.4
\$100-199		33.6			40.2			49.2			41.5
\$200+		27.0			30.6			38.2			33.0
Husband's industry	4			7			8			6	
Professional/manag.		45.1			33.3			43.1			37.7
White collar		33.6			35.0			44.1			37.4
Blue collar		27.0			47.3			50.8			46.5
Race	2			2			4			2	
Malay		36.9			40.8			46.9			41.3
Chinese		38.6			41.2			45.2			42.5
Indian		56.8			60.1			65.6			60.3
Total		39.8			42.9			48.4			43.7
R <sup>2</sup>		23.2			32.7			36.7			30.2
N		1396			2193			1525			5114

TABLE 10. -- Current work by age, means, eta<sup>2</sup> and percent of variance explained, rural areas

	15-24			25-34			35-44			Total		
	eta <sup>2</sup>	$\bar{x}$	adj.	eta <sup>2</sup>	$\bar{x}$	adj.	eta <sup>2</sup>	$\bar{x}$	adj.	eta <sup>2</sup>	$\bar{x}$	adj.
I												
Premarital work	12			26			28			22		
Never worked		26.4			25.2			29.9			26.9	
Worked at home		75.6			70.0			84.2			76.6	
Worked outside		56.7			72.8			79.8			69.5	
II												
Husband's income	6			3			2			2		
\$1-99		42.6			47.2			53.4			47.7	
\$100-199		35.3			46.8			55.6			45.9	
\$200+		27.5			29.1			36.5			30.5	
III												
Race	4			6			6			5		
Malay		37.2			43.2			50.4			43.5	
Chinese		30.6			42.3			35.9			38.0	
Indian		65.7			70.9			82.5			72.7	
Total		40.1			45.7			52.1			45.9	
R <sup>2</sup>												
I	12.0			25.4			28.2			21.5		
I, II	12.5			26.5			29.2			22.4		
I, II, III	16.1			29.0			33.3			25.6		

TABLE 11. -- Current work by age, means, eta<sup>2</sup> and percent of variance explained, urban areas

	15-24		25-34		35-44		Total
	eta <sup>2</sup>	$\bar{x}$ adj.	eta <sup>2</sup>	$\bar{x}$ adj.	eta <sup>2</sup>	$\bar{x}$ adj.	eta <sup>2</sup> $\bar{x}$ adj.
I							
Premarital work	20		14		10		14
Never worked		3.1		5.3		8.2	6.0
Worked at home		45.6		46.8		35.8	43.5
Worked outside		33.9		28.5		34.9	30.9
II							
Husband's income	3		1		1		8
\$1-99		10.8		20.8		13.8	15.4
\$100-199		9.6		12.1		13.4	12.1
\$200+		20.8		16.1		14.7	16.9
III							
Race	1		2		.7		3
Malay		15.4		18.0		13.5	15.8
Chinese		12.2		13.9		12.8	13.3
Indian		17.0		13.7		21.2	16.9
Total		14.4		15.5		14.0	14.8
R <sup>2</sup>							
I		19.3		13.5		9.4	13.5
I, II		20.5		13.9		8.6	13.6
I, II, III		19.8		13.6		8.4	13.5

Table 12. -- Current work by age, means, eta<sup>2</sup> and percent of variance explained, metropolitan areas

		15-24		25-34		35-44		Total	
		eta <sup>2</sup>	$\bar{x}$ adj.	eta <sup>2</sup>	$\bar{x}$ adj.	eta <sup>2</sup>	$\bar{x}$ adj.	eta <sup>2</sup>	$\bar{x}$ adj.
I									
Premarital work		14		14		11		12	
Never worked			1.8		5.6		11.4		7.2
Worked at home			25.6		28.3		42.7		31.9
Worked outside			24.4		35.6		37.2		33.6
II									
Husband's income		2		.2		.7		.1	
\$1-99			7.5		23.5		30.5		23.1
\$100-199			9.0		18.1		22.3		17.2
\$200+			16.0		21.3		16.7		18.9
III									
Race		2		2		2		2	
Malay			12.3		16.4		19.4		16.1
Chinese			12.2		21.2		22.4		20.4
Indian			8.6		21.3		13.3		15.6
Total			11.3		20.1		20.5		18.5
R <sup>2</sup>									
I			12.5		13.5		9.8		11.9
I, II			12.3		13.1		9.9		11.8
I, II, III			11.1		12.8		9.6		11.8



TABLE 13. -- Percent of variance explained for various labor force participation measures by age and agricultural activity

	Non-Agriculture				Agriculture			
	15-24	25-34	35-44	Total	15-24	25-34	35-44	Total
Work after marriage								
Area								
Premarital work	17.7	18.3	19.4	17.9	-	-	-	-
Income per family member	19.0	20.0	19.8	18.9	-	-	-	-
Husband's employment	18.9	20.0	19.7	18.9	-	-	-	-
Husband's income	18.7	21.0	22.6	19.9	10.0	26.3	29.3	23.2
Husband's industry	19.1	21.0	22.5	19.9	8.9	27.4	28.8	23.8
Race	19.2	21.1	23.0	20.2	8.9	27.0	31.9	24.1
Current work								
Area								
Premarital work	18.9	21.8	21.7	20.4	-	-	-	-
Income per family member	19.7	22.5	21.8	20.9	-	-	-	-
Husband's employment	19.6	22.5	21.8	20.9	-	-	-	-
Husband's income	19.6	23.8	25.6	22.2	14.8	26.2	40.0	27.5
Husband's industry	19.9	24.0	25.6	22.3	14.8	28.9	40.1	28.2
Race	19.8	24.1	26.1	22.5	14.0	28.5	41.7	28.2

Blanks indicate too few cases to have a reliable estimate.  
Percent of variance explained refers to variance explained by variable listed and all preceding variables.

CHAPTER V  
EDUCATION AND MEDIA USE RELATED TO  
THE WORK OF MARRIED WOMEN

This chapter investigates the effect of education and related variables upon the work of women. The related variables, husband's education and informal education show relatively little effect upon a woman's work. Formal education, on the other hand, is related to the work rate of married women in rural areas, and a curvilinear one in urban areas. There are also large differences in work rates for a given level of education between urban and rural areas.

Review of Literature

Studies done in other areas have suggested the potential influence of education upon female labor force participation in West Malaysia. However, most of the studies on education and labor force participation have been done in developed countries. The relationship has uniformly been a consistent, positive one, although of varying strength. Ridley (1969), Bowen and Finegan (1969), Morgan (1966) and Sweet (1970) for example all found a positive relationship between labor force participation and education for women in the United States. Cain (1966) similarly found proportion of married life worked to be

related to education.

Different light is shed by a French study investigating the desire to work for married women (Dubrulle and Gautier, 1969). In the "modified probability sample" employed in this study, women with middle level education showed less interest in future work, as well as less past work experience, than did women with higher or lower education.

Mason (n.d.) has suggested the potential fruitfulness of exploring the effect of the difference in education between husband and wife. If the wife has higher education than her husband, this has a positive effect on her labor force participation, in addition to the separate effects on her or her husband's education.

A separate effect of area is also suggested by de Laval (1970) who specified the relationship between education and labor force participation by area in Sweden. He found that women of high educational attainment has high levels of labor force participation in all areas, whereas women with low education had high levels of labor force participation in urban areas, but low levels in rural areas. de Laval plausibly relates this to the availability of work for persons of different levels of skill in different areas.

It is not clear, however, to what extent the relationships between education and labor force participation in developed countries can be transposed to a developing,

largely agricultural society. de Laval's work certainly suggests potential difficulties, because of the different levels of labor force participation of women with the same education in urban and in rural areas.

In developing countries, the relationship appears to be both more complex and less well researched. Stycos and Weller (1967), in an attempt to relate labor force participation and fertility, found education to be one of the main variables influencing both fertility and labor force participation. Their data can be recomputed to show an urban-rural differential in the relationship between education and labor force participation. Although labor force participation of women is low in either area, rural women with education are more likely to be employed than women without education. In urban areas there is no such differential.

Education was also used as a stratification variable by Minkler (1970) in a study of labor force participation and fertility in India. For educated women, there was a negative correlation between labor force participation and fertility, for uneducated women there was not.

Mueller's study of Taiwan (Mueller et al., unpubl.) indicates an important positive effect of education on female labor force participation, when area and husband's employment are controlled for; this is particularly true for wives of wage and salary earners. However, there is

also an indication that rural women with low education are more likely to work than others.

From these studies we can tentatively conclude that there is evidence both of a positive linear relationship and a curvilinear relationship between education and female labor force participation. Education not only makes more kinds of skilled work possible, it also opens up the possibility of new roles, other than wife and mother, for women. Also, work for pleasure, intellectual, social or moral gratification will increase with the ability to do such work, i.e. with education and training. However, area possibly as a reflection of the availability of work also appears to be a factor to be taken into account.

One may also suggest that education is likely to have an indirect effect on fertility because of its effect on labor force participation. In accordance with the incompatibility framework of work and fertility, developed by Stycos and Weller (1965), work has a negative effect on fertility. If education has a positive influence on labor force participation, and labor force participation has a negative effect on fertility, the negative effect of education on fertility, via labor force participation, must be added to the traditionally assumed negative effect of education on fertility, via a change in aspirations and values. However, this comes more within the realm of our fertility analysis (Chapter VI) than within that of the present chapter.

### Analytic Framework

Employing a framework similar to that of the previous chapter, this chapter focuses on the influence of education on the labor force participation of married women in West Malaysia. Labor force participation is measured, as before, in terms of current work, work before marriage, work after marriage, and years worked since marriage.

Education is measured as years of education completed by the woman and by her husband, as well as the highest level of qualification, a different item on the questionnaire, of both. The educational differential between wife and husband is also measured in order to assess a possible independent effect, as suggested in the literature.

An innovative aspect of this study is the measurement of informal education in addition to the measures of formal education, traditionally employed. It is reasoned that formal education, particularly if limited to four or five years in childhood may have less effect on life-style and work than ways of acquiring, processing and using information acquired later in life. This informal education may have effects independent of as well as in addition to formal education.

While designed with a somewhat different focus, the West Malaysian Family Survey of 1966-67, does provide information relevant to informal education. The process of informal education can be measured through mass media use.

The effect of informal education can be measured through knowledge of a specific subject, family planning. These variables might not be the designed measurements in a study of informal education, but for a secondary analysis of data, they are far from unsuitable.

Media use is measured by a straight forward media index, giving equal weight to newspaper reading, book and magazine reading, radio listening, TV watching, and film attendance on an ordinal scale from "Never" to "Daily." While the summing of the values on the ordinal scale is methodologically inexact, this index nevertheless gives a rough indication of self-exposure to the mass media.

Family planning knowledge, which in the interview was split into two variables--number of family planning methods heard of and number of methods respondent knew how to use--is kept as two variables, since there is little justification for summing or ordering the answers to the two questions.

## Results

In the assessment of the effects on labor force participation of education and education related variables several interesting relationships emerge: the highest percentage of variance explained for a subgroup is 39.2 for Indian women in rural areas (Table 2). Moreover, several internally and logically consistent relationships emerge.

By itself, years of schooling have some influence upon work, particularly on work since marriage (Table 3). When taken together with the other variables, particularly the core variables of age, area, and race, its influence practically disappears (Table 3). A similar, but much weaker relationship holds for knowledge and use of family planning. Age, race and area, on the other hand, wield significant influence by themselves or in conjunction with the weak family planning variable, net of education and other variables (Table 3). For current work, area adds 5.6 percent to total variance explained to the family planning variables, for work since marriage somewhat less. For one subgroup, Indian women, the education variables alone explain as much as 24.3 percent of the variance (Table 4).

As in the previous chapter, age is important not only in the self evident explanation of years worked since marriage, but also in explaining premarital work, especially for Chinese women, work since marriage, and current work (Tables 1, 2, 3). Net of education and media variables, age adds about one percent of the variance explained to current work and work since marriage.

Whether education is measured as years of school completed or as the highest level of qualification attained, it shows, not unexpectedly very similar effects. While not consistently powerful in explaining the variance in labor force participation, it appears to act as a modifier on



work in important ways. The highest work rates, adjusted for all the other variables, are shown by women with the highest education, then those with the least education, and the lowest by women with middle level education, a curvilinear relationship. The differences in work rates are quite definite: the adjusted means show 53.6 percent of the women with seven or more years of schooling to be working currently, compared to 40.6 percent of those with 0-1 years, 35.8 percent of those with 2-5 years of school and 33.8 percent of those with six years of school. For work since marriage the differences are similar (Table 4). Very high education apparently promotes work, but the next lower step on the educational ladder does just the opposite. However, the unadjusted scores show a different relationship: those with the lowest educational attainment are more likely to be working. When the other variables, principally socio-economic status, are held constant, however, the relationship is reversed, and women with high education work more. The differences between unadjusted and adjusted values for current work by education is made more credible by an identical relationship between education and work since marriage as well as years worked since marriage.

The relationship between education and work is also modified by area. In urban and metropolitan areas there is a curvilinear relationship between education and labor force participation: women with middle level education are least

likely to work. This holds largely for all the work variables, and for all three races, the exception being Indian women, for whom it is only true for current work. In rural areas, on the other hand, there is an indirect relationship between education and labor force participation, again across variables and races, with the exception of premarital work for Indian women. Thus, instead of facilitating work in rural areas, education appears to discourage it.

None of the other variables included in the analysis wields much influence. Husband's education has comparatively little influence on women's work: variance added is negligible,  $\eta^2$  are small and percentage differences between categories are trivial.

The educational discrepancy between husbands and wives, although it does not explain much variance, shows the predicted difference for current work: women with more education than their husbands are more likely to work than women with less or the same education. For work since marriage, this does not hold: here women with the same education work the most, although women with more education than their husbands still work more than women with less, although the percentage differences are very small.

The media index similarly explains little variance but does show higher work rates for high media users, but also for low media users. Possibly the composite nature of the

index, which mixes literary and non-literary media may account for this. Again, the percentage differences are small. For each of the racial groups more subtle and specific relationships appear in the analysis, in addition to the general findings.

#### Malays

Education, measured as the highest level of qualification completed, has apparently a curvilinear effect on the labor force participation of Malay women in metropolitan and urban areas. These two areas are grouped into one, in order to have sufficient cases in the different cells in the analysis. For premarital work and work after marriage, as well as for current work, the effect of this variable alone is 6.2, 3.3 and 4.2 percent respectively of the total variance explained (Table 1). The highest labor force participation is shown by the group with the highest education, 38 percent, whereas the group with middle level education shows 11 percent and the lowest educated group 21 percent for premarital work (Table 6). Current work and work since marriage show the same effect.

This can be interpreted as an indication of more jobs available for unskilled women, as well as a greater need to work, compared to women with middle level education. On the part of more educated women possibly an interest in work is operative, that may be absent for women of middle level

education--or the jobs available for the latter category may be more limited. Again, we have no empirical data to support this speculation.

The U-shaped curve of labor force participation and level of qualification is robust when controlled for the other variables, age, family planning use and knowledge, husband's education, the husband-wife educational discrepancy and one media index.

In rural areas, the level of qualification, or any of the other variables has little explanatory power for Malay women. Moreover, there is an indirect relationship between level of qualification and the different measures of labor force participation employed here: the higher a woman's level of qualification, the less likely she is to work (Table 7). Either the motivation to work is lower, or, more likely, the availability of skilled jobs is smaller in rural areas. Discrepancy in education between husband and wife has little power in explaining the variance in labor force participation. In fact, results showed lower labor force participation of Malay wives with higher education than their husbands, quite contrary to expectation.

Husband's level of qualification is inversely related to labor force participation of wives, but it is also of unimportant in explaining the variance.

## Chinese

None of the variables tested is very powerful in explaining the variance in female labor force participation, as measured here, for the Chinese in metropolitan and urban areas. Despite the insignificant amount of variance explained the same curvilinear relationship for level of qualification and labor force participation as for Malays holds: the highest labor force participation is shown by women of high qualification, then women of low qualification and the lowest by women in the middle group, except for work before marriage, where the relationship is a direct one (Table 7). There is also a direct (although not very powerful in explaining variance) relationship between a woman's labor force participation and her level of qualification compared to that of her husband: wives with higher qualifications than their husbands are more likely to work, than wives with the same level of qualification as their husbands; least likely to work are wives with less education than their husbands. This is very much in accordance with predictions based on studies in the West.<sup>1</sup> Husband's level of qualification, on the other hand, has very little effect.

In rural areas, the educational variables are a little more powerful in explaining the variance, but still not very powerful. Level of qualification alone explains 2.0, 2.8,

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<sup>1</sup>On the other hand it is opposite that of Malays.

and 5.2 percent of the variance in premarital work, work since marriage and years worked since marriage (Table 9). This relationship is an inverse one, contrary to expectation, but like the Malays: the higher the level of qualification the less likely is a woman to work or have worked.

Husband's level of qualification is another variable that can explain some variance in rural areas: 4.0, 2.5 and 3.5 of work since marriage, years worked and current work respectively (Table 9). Here we find a different curvilinear relationship. Wives whose husbands have middle level of qualification are most likely to work, followed by wives whose husbands have the lowest level of qualification; lowest labor force participation rates are shown by wives whose husbands are the most educated.

Number of family planning methods also explains 3.6 and 3.5 percent of the variance in pre- and post-marital work respectively (Table 9): the more family planning method a woman has heard about the more likely she is to have worked. This also holds for years worked and current work although little variance is explained by these variables.

The most powerful variable in explaining labor force participation is, however, again age, which explains 6.8 percent of the variance in work prior to marriage (Table 9).

Younger women are more likely to have worked prior to

marriage than older women. For current work and work after marriage, however, it explains little. Years worked, understandably, varies directly with age, but explains only 4.9 percent of the total variance. In other words, age is by no means the only, or probably even the strongest factor in explaining how long a woman has worked; younger women may well have worked longer, in absolute years, than older women.

### Indians

For Indian women, very little can be deduced from the education variables tested in metropolitan and urban areas. Only for current work does the curvilinear relationship between level of qualification and labor force participation observed for Malays and Chinese hold (Table 9). For most variables the amount of variance explained is zero when degrees of freedom are adjusted for. The differences in means are small, but indicate a curvilinear relationship between work and education as well as the media index.

In rural areas, however, a higher percentage of variance is explained than for any other group. While level of qualification explains only two percent of premarital work it explains 13, 9.4 and 8.6 percent of the variance in work since marriage, number of years worked, current work respectively (Table 9). The relationship is not easily untangled or understood: level of qualification and

premarital work are directly related, whereas, for the other variables, labor force participation is lowest in the group with the highest education, just as with Chinese and Malays, but slightly lower in the lowest than in the middle level of qualification.

For Indian women, the media index also explains some variance (3.8 percent for premarital work), but contrary to the predictions made. Whereas the media index was hypothesized to be positively related to labor force participation, so that women with high media use were also likely to be working, the data show the opposite: women with high media use index scores were less likely to work; furthermore, the relationship is strengthened when level of qualification is controlled for. However, for the other labor force variables, work after marriage, years worked and current work, the relationship is as hypothesized, although insignificant in explaining the variance.

As in the other two racial groups, the other variable of some interest in this analysis is age. It not only accounts for 26.3 percent of the variance in years worked since marriage--not a particularly surprising finding--but it also explains 2.4 percent of the variance in current work: the older a woman is the more likely she is to be working currently.



## Discussion

From this examination of the effect of education and related variables upon the work of married women, we can discern differential effects depending upon age, race, area and education. Informal education, as measured by the family planning variables, and media use, and the husband's education, on the other hand, have comparatively little effect.

The suggestion of a curvilinear relationship between education and labor force participation in urban areas and an inverse relationship in rural areas would indicate that there may be different labor markets in different areas depending upon education, or perhaps different motivation and taste for work for different groups. Women with low education have fairly high activity rates in urban as well as in rural areas, but for all races, the rates are much higher in rural areas (Table 10). Women with middle level education are less likely to work than women with low education; they are particularly unlikely to work in urban areas. Women with high education have lower activity rates in rural areas than women with lower education. Despite the fact that they have the highest activity rates in urban areas, they still have lower rates in urban than in rural areas.

The difference in activity rates between urban and rural areas is lowest for the educated. It is also lower

for Chinese women than for other races. It would seem then, that urban labor markets cater more to educated women and also to Chinese women than to other groups. Or, rather they are at less of a disadvantage than other groups in the urban labor market.

These findings parallel those of Mueller et al. (n.d.) in Taiwan, where a similar, although numerically insignificant relationship was found. They contrast with those of Stycos and Weller in Turkey (1967) and de Laval (1970) in Sweden, where educated women in rural areas were more likely to be employed than uneducated women. No such relationship was found in urban areas. Apart from different definitions of female work, this discrepancy can be explained in terms of the availability of work at different levels of economic development. On the one hand, we have Turkey with very low female employment; the current activity rate for the whole sample was only 8 percent. This is accompanied by a rigid definition of the female role and by severe restrictions on female employment. Thus, in rural areas it is only the educated who are able to work outside the home; in urban areas, presumably more economically developed and with more opportunities for work outside the home, also those with no education, like the educated, work outside the home, albeit in small proportions. Sweden, on the other hand, is on the other end of the continuum. Few restrictions are placed on female employment outside the home, supply and demand

factors determine labor force participation. Here this means high levels of employment in the urban areas, but employment only of the most employable in rural areas, i.e. the most educated.

West Malaysia has, on the one hand, few restrictions on female employment, and therefore high rates of labor force participation in rural areas. For more skilled women, however, rural employment opportunities or taste for employment decline. In urban areas there is, as in rural areas, high employment for women with low education, but there is also high employment for educated women. Whether women who fall in between these two categories have fewer suitable job opportunities, less taste for work or work less for some other reason cannot be tested with the present data set.

Whereas the notion of different taste for work for different groups is not investigated here, such a difference in taste is nowhere indicated. The differential effect of education in urban and rural areas would suggest that taste may be less important than, on the one hand, demand factors in the labor market, and on the other, social and economic variables unrelated to education.<sup>2</sup> As well as fertility, our results indicate that the personal

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<sup>2</sup>See Chapter VII for the combined effect of education and fertility upon work.

factors of formal and informal education for wife and husband explain a relatively small part of the variance of labor force participation of married women, particularly in urban areas.

TABLE 1. -- Percent of variance explained for different measures of labor force participation by education, metropolitan and urban areas

	Pre-marital work	Work since marriage	Current work	Years worked
<b>Malays</b>				
Age	8.7*	4.6	6.3	2.4
Family planning use	7.9	3.8	5.4	-
Family planning knowledge	7.4	4.0	5.5	-
Educational discrepancy	7.6	4.0	5.7	-
Husband's level of qualification	7.3	4.1	5.7	-
Media index	7.1	3.9	5.5	-
Level of qualification	6.2	3.3	4.2	-
<b>Chinese</b>				
Age	4.9	1.1	1.3	3.5
Family planning use	-	1.1	1.4	-
Family planning knowledge	-	1.2	1.4	-
Educational discrepancy	-	-	1.2	-
Husband's level of qualification	-	1.0	1.0	-
Media index	-	1.2	1.1	-
Level of qualification	-	-	-	-

TABLE 1. (Continued) Percent of variance explained for different measures of labor force participation by education, metropolitan and urban areas

	Pre-marital work	Work since marriage	Current work	Years worked
Indians				
Age	-	3.9	3.8	4.1
Family planning use	-	1.5	3.2	-
Family planning knowledge	-	-	3.4	-
Educational discrepancy	-	-	-	-
Husband's level of qualification	-	-	-	-
Media index	-	-	-	-
Level of qualification	-	-	1.2	-
Total				
Age	4.4	2.8	2.6	3.8
Family planning use	2.5	2.2	2.3	-
Family planning knowledge	1.9	2.0	2.3	-
Educational discrepancy	1.2	1.7	2.3	-
Husband's level of qualification	1.2	1.7	2.0	-
Media index	1.1	1.7	2.2	-
Level of qualification	1.0	1.5	1.9	-

\*Refers to variance explained by variable listed and subsequent variables.

TABLE 2. -- Percent of variance explained for different measures of labor force participation by education, for rural areas

	Pre-marital work	Work since marriage	Current work	Years worked
<b>Malays</b>				
Age	2.4*	2.9	2.4	15.8
Family planning use	2.5	1.8	1.7	6.9
Family planning knowledge	2.5	1.8	1.7	6.9
Educational discrepancy	2.5	1.9	1.7	6.9
Husband's level of qualification	2.4	1.6	1.6	6.9
Media index	2.3	1.6	1.6	5.9
Level of qualification	1.5	-	-	5.3
<b>Chinese</b>				
Age	13.3	11.8	6.6	13.2
Family planning use	6.5	11.6	6.7	8.3
Family planning knowledge	6.2	11.0	5.3	8.4
Educational discrepancy	2.6	7.5	4.9	8.3
Husband's level of qualification	3.0	8.0	4.5	8.7
Media index	2.7	4.0	1.0	6.2
Level of qualification	2.0	2.8	1.0	5.2

TABLE 2. (Continued) Percent of variance explained for different measures of labor force participation by education, for rural areas

	Pre-marital work	Work since marriage	Current work	Years worked
Indians				
Age	16.0	16.2	12.5	39.2
Family planning use	14.2	14.9	9.1	12.9
Family planning knowledge	14.4	12.6	8.1	12.2
Educational discrepancy	14.3	12.4	8.3	12.1
Husband's level of qualification	8.0	12.8	8.3	11.8
Media index	5.8	12.8	8.6	9.5
Level of qualification	2.0	13.0	8.6	9.4
Total				
Age	2.1	2.9	2.2	16.2
Family planning use	2.1	2.3	1.7	7.0
Family planning knowledge	1.9	2.3	1.7	7.0
Educational discrepancy	1.9	2.3	1.7	7.0
Husband's level of qualification	1.9	2.3	1.6	6.9
Media index	1.9	2.0	1.5	6.1
Level of qualification	1.0	1.2	1.0	5.4

\*Refers to variance explained by variable listed and subsequent variables.



TABLE 3. -- Percent of variance explained for current work and work since marriage, by education and related variables

	Current work	Work since marriage
1	1.6	1.8
1, 2	2.1	2.5
1, 2, 3	2.4	3.0
1, 2, 3, 4	3.0	3.8
1, 2, 3, 4, 5	3.5	4.3
1, 2, 3, 4, 5, 6	3.7	4.6
1, 2, 3, 4, 5, 6, 7	6.2	7.0
1, 2, 3, 4, 5, 6, 7, 8	11.8	12.9
1, 2, 3, 4, 5, 6, 7, 8, 9	11.8	13.0
1, 2, 3, 4, 5, 6, 7, 8, 9, 10	11.8	13.0
10, 9, 8, 7, 6, 5, 4, 3, 2	11.1	12.2
10, 9, 8, 7, 6, 5, 4, 3	10.9	11.9
10, 9, 8, 7, 6, 5, 4	10.9	11.9
10, 9, 8, 7, 6, 5	10.6	11.1
10, 9, 8, 7, 6	10.0	10.5
10, 9, 8, 7	9.3	9.5
10, 9, 8	7.0	6.7
10, 9	1.9	1.4
10	.8	.6

- 1 = Education  
 2 = Educational discrepancy  
 3 = Husband's education  
 4 = Socio-economic status  
 5 = Media index  
 6 = Age  
 7 = Race  
 8 = Area  
 9 = Family planning knowledge  
 10 = Family planning use

TABLE 4. -- Labor force participation measures by education and related variables

	Work since marriage	Current work
Years of school		
0-1	46.3	40.6
2-5	41.4	35.8
6	38.5	33.2
7+	61.3	53.6
Educational discrepancy		
None	42.0	38.4
Husband more	45.2	38.5
Wife more	53.5	47.2
Husband's years of school		
0-1	44.8	37.2
2-5	45.9	40.3
6	44.3	39.5
7+	44.3	39.6
Socio-economic status		
U + UM	34.3	32.1
M	36.8	33.7
LM + L	48.1	41.4
Media index		
Low	45.9	40.4
Medium	41.0	34.7
High	53.0	46.7

TABLE 4. (Continued) Labor force participation measures by education and related variables

	Work since marriage	Current work
Age group		
15-24	38.4	33.8
25-34	44.7	39.2
35-44	51.5	44.4
Race		
Malay	39.8	34.9
Chinese	50.1	42.2
Indian	68.4	61.4
Area		
Metropolitan	19.4	14.6
Urban	17.6	14.3
Rural	54.5	48.1
Family planning knowledge		
No	43.9	39.0
Yes	47.2	39.9
Family planning use		
No	45.0	39.4
Yes	45.1	38.8
Total	45.0	39.3
N	4913	4913

TABLE 5. -- Current work by race, percentage  
of variance explained by all variables (I)  
and all variables except area (II)

	I	II
Malay	6.9	3.8
Chinese	8.2	2.0
Indian	43.8	19.5
Total	9.4	4.0

TABLE 6. -- Labor force participation measures by area, adjusted means, Malays

	Urban-Metropolitan				Rural			
	A	B	C	D	A	B	C	D
Level of qualification								
None	26.5	14.4	.5	8.3	44.5	51.2	5.8	45.5
1-5 years	10.1	9.8	.9	6.8	31.7	47.5	4.7	40.8
6+ years	31.9	29.7	1.9	26.8	25.8	29.9	4.0	29.3
Media index								
Low	21.1	17.8	1.3	14.0	42.0	50.7	5.7	45.4
Medium	18.6	12.9	.8	8.1	28.3	57.9	4.1	31.7
High	29.6	22.1	.9	18.8	40.8	49.9	4.8	48.7
Husband's level of qualification								
None	18.1	21.1	1.8	15.8	33.0	39.5	5.6	35.5
1-5 years	15.5	15.2	.9	11.6	38.2	49.7	5.0	43.1
6+ years	26.2	15.9	.8	11.9	46.7	54.3	5.6	49.1
Educational discrepancy								
Husband higher	27.6	19.4	1.1	15.5	43.1	52.2	5.7	46.4
No discrepancy	17.9	14.5	.9	10.7	33.4	41.1	4.9	36.4
Wife higher	22.1	17.3	.7	10.0	51.1	68.2	6.3	59.4

TABLE 6. (Continued) Labor force participation measures by area, adjusted means,  
Malays

	Urban-Metropolitan				Rural			
	A	B	C	D	A	B	C	D
Family planning knowledge								
None	21.2	14.5	1.0	12.5	39.4	47.9	5.4	42.7
Some	21.9	17.7	1.0	12.3	38.1	48.3	5.3	42.1
Family planning use								
None	19.6	16.0	1.0	11.9	39.3	47.7	5.3	42.2
Some	26.3	17.6	1.0	13.3	36.9	50.9	5.6	45.4
Age								
15-24	19.2	9.3	.06	5.8	39.6	42.2	2.5	37.2
25-34	26.7	17.3	1.0	13.3	39.5	45.9	4.6	41.4
35-44	16.6	21.1	1.8	16.4	38.0	56.5	9.1	49.3
Total	21.6	16.5	1.0	12.4	39.1	48.0	5.3	42.5
N	507				3091			

A = Premarital work  
B = Postmarital work

C = Years worked since marriage  
D = Current work

TABLE 7. -- Labor force participation measures by area, adjusted means, Chinese

	Urban-Metropolitan				Rural			
	A	B	C	D	A	B	C	D
Level of qualification								
None	53.2	32.5	2.5	26.0	68.0	58.1	5.7	49.0
1-5 years	51.4	21.3	1.2	15.5	49.8	46.9	4.9	38.1
6+ years	45.3	26.9	1.5	19.6	47.8	48.0	4.5	26.8
Media index								
Low	47.2	24.2	1.5	17.9	63.4	56.7	5.6	42.8
Medium	50.4	27.1	1.7	20.7	46.2	40.3	4.4	44.3
High	61.3	35.3	2.4	28.1	-	-	-	-
Husband's level of qualification								
None	55.4	22.5	1.0	10.0	62.9	53.1	6.6	32.8
1-5 years	46.7	25.3	1.7	19.3	63.4	63.2	6.3	52.6
6+ years	50.6	28.9	1.9	24.0	48.1	31.7	2.7	29.1
Educational discrepancy								
Husband higher	49.7	28.2	1.8	23.0	55.6	48.6	4.9	41.7
No discrepancy	50.1	24.6	1.4	16.7	60.1	55.7	5.8	41.4
Wife higher	52.5	33.3	2.8	30.6	64.4	45.5	2.6	60.0

TABLE 7. (Continued) Labor force participation measures by area, adjusted means,  
Chinese

	Urban-Metropolitan				Rural			
	A	B	C	D	A	B	C	D
Family planning knowledge								
None	45.4	21.3	1.5	15.4	53.1	45.4	4.9	41.6
Some	51.7	28.4	1.8	21.8	66.7	62.4	5.8	44.5
Family planning use								
None	50.2	26.6	1.6	21.8	54.2	48.4	5.0	37.0
Some	50.2	26.9	1.8	19.0	65.2	58.3	5.7	50.7
Age								
15-24	60.2	21.1	.5	16.7	85.7	58.9	2.9	43.5
25-34	57.7	27.8	1.5	20.6	54.4	53.4	5.0	45.3
35-44	35.3	27.7	2.6	21.3	45.7	45.7	8.0	37.1
Total	50.2	26.7	1.7	20.3	58.9	52.6	5.3	42.9
N	1156				364			

A = Premarital work  
B = Postmarital work  
C = Years worked since marriage  
D = Current work



TABLE 8. -- Labor force participation measures by area, adjusted means, Indians

	Urban-Metropolitan				Rural			
	A	B	C	D	A	B	C	D
Level of qualification								
None	28.2	22.2	2.2	14.9	55.4	84.7	9.8	79.3
1-5 years	23.6	15.4	.7	6.0	64.2	92.7	8.2	87.9
6+ years	25.0	20.4	.8	16.9	91.4	48.6	6.6	91.0
Media index								
Low	13.2	15.9	.8	10.8	66.3	84.4	8.6	77.8
Medium	28.6	21.0	1.4	13.7	40.6	87.3	9.6	86.7
High	35.6	23.9	2.0	14.6	-	-	-	-
Husband's level of qualification								
None	20.1	15.2	.6	4.8	41.0	86.4	9.0	72.8
1-5 years	24.9	18.6	1.2	9.2	64.0	88.1	9.7	82.2
6+ years	27.7	21.1	1.5	16.6	68.2	77.3	7.5	78.7
Educational discrepancy								
Husband higher	31.6	30.8	2.0	21.2	47.2	80.3	9.0	75.0
No discrepancy	22.3	11.3	.6	6.1	63.7	87.9	8.9	81.4
Wife higher	26.8	30.0	2.9	23.1	100.0	80.1	9.6	86.9

TABLE 8. (Continued) Labor force participation measures by area, adjusted means,  
Indians

	Urban-Metropolitan				Rural			
	A	B	C	D	A	B	C	D
Family planning knowledge								
None	28.7	24.2	1.7	19.5	60.8	85.1	9.2	79.5
Some	22.9	15.0	.9	6.2	63.7	83.6	7.5	80.7
Family planning use								
None	24.0	15.6	1.3	11.1	61.0	87.0	9.2	81.3
Some	28.0	24.7	1.3	14.9	61.9	64.0	6.9	62.6
Age								
15-24	22.7	7.6	1.3	6.1	50.2	77.9	4.1	68.3
25-34	29.1	22.9	1.1	14.2	68.2	88.0	9.4	83.8
35-44	23.5	25.2	2.6	16.5	65.2	90.0	15.2	89.0
Total	25.7	19.5	1.3	12.7	61.1	85.0	9.0	79.6
N	576				367			

A = Premarital work  
B = Postmarital work

C = Years worked since marriage  
D = Current work

TABLE 9. -- Work after marriage by level of qualification,  
adjusted means by race and area

	Level of qualification		
	No school	1-5 years of school	6+ years of school
Malays			
Urban	14.4	9.8	29.7
Rural	51.2	47.5	29.9
Chinese			
Urban	32.5	21.3	26.9
Rural	58.1	46.9	48.0
Indian			
Urban	22.2	15.4	20.4
Rural	84.7	92.7	48.6

CHAPTER VI  
THE WORK AND FERTILITY OF MARRIED WOMEN

Introduction

In the following analysis of labor force participation as a function of fertility experience, fertility shows very little effect on labor force participation. Age, race and area are more powerful as explanatory variables in this context. Although of little explanatory power in either area, all the variables together nevertheless have markedly greater power in explaining the variance in rural than in urban areas.

Small effects are shown by age at first marriage and number of children ever born: the higher the age at first marriage and the fewer the number of children ever born, the higher the probability of labor force participation.

These data could be interpreted as evidence that fertility and labor force participation stand in conflict, particularly in urban areas, but the evidence is too scanty to offer anything but the barest support for such a hypothesis. If a strong relationship existed, it would indicate this conflict on more than two or three variables, and show stronger effects. The findings suggest that fertility has a negative effect on labor force participation only in a small number of cases.

Fertility has been one of the most widely studied

correlates of female labor force participation. Generally, women's role in production competes with their role in reproduction and a negative relationship between labor force participation and fertility has been widely documented. For instance, as early as in the 1930's a relationship between fertility and the labor force participation of women was shown (Charles and Mishinsky, 1938, p. 148, as quoted in Preston n.d.). In textile areas where demand for female labor was high, fertility was low, in mining areas where the demand for female labor was low, fertility was high. At about the same time, average family size for employed mothers in Sweden was also shown to be much lower than that of mothers not employed (Myrdal, 1941, p. 408).

Since these pioneering studies female labor force participation and fertility have been studied on a number of dimensions. In terms of the goals and intent of the present study, the most important of these dimensions are:

1. macro or micro-level of analysis, i.e. if the study relates the two variables on the aggregate or individual data level,
2. area, i.e. in a developed or a developing economy, and
3. the different measures of fertility and of labor force participation.

Weller (1973) also points to the need for differentiation between period and cohort studies also in labor force

studies, a point well taken, but of no import in the present review. There are simply not enough true cohort studies done at this point in time to merit a separate category. At the same time, the studies to date tend to focus on cumulative rather than current fertility, a serious limitation, inasmuch as labor force participation is a measure of current rather than past activities. It is influenced more by current fertility than by fertility history or cumulative fertility. In addition, with rapid change in fertility rates, current fertility becomes a more pertinent measure than cumulative fertility (see Cho et al, 1970). When drawing inferences from a study and relating one study to another, it is important to keep all three dimensions in mind. A slight elaboration is thus in order.

#### 1. Macro and Micro Level Studies

Although the use of areal data is the only practical way of measuring certain economic concepts such as the demand for female labor and other macro-economic concepts relevant to female labor force participation, areal data and ecological correlations are inadequate substitutes for individual correlations in drawing inferences about individual characteristics and behavior. Only in explicitly areal comparisons and under special conditions are ecological correlations adequate as substitutes for individual

correlations (see Robinson, 1950; Menzel, 1950). A technique for determining upper and lower limits for individual correlations for ecological correlations has also been developed (Davis and Duncan, 1953; Goodman, 1953). Apart from these special cases, however, it is important to bear in mind that macro-level studies are strictly generalizable only on an areal basis and micro-level studies only on an individual basis.

## 2. Area

In addition to the clear limitations of applicability in time and space for all social research, it is useful to bear in mind the divergent aspects of female labor force participation as well as fertility in developed and developing countries. Not only are female labor force participation rates outside family agriculture--and sometimes including family agriculture as well--low in many developing countries, but the labor market takes on an entirely different aspect. The demand and pay scale for female labor is often lower than for male labor. Absorption of the new male entrants into the labor force tends to take priority over that of females in countries already plagued with increasing demands on the expansion of the labor market to accommodate large numbers.

The distinction between economically developed and underdeveloped countries also provides a rough dichotomy

between countries that have completed their demographic transition to a state of low birth and death rates, or have made considerable progress toward this state, and countries that have not yet done so. Because of our emphasis on female labor force participation and its relationship to lower fertility, the demographic distinction is at least as important as the economic.

### 3. Measures of Fertility and Labor Force Participation

Apart from the distinction between aggregate level and individual level data, fertility has been related to labor force participation in terms of number of children, ages of children, intended fertility, contraception and intervals between children. While they all operationalize fertility adequately, they do so in very different ways and with different results.

Similarly labor force participation of women can be and has been studied in terms of current measures such as employment outside the home, work in a particular section of the economy and hours worked, part-time or full-time work, etc. A long term perspective has been used when studying labor force participation in terms of expectation of working life, proportion of married life worked, number of years worked since marriage, or more specifically, work at different stages of the life cycle of the woman.

Some order can be imposed on the plethora of research



reporting an association between fertility and labor force participation by examining the findings in terms of the dimensions just elaborated. This is all the more important since studies are not strictly comparable across the categories of these dimensions, although they often give similar results on macro and micro-level, in developed and developing countries and with different fertility and labor force participation measures.

In developed countries, mainly the United States and Europe, numerous macro-level studies have found a negative relationship between labor force participation and fertility, measured as number of children (Collver, 1968; Preston, 1971; Cain, 1966; Leroy, 1968; Girard, 1958; Berent, 1971) ages of children, also measured as children below school age and dependent children which come closer to a current fertility measure than any other (Bowen and Finegan, 1969; Frejka, 1971; Girard, 1958). In developing countries macro-studies have indicated a similar relationship between labor force participation and number of children (Jaffe and Azume, 1960; Miro and Rath, 1966; Collver and Langlois, 1962; Heer and Turner, 1965; Miro, 1966; Zarate, 1967a; Hass, 1972).

In micro-level studies more detailed measures can be used. In developed countries labor force participation has been found to be negatively associated with number of children ever born (Ridley, 1959, 1969; Sweet, 1970;

Kupinsky, 1971; Mason, n.d.), as well as with measures of current fertility (Cho, 1970, Ch. 6). The relationship between ages of children and labor force participation of the mother has generally been positive, i.e. the younger the children the less likely is the mother to work (Sweet, 1970; de Laval, 1970). Intended or expected fertility has been associated with work in a similar way; here the relationship is, of course, negative (Ridley, 1959; Kupinsky, 1971). Operationalized as contraception, however, no strong relationship between fertility plans and labor force participation has been found (Fortney, 1972). Intervals between births, again, are positively associated with work--women who work have longer intervals (Mott, 1972).

In developing countries, micro-level studies do not present such a uniform picture of the relationship between fertility and work. Number of children was found to have a negative relationship in some studies (Carleton, 1965; Minkler, 1970) but not in others (Driver, 1963; Stycos and Weller, 1967; Mueller; Speare et al., 1973). A study in Taiwan (Speare et al., 1973) showed no effect of work outside the home on the desired number of children, although the actual number of children born to women age 18 to 29 showed a negative relationship. Contraception was positively related to work in modern employment in another Taiwan study (Mueller), but this held for upper and middle class

women only.

The studies cited above show a great many cumulative and a few current fertility measures negatively related to different measures of female labor force participation, both on the aggregate data level and in studies employing individual records like the present study. In order to be able to relate the findings of this study to those cited, several different measures of fertility as well as of labor force participation will be used. The data base, the West Malaysian National Family Survey of 1966-67 provides ample fertility information, but comparatively little information on work patterns, habits and frequencies.

The analysis consists of three separate analyses of work and fertility, using different measures of fertility as the independent variables and a study of fertility as the dependent variable influenced by the different measures of work. These studies will be reported separately.

#### Fertility as the Independent Variable

Since the information provided in a Multiple Classification Analysis is tied to a particular set of variables and their relationship to each other, the information in one analysis is not transferable to another, albeit similar, analysis. The three separate analyses using different fertility measures must therefore be considered separately.

In the first fertility analysis, fecundity, recent

fertility, i.e. whether respondent had had a child in the previous year, and number of children born are used as measures of fertility performance. Fertility expectations and plans are measured by the number of children expected in the next five years, ideal family size for husband and for wife, and use of family planning.<sup>1</sup> Number of marriages, years elapsed since first marriage and whether respondent's family was actively engaged in agriculture or not are used as independent variable controls, in addition to the "core" variables of area and race. The analysis is done separately for each of three broad age groups, and also for urban, rural and metropolitan areas.

Labor force participation is measured as current work, work since marriage and number of years worked since marriage.

Whereas the same labor force and work measures are used in the second stage of the analysis, fertility is measured as follows: no measures of actual fertility performance are included, although impairments to performance, fecundity and family planning are included, as in the first stage of the analysis. Several interval-type measures of fertility are used: months between marriage and first

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<sup>1</sup>Data on expected number of children in the next five or next two years are not very reliable, especially not as a measure of future fertility. As a measure of fertility wishes at a particular point in time, however, they are of interest.

birth and months since last live birth. Expected children in the next two rather than the next five years is measured along with the desire for more children on the part of the husband and the wife. To explore this concept in somewhat greater detail, this analysis also includes how the respondent would feel if she had one child more than she wanted.

The third set of fertility variables combines elements of the first two sets into the following set of independent variables: months since last live birth, months between marriage and first birth, children ever born, additional children wanted by wife and by husband, in addition to the "core" variables of race and area. Number of years married, in 5-year age groups, is used as a control variable, in conjunction with area, dichotomized into urban-metropolitan and rural. Work is measured as proportion of married life worked, rather than number of years worked, as well as current work and work since marriage.

In this analysis an index of child dependency, developed by Schnaiberg (1973) is also introduced. Measured as number of child months of dependency per year of marriage, this variable reflects the burden of child-bearing in terms of economic and psychological costs to the parents. It is calculated as

$$(\text{CYD})_{T_0 - T_1} = \sum_{i=1}^n (T_1 - B_i) = nT_1 - \sum_{i=1}^n B_i$$

where

- $n$  = number of children born in the period
- $T_1$  = the upper boundary of the period being analyzed
- $B_i$  = year of birth of the  $i$ th child
- $T_i$  = year of marriage
- $i$  = birth order

## Results

The fertility measures in the first stage of the analysis are not especially powerful in explaining the variance in the labor force measures. While 11-21 percent of the variance, depending upon the age group, is explained for current work, and work since marriage and years worked since marriage show very similar values, a large fraction of this is accounted for by the "core" variables area and race (Table 1) which necessarily precede fertility both logically and chronologically.

Race is definitely not affected by fertility in any way, and clearly precedes fertility in a logical framework. Area will precede fertility logically and chronologically only if we can postulate little or no fertility induced migration, but this can be done in West Malaysia.

Ideal family size bears some relation to work, especially in the older age groups, but adds or subtracts less than two percent from the total variance explained. An increase in number of children born decreases labor

force participation in some groups, but the relationship is not uniform or consistent over age, area, or labor force variables (tables not shown).

A breakdown of this analysis by area yields even less explanation of variance (Table 2) thereby indicating the importance of area in explaining differential work patterns. The difference by area would appear to indicate different labor market conditions and different demand for labor in different areas. While all the values for  $R^2$  are small, a definitely larger proportion of variance is explained in the analysis of rural than of urban areas. This is, in part, because of the greater predictive power of race in labor force participation in rural areas.

The second set of fertility variables, principally interval variables, combined with a more detailed analysis of the number of children wanted or expected in the next two years is even less successful in explaining the variance in work patterns, i.e. current work, work since marriage, and number of years worked since marriage.

All variables together explain 10 to 27 percent of the total variance, depending upon work measure and age group, but the largest fraction of this is accounted for by area, the second largest by race, neither of which are relevant in the present context (Table 3). (For a discussion of their importance see Chapter III.)

Some consistent differences by the number of years since

last live birth appear, especially for current work, where women with more recent births are less likely to be working in all age groups, but this explains no additional variance; the  $\eta^2$  are low, and the percentage point differences between the different categories of time passed since last live birth are only 5-8 percent (tables not shown).

Employing the third set of fertility variables and controlling on marital duration more of the variance is explained (Table 4). Again the variables are more powerful in rural than in urban areas (Table 5). In the total analysis as well as in the analysis by area, however, the primary core variables age and race account for a major fraction of the total variance explained. Of greater interest in this context, however, is the influence of 1) age at first marriage and 2) number of children ever born. While the variance explained by these variables alone is not large, as measured by  $\eta^2$ , the approximate equivalent of the partial correlation coefficient in the MCA analysis, they do give an indication of the importance of the variables (Table 4 and 5).

#### Age at First Marriage

For current work as well as for work since marriage an increase in age at first marriage shows an increase in percentage of women in the labor force (Tables 6, 7). This is uniformly true in urban areas, but holds only for some



age groups in rural areas, where those who married at ages 17-19 have lower work rates than those who married earlier. This finding pinpoints although not unequivocally, the importance of delayed marriage in establishing roles other than those of wife and mother, in getting a vocational skill, and in regarding labor force participation as a normal activity. Nevertheless, this is not a major finding, for the  $\eta^2$  nowhere exceed six percent.

#### Children Ever Born

Although the variance explained by this independent variable is minimal, a fairly consistent pattern of labor force activity, current as well as since marriage, is shown (Tables 6, 7). Except for a marital duration of 15-19 years, labor force participation decreases consistently with a larger number of children ever born in urban areas. In rural areas it holds only for marital duration 0-9 and 15-19, for work since marriage, and the same marital duration as well as 20 years and over for current work.

#### Fertility as a Dependent Variable

As in the previous section it is helpful to use several measures of fertility and labor force participation. Fertility is measured on an interval scale for the following variables: months from marriage to first birth, months since last birth, additional number of children wanted by respondent and the same for her husband, the number of

children ever born and a measure of child dependency that is a combination of the mean interval and by number of children, developed by Schnaiberg (Schnaiberg, 1971, p. 71). This measure describes the number of child months of dependency per year in the interval under study (see above p. 143). In addition, a life-cycle variable, age at first marriage is included.

Labor force participation is similarly analyzed through various measures, although the number of measures available from the survey are few compared to the fertility measures. Work before marriage, work after marriage, proportion of married life worked and current work are used as independent variables. Number of years married, in 5-year intervals, as well as age, race and area are included as additional independent variables known to have important effects on fertility and work.

## Results

A fairly large proportion of the variance in fertility is explained by the work and core variables used in this analysis (Table 8), as much as 38.6 percent for children ever born. When the analysis includes the background variables of age, race, area and marital duration, these explain the major part of the variance accounted for and the work variables add only insignificantly to this. When the work variables only are used in explaining fertility,

they explain very small portions of the variance. Their lack of explanatory power is also apparent from the small  $\eta^2$  coefficients of these variables in the total analysis. The strongest effect among the work variables, whether measured as  $\eta^2$  coefficient or as added variance explained, is years worked since marriage. Years worked since marriage is correlated with years married as well as with age, and this accounts for its greater explanatory power.

For all the fertility variables, consistently more variance is explained in urban than in rural areas (Table 9). The amount of variance explained is also considerably greater in the age group 15-24 than at the other ages, especially in urban but also in rural areas. This is due to the greater influence of marital duration in this young age group in both urban and rural areas, as well as to the effect of the premarital work variable in the urban areas.

Consistent patterns of work over age and area by fertility are few and minor. Although the  $\eta^2$  coefficients are uniformly small--around one or two percent of the total variance at most, in many cases much less--some percentage differences of interest are still apparent. In urban areas women who are currently working have fewer children ever born in every age group than women who are not working (Table 10). The difference is on the order of .5 child in every age group. It is only in the young age group 15-24,

however, that work since marriage has a similar effect upon children ever born. Women age 15-24 in urban areas who have worked since marriage have a mean of .58 children ever born compared to 1.64 for women who have not worked since marriage--a substantial difference. In the age group 25-34, however, this difference is reduced to a mere .09 and in the age group 35-44 it is women with work experience after marriage who have .4 more children than women who have not worked.

In rural areas women currently working also have consistently lower cumulative fertility, by as much as .97 children in age group 35-44, but work since marriage is, on the contrary, associated with higher cumulative fertility. Rural women who have worked since marriage in the age group 15-24 have .73 more children than women who have not worked; in the age group 35-44 the difference is as high as 2.5.

In other words, women who are currently working have lower fertility than women who are not, either because they want to continue working, or because their low fertility permits them to do so. Women who have ever worked since marriage, adjusted for those currently working, have high fertility, which may have stopped them from continued work. In urban areas, in the younger ages the distinction between work and work since marriage is too small for this distinction.

This picture is not reinforced by the data on additional children wanted (Table 11). Women currently working want only slightly fewer children than women who are not-- .09 and .11 for urban and rural areas; moreover the relationship does not hold up over all ages. Women in urban areas who have worked want fewer children whereas in rural areas women show no such difference. Urban women who have worked 1-7 years also want fewer additional children in all age groups, but this is not true for rural women.

By adding the number of children born and the additional number of children wanted we can get a clearer picture. Women who are currently working want a smaller total family size than women who are not in both urban and rural areas (Table 12). Moreover, in urban areas the increase in total desired family size by age is slower or smaller for working than for non-working women. Work since marriage shows a weaker effect similar to that of current work in urban areas, but in rural areas women who have worked since marriage want a much larger family than women who have not, a difference by one child in age group 25-34, 1.3 children in age group 15-24, and 2.4 children in the oldest age group (see Table 12). Women in rural areas who have worked since marriage also show the greatest increase in family size by age, an increase of over four children from age 15-24 to age 35-44.

The last interval measure reinforces the negative

relationship between fertility and current work. Except for the age group 15-24 in urban areas, it is women who are currently working who have the longest interval since the last birth--an average difference of 10-12 months (Table 13). In urban areas this is partly true also for work since marriage, but in rural areas women who have worked since marriage have a shorter last interval than women who have not.

The rural-urban differences suggest that rural women have economic motivations for work or fertility. The measure of child dependency (Table 14), however, contradicts this hypothesis, for in rural areas women who have worked have lower child dependency scores than those who have not; the same is true for current work.

Controlling on number of marriages does not significantly alter the results, although consistently a much higher proportion of variance is explained for women married once only (Table 15). However, marital duration, and to some extent, number of years worked, account for most of the variance in both the married once and the married more than once category.

Women married once only have higher fertility than women married more than once, for each marital duration category, measured cumulatively as number of children ever born, as well as currently by the months since last live birth (Table 16). This has been investigated in detail by

Palmore and Ariffin (1969), using the same data set as here.

Particularly noteworthy are the differences between women having worked or working and those who have not for women married more than once. In this category, women who have not worked or are not working have markedly lower cumulative as well as current fertility than women who have worked (Table 16).

TABLE 1. -- Amount of variance explained for labor force participation by selected variables related to fertility (numbers refer to variance explained by variable on line and all variables above)

Area	Current work				Work since marriage				Years worked since marriage			
	15-44	15-24	25-34	35-44	15-44	15-24	25-34	35-44	15-44	15-24	25-34	35-44
Race	10.2	7.3	11.5	16.4	10.1	8.2	10.9	16.6	8.4	6.8	12.1	17.4
Fecundity	10.3	7.4	11.5	16.3	10.2	8.5	11.0	17.0	11.3	7.4	12.2	17.4
Recent fertility	10.4	7.7	11.5	16.2	10.2	8.4	11.0	16.9	11.3	6.7	12.2	17.3
Expected children next five years	10.6	7.6	11.6	16.8	10.3	8.3	11.1	17.0	12.2	6.6	13.4	17.1
Children born	10.5	7.6	14.4	16.9	10.2	8.4	14.1	17.1	15.7	10.6	13.6	18.2
Ideal family size: wife	10.6	9.0	14.4	18.2	10.4	9.4	14.4	18.5	15.8	11.1	13.7	19.1
Ideal family size: husband	11.0	8.9	14.2	20.6	10.7	9.3	14.3	20.7	16.3	11.4	14.2	20.5



TABLE 1. (Continued) Amount of variance explained for labor force participation by selected variables related to fertility (numbers refer to variance explained by variable on line and all variables above)

	Current work				Work since marriage				Years worked since marriage			
	15-44	15-24	15-34	15-44	15-25-34	15-25-34	15-25-34	15-25-34	15-24	15-24	15-24	15-24
Use of family planning	11.0	8.8	14.3	21.0	10.7	9.4	14.4	20.7	16.3	11.7	14.2	20.5
Number of marriages	10.9	9.4	14.3	20.8	10.8	9.6	14.8	20.5	16.3	11.7	14.5	21.2
Years married	10.9	9.3	14.3	20.7	10.8	9.5	14.7	20.4	16.3	11.6	14.4	21.1
Engaged in active farming	11.2	12.3	14.2	20.8	11.0	13.0	14.7	20.9	17.0	17.2	14.6	21.3

TABLE 2. -- Amount of variance explained ( $R^2$ ) by all fertility variables (Table 1) by area, for current work, work since marriage and years worked since marriage

	Rural	Urban	Metropolitan
Current work	7.9	2.0	1.8
Work since marriage	8.1	.1	2.4
Years worked since marriage	22.6	.6	3.5



TABLE 4. -- Work since marriage and current work,  $\eta^2$  of interest,  
by marital duration

Marital Duration:	Work since marriage: eta <sup>2</sup>					Current work: eta <sup>2</sup>					Total	
	1-4	5-9	10-14	15-19	20+	Total	1-4	5-9	10-14	15-19		20+
Area	7.4	6.5	7.5	6.3	11.9	8.2	5.3	7.2	6.2	9.3	10.9	8.1
Race		3.8	2.0	4.1	3.1	2.2	1.3	4.0	2.4	4.4	2.6	2.6
Months since last live birth												
Children ever born		1.2	1.8		1.2			1.6	2.0			
Marriage to first birth												
Age at first marriage	1.4			1.1			2.0					
Additional children wanted: husband		1.0						1.3			1.0	
Additional children wanted: wife		1.6			1.0			2.8			1.6	
R <sup>2</sup>	13.9	15.0	11.0	17.6	15.1	12.5	12.5	17.3	10.5	19.0	13.8	12.6

TABLE 5. -- Work since marriage and current work by marital duration and urban or rural area,  $\eta^2$  of interest and  $R^2$

	Urban						Rural					
	0-4	5-9	10-14	15-19	20+	Total	0-4	5-9	10-14	15-19	20+	Total
Work since marriage												
Age	5.7	1.4	1.1									
Race	4.0		6.0	1.6			2.4	10.4	5.1	14.3	3.6	5.2
Months since last live birth		2.0						1.2		1.6		
Children ever born		1.9						3.1	1.8		1.2	
Marriage to first birth							2.3			1.6		
Age at first marriage	3.7	1.8	4.0				4.9	2.3	1.4	5.6	1.6	1.7
Additional children wanted: husband		1.1					2.0	1.2				
Additional children wanted: wife				1.0			2.4	3.2				
Child dependency					1.1				1.2			
R <sup>2</sup>			4.4				4.9	18.7	10.1	19.5	6.8	7.5

TABLE 5. (Continued) Work since marriage and current work by marital duration and urban or rural area, eta<sup>2</sup> of interest and R<sup>2</sup>

Current work	Urban						Rural				
	0-4	5-9	10-14	15-19	20+	Total	0-4	5-9	10-14	15-19	20+ Total
Age	4.6	1.2	1.5			2.8					
Race	2.5			3.4			1.2	11.3	5.9	12.5	2.9 5.7
Months since last live birth							2.7	1.0	1.3	1.7	
Children ever born								3.5	2.3		
Marriage to first birth							3.6	1.1			
Age at first marriage	2.8	1.4	2.6	1.4	1.0		2.5	2.4		3.2	2.5 1.1
Additional children wanted: husband							1.7	1.5			
Additional children wanted: wife								5.4			
Child dependency										1.8	
R <sup>2</sup>			2.0	.4			9.8	22.2	10.3	16.2	7.0 8.3
N	116	271	279	230	270	1166	172	588	753	617	841 2971
Total N	4137										

TABLE 6. -- Current work by marital duration, urban and rural areas, adjusted means

	Rural						Urban					
	0-4	5-9	10-14	15-19	20+		0-4	5-9	10-14	15-19	20+	
Age												
15-24	40.6	39.3	48.5	-	(32.6)		8.4	12.4	4.6	-	-	
25-34	65.5	48.2	46.1	45.3	66.6		22.0	15.7	16.9	20.7	23.2	
35-44	-	-	17.1	49.3	51.2		4.9	23.6	19.3	6.6	16.1	
Race												
Malay	44.0	35.8	43.4	39.1	50.7		8.2	18.4	8.6	5.0	13.5	
Chinese	30.8	42.8	28.9	54.4	41.7		17.0	14.8	23.2	18.2	17.9	
Indian	55.2	84.8	79.1	94.6	84.0		11.4	12.2	11.3	10.6	18.7	
Months since last live birth												
0-18	49.4	45.0	41.1	36.9	49.4		12.0	12.6	17.8	13.4	16.5	
18+	34.2	40.7	48.0	51.7	53.4		21.5	17.8	16.8	13.0	16.2	
Children born												
0-2	46.4	41.0	51.3	53.4	41.4		14.3	19.1	24.6	16.1	24.5	
3-5	19.9	43.0	48.0	47.3	51.9		14.7	13.9	17.0	14.9	17.3	
6+	-	64.4	30.0	44.5	54.0		-	6.7	15.3	11.3	14.4	
Marriage to first birth												
0-12 months	35.6	49.6	48.4	50.3	50.9		12.8	15.5	16.9	12.7	17.1	
12+ months	54.3	38.7	43.1	45.2	53.1		18.4	15.6	17.4	13.4	14.4	

TABLE 6. (Continued) Current work by marital duration, urban and rural areas, adjusted means

	Rural						Urban				
	0-4	5-9	10-14	15-19	20+		0-4	5-9	10-14	15-19	20+
Age at marriage											
-16	28.0	42.2	42.2	43.9	47.1		9.8	10.7	13.9	4.8	13.1
17-19	42.4	36.5	39.6	49.8	68.2		17.0	13.4	15.3	13.5	19.2
20-44	51.4	54.7	61.7	54.0	62.0		14.3	17.9	20.3	20.8	21.4
Additional children wanted:											
husband											
More	46.2	43.5	40.3	50.5	57.3		16.7	17.6	17.4	19.2	13.9
No more	31.3	42.3	51.0	42.9	48.9		4.5	12.1	17.0	10.9	16.9
Additional children wanted:											
wife											
More	43.5	51.1	48.1	41.6	54.7		13.6	15.4	20.1	5.5	16.6
No more	42.5	23.2	39.0	52.2	50.7		21.1	15.8	14.4	16.5	16.1
Child dependency											
1-49	43.4	42.2	43.7	49.7	53.5		-	15.5	31.4	18.7	21.4
50-99	-	45.4	48.8	39.1	52.7		15.3	16.2	16.6	13.3	15.3
100-149	-	-	-	-	33.0		-	-	14.2	5.5	33.2
Grand mean	43.4	43.1	44.8	46.3	52.5		14.4	15.5	17.2	13.1	16.2



TABLE 7. -- Work since marriage by marital duration, urban and rural areas,  
adjusted means

	Rural						Urban					
	0-4	5-9	10-14	15-19	20+		0-4	5-9	10-14	15-19	20+	
Age												
15-24	55.7	40.3	57.4	-	-		12.1	16.8	11.6	-	-	
25-34	46.9	59.0	53.3	49.9	72.2		27.9	21.6	23.7	28.5	20.5	
35-44	-	-	32.9	46.2	59.2		3.1	28.8	17.3	14.3	21.8	
Race												
Malay	51.8	41.8	51.4	40.6	58.6		11.4	21.3	11.4	13.3	17.1	
Chinese	63.2	47.3	36.1	70.8	50.0		22.9	21.2	29.5	25.4	24.6	
Indian	56.3	88.4	85.8	94.3	94.5		13.0	20.1	16.3	19.4	26.0	
Months since last live birth												
0-18	57.5	50.7	50.7	38.9	65.5		17.8	16.7	26.5	16.8	28.6	
19+	50.5	45.9	54.2	54.7	59.2		22.8	24.4	19.8	22.2	20.6	
Children ever born												
0-2	55.6	45.5	66.4	55.9	40.1		19.4	25.9	29.6	17.5	28.0	
3-5	47.7	49.6	53.9	50.2	60.0		12.6	18.7	22.1	20.8	21.5	
6-20	-	65.0	38.2	46.9	63.1		-	17.1	20.3	21.6	20.7	
Marriage to first birth												
0-12	49.3	52.5	60.7	56.7	63.9		16.0	21.5	20.1	17.0	23.2	
13+	62.4	46.0	48.7	46.8	59.3		27.3	20.6	24.2	23.2	21.1	

TABLE 7. (Continued) Work since marriage by marital duration, urban and rural areas, adjusted means

	Rural					Urban				
	0-4	5-9	10-14	15-19	20+	0-4	5-9	10-14	15-19	20+
Age at first marriage										
-16	42.2	51.6	50.6	44.2	56.4	15.6	16.5	14.1	15.7	19.3
17-19	4-.9	39.0	46.8	54.5	70.2	19.7	17.7	17.2	16.4	24.2
20-44	70.6	55.6	68.7	66.4	72.8	19.3	24.2	30.5	30.7	25.2
Husband wants more children										
no more	57.3	50.2	48.1	52.5	66.4	21.1	23.0	19.7	27.9	25.6
	39.2	45.6	58.6	46.0	56.3	10.5	17.9	24.1	18.2	20.6
Wife wants more children										
no more	54.9	54.5	55.5	43.2	60.4	18.9	21.1	25.7	11.3	22.2
	53.1	34.0	47.4	56.0	60.8	21.4	21.1	18.9	25.1	21.6
Child dependency										
Rural										
1-49		47.6	48.8	52.6	61.6	-	26.3	37.3	25.6	40.6
50-99		51.8	64.3	41.9	59.0	19.9	20.7	21.5	21.6	20.9
100-149					53.3	3.3	21.0	22.8	18.7	21.2
N	1166					2971				

TABLE 8. -- Percent of variance explained for fertility measures by premarital work, work since marriage, work location, current work, number of years worked, marital duration, race and area, by age

	15-24	25-34	35-44	All
Months since last live birth	14.6	8.7	5.0	26.4
Desire for more children	4.8	10.6	5.9	10.8
Husband's desire for more children	7.6	6.1	3.7	6.2
Marriage to first birth interval	25.3	8.9	2.8	8.8
Child dependency	17.8	8.4	1.6	14.3
Children ever born	38.3	28.1	6.6	38.6

TABLE 9. -- Percent of variance explained for various fertility measures, interval scale, by age and area

	15-24	25-34	35-44	All
Months since last birth				
Urban	16.3	11.2	4.4	29.2*
Rural	14.0	7.7	6.0	23.1*
Desire for more children				
Urban	11.4	8.3	1.5	12.9
Rural	4.3	8.8	3.9	7.2
Husband's desire for more children				
Urban	10.1	4.9	.9	7.1
Rural	7.6	4.1	4.2	4.4
Marriage to first birth				
Urban	14.6	5.6	1.2	9.0
Rural	23.9	6.6	1.4	7.3
Child dependency				
Urban	18.0	12.0	-	17.0
Rural	17.6	6.6	2.8	14.3
Children ever born				
Urban	35.9	39.0	9.7	41.9*
Rural	38.7	21.4	6.5	39.1*

\*The larger proportion of variance explained for all ages than for each individual age group is accounted for by the greater effect of marital duration in the total group, e.g.  $\eta^2$  for marital duration are 28.9 in urban and 22.6 in rural areas for months since last live birth, 41.8 in urban and 37.2 in rural for children ever born.

TABLE 10. -- Children ever born by age, area and work status

	Urban					Rural				
	15-24	25-34	35-44	All		15-24	25-34	35-44	All	
Premarital work										
Yes	1.48	3.67	5.75	4.02		1.97	4.32	5.66	4.10	
No	1.50	3.65	5.71	4.03		1.64	4.22	6.05	4.12	
Work since marriage										
Yes	.58	3.59	6.05	4.16		2.18	4.55	6.91	4.78	
No	1.64	3.68	5.63	3.98		1.45	3.99	4.49	3.39	
Work location										
Home	1.48	4.29	4.78	4.04		1.11	4.46	5.73	4.09	
Outside	1.67	4.19	5.22	4.16		1.66	4.29	5.34	3.94	
N/A	1.48	3.49	5.92	3.99		1.94	4.23	6.43	4.25	
Current work										
Yes	1.23	3.13	5.42	3.58		1.31	4.16	5.42	3.77	
No	1.53	3.77	5.79	4.11		2.09	4.38	6.35	4.40	

TABLE 10. (Continued) Children ever born by age, area and work status

	Urban					Rural				
	15-24	25-34	35-44	All		15-24	25-34	35-44	All	
Years worked										
0	1.36	3.77	5.66	4.07		1.74	4.61	5.84	4.37	
1-7	2.31	3.26	6.22	3.92		1.82	3.65	5.59	3.59	
8+	4.14	3.40	5.68	3.69		1.84	4.11	5.99	4.05	
Marital duration										
0-4	.97	1.16	1.50	1.03		.95	1.48	-	1.05	
5-9	2.66	2.88	2.37	2.80		2.36	3.26	1.25	2.74	
10-14	3.63	4.58	4.15	4.48		3.03	4.05	4.27	3.94	
15-19	-	5.37	5.37	5.36		1.04	5.22	5.91	5.39	
20+	2.88	4.77	6.48	6.41		2.22	5.27	6.01	5.81	
Race										
Malay	1.39	3.42	5.61	3.85		1.79	4.08	5.68	3.95	
Chinese	1.57	3.80	5.77	4.14		1.56	4.80	7.10	4.86	
Indian	1.58	3.62	5.81	4.02		1.88	5.23	6.58	4.78	

TABLE 11. -- Additional number of children wanted by age, area and work status

	Urban					Rural				
	15-24	25-34	35-44	All		15-24	25-34	35-44	All	
Premarital work										
Yes	2.28	1.36	.58	1.25		2.44	2.16	1.78	2.10	
No	2.52	1.53	.80	1.43		2.59	2.02	1.67	2.08	
Work since marriage										
Yes	2.79	1.56	0	.91		2.83	2.30	2.13	2.09	
No	2.37	1.41	1.01	1.49		2.23	1.88	1.17	2.08	
Work location										
Home	2.27	1.46	2.75	2.10		2.50	1.79	1.46	1.80	
Outside	2.74	1.85	2.06	1.97		2.24	2.09	1.86	2.07	
N/A	2.41	1.35	.28	1.19		2.68	2.17	1.65	2.15	
Current work										
Yes	2.97	1.44	.37	1.29		2.69	1.60	1.99	2.02	
No	2.36	1.45	.81	1.38		2.38	2.52	1.43	2.14	

TABLE 11. (Continued) Additional number of children wanted by age, area and work status

	Urban					Rural				
	15-24	25-34	35-44	All		15-24	25-34	35-44	All	
Years worked										
0	2.56	1.56	.79	1.36		2.78	1.95	3.05	2.16	
1-7	1.49	1.02	.23	1.22		2.18	2.33	.99	2.19	
8+	3.60	1.42	.89	1.69		2.07	2.20	.63	1.90	
Marital duration										
0-4	2.64	2.43	2.33	2.59		2.62	2.79	-	2.55	
5-9	1.97	1.64	1.75	1.72		2.50	2.50	2.47	2.41	
10-14	1.13	1.18	1.09	1.16		2.10	2.05	2.12	2.09	
15-19	-	.90	.63	.72		.97	1.98	2.12	2.06	
20+	2.76	.17	.64	.64		2.07	1.57	1.60	1.66	
Race										
Malay	2.47	1.84	1.14	1.71		2.53	2.23	1.77	2.16	
Chinese	2.54	1.29	.49	1.17		2.52	1.22	1.09	1.47	
Indian	2.12	1.15	.88	1.25		2.30	2.07	1.91	2.04	



TABLE 12. -- Number of children ever born plus additional children wanted by area,  
age and work status

	Urban			Rural		
	15-24	25-34	35-44	15-24	25-34	35-44
Premarital work						
Yes	3.76	5.03	6.33	4.41	6.48	7.44
No	4.02	5.18	6.51	4.23	6.24	7.72
Work since marriage						
Yes	3.37	5.15	7.05	5.01	6.85	9.04
No	4.01	5.09	6.64	3.68	5.87	5.66
Work location						
Home	3.75	5.75	7.53	3.61	6.25	7.19
Outside	4.41	6.04	7.28	3.40	6.38	7.20
No	3.89	4.84	8.20	4.62	6.40	8.08
Current work						
Yes	4.20	4.57	5.79	4.00	5.76	7.41
No	3.89	5.22	6.60	4.47	6.90	7.78

TABLE 12. (Continued) Number of children ever born plus additional children wanted  
by area, age and work status

	Urban			Rural		
	15-24	25-34	35-44	15-24	25-34	35-44
Years worked						
0	3.92	5.33	6.45	4.52	6.56	8.89
1-7	3.80	4.28	6.45	4.00	5.98	6.58
8+	7.74	4.82	6.57	3.91	6.31	6.62
Marital duration						
0-4	3.61	3.59	3.83	3.57	4.27	-
5-9	4.63	4.52	4.12	4.86	5.76	3.72
10-14	4.76	5.76	5.24	5.13	6.10	6.39
15-19	-	6.27	6.00	2.01	7.20	8.03
20+	5.64	4.94	7.12	4.29	6.84	7.61
Race						
Malay	3.86	5.26	6.75	4.32	6.31	7.45
Chinese	4.11	4.29	6.26	4.08	6.02	8.19
Indian	3.70	4.77	6.69	4.18	7.30	8.49

TABLE 13. -- Months since birth of youngest child by age, area and work status

	Urban					Rural				
	15-24	25-34	35-44	All		15-24	25-34	35-44	All	
Premarital work										
Yes	14.7	29.6	59.1	37.5		21.2	28.2	56.6	35.0	
No	16.7	30.8	58.0	37.9		2.10	32.7	54.7	36.2	
Work since marriage										
Yes	8.0	55.0	36.4	37.3		22.5	28.0	49.9	27.3	
No	12.2	22.2	65.1	37.8		36.7	33.6	63.1	44.7	
Work location										
Home	20.5	17.3	51.3	32.8		38.4	26.7	49.9	35.1	
Outside	12.4	18.8	52.7	33.6		29.4	32.3	56.2	37.3	
N/A	16.0	33.9	60.1	38.9		13.5	30.2	56.6	34.5	
Current work										
Yes	11.1	40.0	70.9	47.4		24.2	33.8	66.8	41.5	
No	16.5	28.1	55.7	35.8		19.0	28.1	44.1	30.8	

TABLE 13. (Continued) Months since birth of youngest child by age, area and work status

	Urban					Rural				
	15-24	25-34	35-44	All		15-24	25-34	35-44	All	
Years worked										
0	13.7	36.0	51.8	37.6		14.6	29.1	59.5	32.2	
1-7	31.2	13.4	78.9	37.9		27.5	34.6	56.9	40.7	
8+	10.3	8.2	82.0	38.3		35.0	31.1	51.4	37.9	
Marital duration										
0-4	12.7	13.0	10.6	13.0		16.0	10.6	-	14.8	
5-9	23.2	26.9	33.0	26.8		23.0	20.5	64.2	22.4	
10-14	29.5	33.9	49.5	36.6		29.8	29.7	42.9	30.7	
15-19	-	41.5	54.5	47.7		39.7	36.4	40.7	37.6	
20+	24.3	62.1	64.1	64.1		50.8	46.4	59.0	57.7	
Race										
Malay	16.9	28.1	59.1	36.1		20.9	30.9	56.4	35.0	
Chinese	16.0	31.7	57.8	39.1		23.1	32.8	48.3	35.9	
Indian	13.7	29.6	59.0	36.2		20.6	26.4	54.6	33.0	

TABLE 14. -- Child dependency by age, area and work status

	Urban					Rural				
	15-24	25-34	35-44	All		15-24	25-34	35-44	All	
Premarital work										
Yes	17.7	29.1	34.2	28.9		20.8	30.7	34.4	29.1	
No	18.6	20.0	32.9	29.1		21.8	33.2	34.3	30.7	
Work since marriage										
Yes	5.6	40.1	30.8	31.9		19.1	30.9	31.8	28.3	
No	20.2	26.2	34.0	28.2		23.2	33.4	37.7	31.9	
Work location										
Home	10.3	31.1	26.8	28.3		27.4	35.1	35.1	32.8	
Outside	14.8	26.8	27.2	26.6		29.9	34.8	36.9	33.5	
N/A	19.0	30.1	35.1	29.5		14.8	29.3	31.7	26.6	
Current work										
Yes	12.7	26.1	36.3	27.9		16.6	30.2	34.9	28.0	
No	20.0	30.3	32.6	29.2		24.4	33.7	33.8	31.7	

TABLE 14. (Continued) Child dependency by age, area and work status

	Urban					Rural				
	15-24	25-34	35-44	All		15-24	25-34	35-44	All	
Years worked										
0	15.0	32.1	31.8	29.4		23.9	30.8	35.3	29.9	
1-7	38.5	21.3	39.5	27.5		17.1	33.2	37.8	29.7	
8+	75.8	23.0	37.1	27.6		23.1	33.4	32.5	30.3	
Marital duration										
0-4	13.6	18.1	42.2	15.4		14.7	14.4	..	14.2	
5-9	29.5	30.9	26.5	30.4		26.2	31.4	12.6	28.1	
10-14	31.0	30.8	30.6	30.9		29.1	30.5	31.8	30.6	
15-19	-	34.0	33.7	33.8		29.3	35.9	29.5	34.4	
20+	19.7	35.3	34.0	33.9		25.5	34.1	35.8	35.2	
Race										
Malay	17.2	28.6	33.6	28.3		20.7	31.8	33.4	29.4	
Chinese	19.7	30.4	33.1	29.7		20.5	32.7	38.3	31.6	
Indian	17.9	28.5	33.2	28.2		26.7	34.0	39.5	33.6	

TABLE 15. -- Percent of variance explained for fertility variables, by number of marriages

	Married once	Married more than once
Months since last birth	28.4	15.4
Desire for more children	12.0	6.4
Marriage to first birth	9.8	4.7
Child dependency	18.2	2.7
Children ever born	47.3	15.5
N	4318	941

TABLE 16. -- Number of children ever born and months since last live birth,  
by number of marriages and work variables

	Children ever born		Months since last live birth	
	Married once	Married more than once	Married once	Married more than once
Premarital work				
No	4.1	3.8	35.5	48.5
Yes	4.2	4.1	34.8	44.8
Work since marriage				
Yes	4.6	5.8	27.3	41.0
No	3.8	2.3	41.2	52.1
Work location				
Home	3.8	3.6	37.0	42.6
Outside	3.9	4.0	35.0	49.2
N/A	4.1	3.9	35.1	46.5
Current work				
Yes	4.3	4.4	32.0	39.1
No	4.0	3.1	40.6	59.4
Years worked				
0	4.3	5.1	32.3	47.3
1-7	4.0	2.3	40.0	51.3
8+	4.1	2.7	38.7	43.2



TABLE 16. (Continued) Number of children ever born and months since last live birth, by number of marriages and work variables

	Children ever born		Months since last live birth	
	Married once	Married more than once	Married once	Married more than once
Marital duration				
0-4	1.0	.6	13.8	28.0
5-9	2.8	2.3	23.7	24.4
10-14	4.3	3.1	31.8	36.4
15-19	5.6	4.4	40.8	38.7
20+	6.6	4.5	61.2	60.4
Race				
Malay	4.0	3.8	34.8	47.7
Chinese	4.4	5.6	37.3	38.1
Indian	4.5	5.6	33.1	30.2
Area				
Metropolitan	3.9	3.5	39.4	63.4
Urban	4.3	3.1	36.7	58.0
Rural	4.2	4.0	33.9	45.2
Total	4.2	3.9	35.2	47.0

CHAPTER VII  
THE COMBINED EFFECTS OF WORK, EDUCATION AND  
FERTILITY ON THE WORK OF MARRIED WOMEN

The analyses of the preceding chapters have each indicated variables associated with the various work measures for our sample of married women. This chapter combines the more important or interesting of these variables into an analysis of the association of all the factors together with the work of married women. It covers all the areas at the same time in order to provide a picture of the universe under study more realistic than can be had by singling out one aspect, such as previous work experience, or education, as in the earlier chapters. It shows how these independent variables remain influential or diminish in effect when combined with each other. Finally, it shows, through the amount of variance explained, how well we have been able to understand and account for the labor force participation of women in the sample, within the micro-level analysis we have specified.

Several factors stand out as important:

1. The consistently most powerful variable in explaining the labor force participation of married women, whether operationalized as current work, work since marriage, years worked or proportion of married life worked,

is premarital work.<sup>1</sup> Work before marriage is the most powerful determinant of work after marriage.

2. While the social and economic variables show some effect on labor force participation those influences operate in more than one direction. On the one hand, the wife's education and socio-economic status, as rated by the interviewer, tend to be positively related to work; on the other, women whose husbands have low education and income are also very active in the labor force.<sup>2</sup> However, this tendency to a curvilinear relationship is by no means consistent over age, area, or most importantly any one dependent variable.

3. Fertility, as investigated here, also bears an ambiguous relationship to work. While some of the variables for some groups suggest a negative association, there is a definite positive association for others.<sup>3</sup> Work and children are anti-thetical in West Malaysian society, only for a very small group those with high education. For the population as a whole our data would be more supportive of a positive rather than a negative association. This may be

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<sup>1</sup>For a discussion of the effects of premarital work, see Chapter IV.

<sup>2</sup>For a discussion of the association of education and work, see Chapter V.

<sup>3</sup>Fertility and its relationship to work is discussed in Chapter VI.

a reflection of the current level of development and does not preclude change at a later stage of development. Our data do not, however, give any indication of its imminence.

### Variables

The earlier chapters suggest the following variables to be of most interest in assessing female labor force participation: premarital work, husband's income and socio-economic status, from the work related variables, years of school completed for the wife and the husband from the education chapter, and age at first marriage, marriage to first birth interval, number of children ever born, interval since last birth, additional children wanted for wife and husband from the fertility chapter. In addition, age, race, area and marital duration have consistently been shown to be important controls. The same categories as in the previous chapters are used.

The dependent variables used are, as before, current work, work since marriage, years worked since marriage and proportion of married life worked. A special variable controlling whether a woman has been married one or more times will also be included. The frequency of divorce in West Malaysia, especially among Muslims, would lead to the expectation that women who have been married more than once would be more likely to work, having been forced to support themselves during divorce.

Findings: Percent of Variance Explained

A not insubstantial amount of the variance in labor force participation, whether measured as work since marriage or current work, is explained by the combination of the work, education and fertility variables. Table 1 shows the total variance explained by age, education, race, area and marital duration as control groups. Work since marriage is consistently better explained than current work. Separate control on race yields the highest percentage of variance explained, 51.4 and 51.9 percent for Indian women, work since marriage and current work, but the variance explained for the other races is much smaller. For either work variable, the next highest percent of variance explained results when controls are instituted simultaneously for high and low education and age. The high education group shows 43.3 percent of the variance explained for all ages together, 46.0 percent for age group 25-34.

Substantial differences exist for the amount of variance explained between low and high education, urban-metropolitan (which will hereafter be referred to simply as urban areas) and rural areas, as well as for different marital duration, race and age groups. This indicates different explanatory powers on the part of the independent variables depending upon control group classification. It is therefore important to do the analysis separately for each of these.

The separation by area, followed throughout the preceding analysis retains its significance in the global analysis. For work since marriage the total variance explained is 29.9 percent in rural areas and only 18.6 percent in urban areas (Table 1). Current work has less variance explained: 22.6 and 13.9 percent in rural and urban areas, respectively. Especially in the oldest age group, 35-44, the difference in variance explained is quite large, 38.6 percent for rural areas and 15.3 percent for urban areas for work since marriage, 38.6 and 11.1 percent respectively for current work. The major contribution to this difference comes from premarital work, with an  $\eta^2$  as high as 32.1 percent for rural areas and as low as 14.1 percent for urban areas, age group 35-44. Race and husband's income also explain more of the variance in rural than in urban areas.

#### Premarital Work

Despite the difference in variance explained depending upon area, the independent variables accounting for the explanation overlap considerably. By far the most important one is premarital work: if the woman has worked before marriage she is more likely to have worked since marriage and to be working currently. For work since marriage  $\eta^2$  for premarital work are 24.1 in rural and 15.3 in urban areas; for current work  $\eta^2$  for premarital work are 22.1

and 11.9 respectively, for all ages combined, indicating a substantial part of the variance attributable to it (Tables 2 and 3).

#### Age at First Marriage

Another important variable is age at first marriage: in the age group 15-24 the likelihood of work increases directly with an increase in the age at marriage. In the other age groups no such pattern is shown for work since marriage. For current work this pattern, along with moderately large  $\eta^2$  coefficients is found in age groups 15-24 and 35-44, but not in the middle age group (Table 3). Thus the support for the hypothesis that a delayed age at marriage would result in a greater interest in work is not unequivocally verified, although it does receive selective support in both urban and rural areas.

#### Husband's Income

The husband's income is consistently and negatively related to a married woman's work, both work before marriage and current work. More variance is explained for rural than for urban areas, and for non-Chinese (Tables 2 and 3), but the negative relationship is consistent throughout: the less income the husband earns, the more likely is the wife to have worked or to be working.

### Urban-Rural Differences

Differences between urban and rural women in terms of labor force participation become clearer when work is related to number of children born and to schooling. In rural areas current work or work since marriage show no regular pattern or any significant amount of variance explained by children born, or for years of schooling. In urban areas, however, some patterns can be discerned; the amount of variance explained by these variables is not large;  $\eta^2$  are in the order of one or two percent. In the youngest age group work since marriage increases with number of children born. The middle age group also shows slightly higher probability of work for women with many children. In the oldest age group an inverse relationship has become apparent: women with few children are the most likely to work. Current work shows the same patterns, except that the inverse relationship shows also in the middle age group. The urban-rural differential can be interpreted as evidence of differential work situations in urban and rural areas. The inverse relationship in urban areas would not contradict the suggestion that motherhood and work are to some extent alternatives to each other. However, the positive relationship in the youngest age group indicates that fertility also promotes work or that work facilitates high fertility in some segments of society.



Support for the inverse relationship between work and fertility is increased by the fact that when high and low education is controlled for, the inverse relationship exists only for those with high education; with low education the relationship is positive. Unfortunately, the sample size does not allow a simultaneous control on age, area and education. The adjusted means do, however, reflect the adjustment for the other variables including area. Thus, it is work for the educated, and, to some extent also work in urban areas, that is associated with lower fertility. In urban areas high education is also by itself associated with more current work and more work since marriage;  $\eta^2$  are as large as 6 to 7 percent, and percentage differences in means are sizeable (Tables 3 and 4). For work since marriage women with seven or more years of education have past work rates as high as 41 percent for all ages together, compared to less than half of that for women with less education: 20.5 percent for those with 0-1 years and 16 percent for those with 2-6 years. Current work shows the same pattern: women with high education have current work rates of 30.7 percent whereas the next highest rate is only 15.3--for women with 0-1 year of school.

In urban areas, although the  $\eta^2$  are small, there is a consistent although small also in percentage terms, negative association between wanting more children and working. Women who want more children have current work rates of

17.6, whereas women who do not work have slightly lower rates, 14.6. For husbands the relationship to the wife's work is the reverse. This again, tends to confirm, however, tentatively, the alternative aspects of motherhood and work for urban women (Table 3).

From the sporadic significant findings above we can conclude that the negative association between work and childbearing is confined to the more modern sectors of the society and the economy, namely to urban areas and to work requiring more education, and is by no means consistently proved. While there is evidence of such an association, it cannot be explained satisfactorily only by the information available here. Possibly the availability of childcare, work attitudes and time use may explain some of the micro-level differences unaccounted for here, but our data do not allow a further exploration of this. In addition, macro-economic factors are likely to have some influence.

### Education

The difference in labor force participation according to education only is of substantive interest by itself. Many of the independent variables explaining work since marriage and current work, when controlled on age and area, also contribute to the explained variance when controls are instituted for high and low education; high education is

defined as six or more years of education, low as 0-5 years. Premarital work is again the most powerful variable; husband's income shows a consistently negative correlation with work for women; race and area explain a non-trivial amount of variance (Tables 4 and 5).

While schooling is not important in explaining the variance, it shows an interesting effect for current work, with a positive association between work and school for high education and a negative one for low education in the two older age groups. This suggests a U-shaped curve of education and current work. This is not true for work since marriage, however.

Husband's schooling takes on some importance when the wife's education is controlled. Fairly high rates of work for women whose husbands have little schooling becomes apparent, but the relationship is neither uniform nor strong enough to warrant more than a speculation as to significance.

#### Marital Duration

Control on marital duration does not drastically alter the relationships already examined and discussed: pre-marital work, husband's schooling and income are, in addition to race and area, the most important variables in explaining work since marriage and current work (tables not shown). Husband's schooling shows a curvilinear association with higher work rates for women whose husbands fall in the

middle on the education scale.

### Race

Controlling separately for race shows some additional differences. Most of the variance is explained for Indian women, than for Malay women and the least for Chinese women (Table 1). A large fraction of the variance for Indian women, and to a lesser extent also for Malay women, is due to area. For Chinese women, on the other hand, area is of little importance. Husband's income has a differential effect by race similar to that of area. For Chinese women the effect of husband's income on work is small, for Malay and Indian women it is moderately large.

Apart from these differences by race, however, by and large the same variables exert the same influence on the dependent variable regardless of race.

### Number of Times Married

In order to control for possible interaction between number of times married and other independent variables, principally age at marriage, as shown by Palmore (1969) a separate analysis controlling for number of times married is done.

The control on whether a woman has been married once or more than once does not yield very different results. The proportion of variance explained by the set of

independent variables varies no more by one marriage or two or more marriages (Table 6), than by age group. The variance explained by work since marriage age 35-44 differs by 9.1 percent for women married once and women married more than once, but this difference is not attributable to any one significant factor; rather all the variables explain a little more variance.

Similarly, the grand mean for work since marriage as well as for current work show similar values for one or more marriages (Table 7). Only by looking at individual percentage differences can some more information on the effect of number of marriages upon work be gleaned (Table 8). For both work since marriage and for current work women married more than once with schooling for two years or more show higher work rates than women married only once: 57.7 versus 43.1 percent for 2-5 years of school and 69.2 versus 46.0 percent for six or more years of school have worked since marriage. Current work shows similar results. A similar difference is also apparent by husband's years of schooling. This can be taken to show that number of marriages makes a difference to a woman's labor force participation only if she has the schooling or skills required. For women and husbands with little or no schooling, the number of marriages makes no difference in the current or past work of the woman. However, the present sample includes only currently married women and give no information on the work

of divorced women who have not remarried, or of widows. Their work rates may well be higher at all educational levels.

Other consistent differences appear by race and area. Indian women with more than one marriage show higher work rates than Indian women with one marriage only. Either the work habits since divorce or widowhood persist more strongly for Indian women--or their work patterns permit divorce.

In urban and metropolitan areas higher work rates are shown not for women married more than once, but for women married once only. This is not simply an artifact of the age distribution, but holds for the individual age groups as well (Table 9). Why this should be so is not apparent from the present study.

In rural areas there is a similar relationship over all ages. Women married more than once and women married once only show comparable rates both for work since marriage and for current work.

Work rates by age at first marriage do not vary very much by number of marriages. Women married more than once show somewhat higher rates; in the oldest age at marriage group, 20 and above, the difference in work rates since marriage amounts to 12.8 percent.

#### Continued Work

It is also of interest to assess the continuity of

work. The limited data permit such an assessment if we look at those currently working and the years worked of those who have worked since marriage. The proportion of married life worked can also be measured.

As shown previously (Chapter IV) work varies greatly with area. Therefore, a sample on those who have worked since marriage overrepresents rural areas. Bearing this limitation in mind, some information can nevertheless be gleaned from the data on continued work. Table 10 shows the considerable differences in work by area, with an increase in years worked from metropolitan to urban to rural areas, as well as an increase by age. Current work follows the same pattern, except that the highest proportion currently working of those who ever worked is found in urban areas, in the age group 15-24. This may well be explained in purely statistical terms, for the number of cases is only 12, too small to yield an estimate of acceptable reliability (Table 10).

For current work only a small percentage of the variance is explained 13.3, 5.8 and 11.7 percent for ages 15-24, 25-34 and 35-44. The same differences by premarital work and husband's income appear, as well as those by race and area. Little variance is explained by these, however (Table 11).

Number of years worked is more adequately explained:  $R^2 = 46.0, 26.9, \text{ and } 25.5$  for age groups 15-24, 25-34 and

35-44 (Table 12). In part this is because many of the measures are correlated with years married, i.e. age at first marriage, and number of children ever born. Number of years worked since marriage is of course strongly correlated with number of years married. Nevertheless, the differentials already discussed also appear here. Apart from the strong influence of premarital work, we also find SES and years of school to be positively, although not linearly, related to years worked, whereas husband's income and schooling are, as before, negatively associated. This would suggest two types of working women, those with husbands of low education and income whose economic situation compel work for many years, and those with high education and SES, who may be more likely to work for other reasons.

Among the fertility variables the interval from marriage to first birth increases with years worked, except for age group 35-44. A sizeable proportion of work since marriage is thus accounted for by work prior to the birth of the first child. However, it is by no means the only time that these women work, for the number of years worked exceeds the birth interval in each category.

Children ever born is consistently and positively related to years worked, a relationship that is especially strong in the youngest age group, and that suggests clearly the confounding of the time variable. The same is true for



the positive relationship between the length of the open interval and years worked.

#### Proportion of Married Life Worked

The confounding of the time variable can, however, be obviated in several ways. The obvious one, a control on marital duration independently or together with age, cannot be done because of the small number of cases in the ever worked category. Instead we have calculated the proportion of married life worked. This, unfortunately, leads to a further reduction in the sample. Information on the proportion of married life worked is available only for about 20 percent of the sample. Of these, about 80 percent are from rural areas. The resulting subsample of 886 cases, unweighted, 1044 cases when weights are included, is therefore biased, and tells little about the whole sample. For instance the number of years worked is much smaller in the sample measuring proportion of married life worked. While it is possible to inflate the years worked to reflect a larger sample, assuming that the number of years married is the same for those who give this information and those who do not, we cannot assume that the relationships found between the independent variables and proportion of married life worked also hold for the inflated proportions. We therefore have to limit the analysis to the small, biased sample at hand, bearing in mind, as always, the severe

limitations attached to the analysis.

For number of years worked different percentages of variance are explained for the subsample: 54.1, 17.7 and 13.9 for the three age groups compared to 46.0, 26.9 and 25.5 for the total sample. Although the small numbers in the subsample suggest less reliable values, particularly for individual age groups, there are clearly substantial differences between the two samples.

At the same time, essentially the same variables, and with exceptions, the same directions of relationships, explain the variance. Thus, premarital work, husband's schooling and income show similar associations with years worked in both samples, as do children ever born, marriage to first birth interval and the last interval (Table 13).

For the proportion of married life worked, more variance is explained in the younger than in the older age groups. The older the woman, the longer she has been married, apparently, the more do factors not included in the analysis here explain the variance. As with the other measures of work, premarital work explains most of the variance: women who work prior to marriage work a larger proportion of their married life. The differences are, however, much less dramatic than for current work or work since marriage (Table 13).

Schooling shows a pattern of increased proportion of married life worked with increased schooling, as do the

other labor force measures. Husband's schooling, again, has the opposite effect. Husband's income shows an ambiguous effect.

The fertility variables give no clear-cut findings, whereas children ever born show the largest proportion of married life worked for women with 0-2 children, the differences are miniscule and do not hold up when individual age groups are considered: in the youngest age group it is women with six or more children who have worked the most.

From the brief description above it is clear that on our sample of proportion of married life worked, despite the odd sample, the findings from the analysis of current work and work since marriage are not contradicted. To the extent permitted by the reliability of the data in the small sample, they can be considered upheld. On the other hand, any differences that appear are also made too unreliable to be the basis for any substantive conclusions.

Of greater interest is the very small sample of rural women whom we have information on proportion of married life worked. The total percent of variance explained is not large--11.6 percent, but some noteworthy interrelationships can be found.

The single most significant variable in explaining proportion of married life worked is again premarital work.  $\text{Eta}^2$  is 5.4 percent. Women who did not work prior to marriage have worked 46.9 percent of their married life

whereas women who have worked prior to marriage have worked 61.4 percent. These differences are essentially the same whether we look at raw means or means adjusted for all the other variables, including age and race. Race ( $\eta^2 = 2.5$ ) and age ( $\eta^2 = 1.2$ ) also show some minor differences: Chinese women have worked a larger fraction of their married life as have younger women. The latter is easily explained by the smaller denominator, years married, in the calculation of proportion of married life worked for this age group (Table 13).

Similar to the findings for work since marriage and current work, proportion of married life worked in rural areas shows differences by cumulative fertility, first birth interval and husband's income. Women with many children, women who had a baby soon after marriage and women whose husbands have low income have worked a greater proportion of married life. In no case, however, does the proportion diverge much from the grand mean of 55 percent.

In all, the potential use of labor force participation as a policy variable in the limitation of fertility is thus given little credit. It appears that when work and fertility are negatively associated--as indeed they are in some cases--it is an association due to a preceding variable such as urban residence or education. In other words, when modernizing influences such as high education or high age at marriage are already depressing fertility, labor force

participation depresses it further. In their absence, however, it has either no relationship to fertility or a positive one.

TABLE 1. -- Percent of total variance explained by different control groups

Age	Educatic		Education*		Area		Working of Ever Worked
	Low	High	Low	High	Rural	Urban	
Worked since marriage							
15-24	27.5	46.8	26.2	45.8	27.0	13.8	
25-34	30.9	45.3	30.9	46.0	31.4	21.6	
35-44	38.7	43.4	38.3	44.5	38.6	15.3	
Total	31.3	42.8	31.1	43.3	29.9	18.6	
Current work							
15-24	20.5	38.0	21.6	38.0	23.1	11.6	13.3
25-34	30.7	34.1	30.7	34.5	29.5	16.1	5.8
35-44	37.9	25.5	36.9	25.5	38.6	11.1	11.7
Total	29.5	33.0	29.3	33.3	22.6	13.9	5.1
Marital duration							
Work since marriage							
0-4	31.1				Current work		27.8
5-9	31.0				0-4		30.2
10-14	26.9				5-9		23.4
15-19	45.6				10-14		45.9
20+	38.5				15-19		36.3
Total	32.2				20+		29.7
					Total		

TABLE 1. (Continued) Percent of total variance explained by different control groups

Race	Work since marriage	1	2 or more
Malay	32.7	31.5	26.1
Chinese	25.1	34.2	28.6
Indian	51.4	38.5	47.6
Total	30.4	33.4	30.6

Number of marriages	1	2 or more
Work since marriage	27.2	32.4
15-24	32.0	28.1
25-34	35.3	49.5
35-44	30.3	30.2
Total		

Race	Current work	1	2 or more
Malay	29.5	27.2	32.4
Chinese	17.1	32.0	28.1
Indian	51.9	35.3	49.5
Total	27.9	30.3	30.2

\*With education included in the analysis.

TABLE 2. -- Work since marriage, adjusted means and  $\eta^2$  by area

	Rural Areas					Urban and Metropolitan Areas				
	15-24	25-34	35-44	Total	$\bar{x}_{adj} \eta^2$	15-24	25-34	35-44	Total	$\bar{x}_{adj} \eta^2$
Race										
Malay	43.1	48.8	59.4	50.6	5.1	11.6	20.9	22.1	19.4	1.7
Chinese	42.2	49.1	50.4	47.9		15.0	26.9	23.1	23.8	
Indian	79.0	80.8	84.5	81.0		11.6	19.5	26.1	19.4	
School										
0-1	44.2	52.7	59.9	53.4	1.3	10.5	22.8	20.5	20.5	5.9
2-5	51.0	49.6	65.1	54.0		8.6	17.1	20.9	16.4	
6	45.8	56.2	47.6	51.1		8.3	16.9	23.5	16.1	
7+	50.7	53.1	-	51.8		28.3	45.4	44.9	41.3	
Prenatal work										
No	33.0	32.6	36.0	33.4		3.4	9.7	14.4	10.5	
Yes	66.6	76.2	90.6	78.5		28.3	43.4	47.4	41.4	
Age at first marriage										
-16	45.6	52.9	61.0	52.0	1.1	11.3	29.0	24.2	22.7	1.4
17-19	49.2	47.3	62.8	52.3		13.0	23.8	19.9	19.5	
20+	57.5	57.6	57.5	60.0		14.8	21.7	24.7	22.9	
Husband's schooling										
0-1	41.2	49.2	56.5	50.9	1.3	13.4	17.7	26.5	21.8	1.0
2-5	58.9	51.7	64.0	56.2		8.9	27.1	25.5	23.6	
6	37.2	58.6	64.1	51.5		14.0	22.5	22.0	19.8	
7+	44.6	47.2	58.3	50.2		15.2	23.9	19.9	21.4	



TABLE 2. (Continued) Work since marriage, adjusted means and  $\eta^2$  by area

	Rural Areas					Urban and Metropolitan Areas				
	15-24	25-34	35-44	Total		15-24	25-34	35-44	Total	
	$\bar{x}_{adj} \eta^2$	$\bar{x}_{adj} \eta^2$	$\bar{x}_{adj} \eta^2$	$\bar{x}_{adj} \eta^2$	$\bar{x}_{adj} \eta^2$	$\bar{x}_{adj} \eta^2$	$\bar{x}_{adj} \eta^2$	$\bar{x}_{adj} \eta^2$	$\bar{x}_{adj} \eta^2$	$\bar{x}_{adj} \eta^2$
Husband's income										
0-99	52.4	53.6	4.7	3.1	2.9	14.6	37.4	29.9	29.6	
100-199	35.4	53.3		62.0	55.7	13.3	24.6	21.9	21.5	
200+	22.4	34.0		44.7	36.4	12.0	20.4	21.9	19.6	
Socio-economic status										
U+UM	38.8	44.0	1.8	1.5		10.5	25.1	15.3	20.4	1.2
M	51.9	41.9		40.4	42.4	14.2	28.0	19.1	21.4	
LM+L	47.1	54.6		53.1	46.9	12.8	22.5	27.8	22.4	
Marriage to first birth										
-12	46.2	56.1		61.6	54.3	10.9	21.2	23.9	19.3	
13-36	48.2	51.2		59.3	52.5	14.7	26.1	23.3	23.7	
37+	47.1	48.1		61.3	53.9	25.4	26.7	21.2	26.0	
Children ever born										
0-2	46.4	57.6		43.8	47.8	11.6	24.9	33.7	20.1	
3-5	49.8	51.0		61.0	53.1	15.6	25.0	23.4	21.4	
6+	39.9	51.2		63.4	58.3	42.7	25.3	20.3	23.8	
Additional children wanted: husband										
More	48.1	53.6		64.7	55.0	13.5	25.9	26.0	23.3	
No more	45.2	50.3		57.8	51.3	11.8	21.9	22.3	20.5	

TABLE 2. (Continued) Work since marriage, adjusted means and  $\eta^2$  by area

		Rural Areas				Urban and Metropolitan Areas			
		15-24	25-34	35-44	Total	15-24	25-34	35-44	Total
		$\bar{x}_{adj} \eta^2$	$\bar{x}_{adj} \eta^2$	$\bar{x}_{adj} \eta^2$	$\bar{x}_{adj} \eta^2$	$\bar{x}_{adj} \eta^2$	$\bar{x}_{adj} \eta^2$	$\bar{x}_{adj} \eta^2$	$\bar{x}_{adj} \eta^2$

TABLE 3. -- Current work, adjusted means and  $\eta^2$  by area

	Rural Areas					Urban and Metropolitan Areas				
	15-24	25-34	35-44	Total		15-24	25-34	35-44	Total	
	$\bar{x}_{adj} \eta^2$	$\bar{x}_{adj} \eta^2$	$\bar{x}_{adj} \eta^2$	$\bar{x}_{adj} \eta^2$	$\bar{x}_{adj} \eta^2$	$\bar{x}_{adj} \eta^2$	$\bar{x}_{adj} \eta^2$	$\bar{x}_{adj} \eta^2$	$\bar{x}_{adj} \eta^2$	$\eta^2$
Race										
Malay	37.1	43.7	26.3	44.7	5.5	5.2	2.3	1.6	17.5	15.1
Chinese	22.6	42.1	22.5	37.0		8.8	16.4		16.9	17.7
Indian	71.2	77.2	38.6	74.8		10.3	10.6		18.3	12.1
School										
0-1	1.2	47.3	26.2	47.4	1.2	6.2	7.0	2.2	15.3	4.8
2-5		44.8	30.8	46.7		7.8	11.6		15.7	11.8
6		49.1	20.4	44.2		6.3	12.5		18.4	11.9
7+		53.3	-	45.6		24.8	32.3		33.2	30.7
Premarital work										
No	11.4	24.0	33.2	27.5	22.1	12.7	12.8	11.8	10.0	7.5
Yes	27.3	27.6	15.9	71.3		3.0	6.7		37.6	31.2
Age at first marriage										
-16	37.8	49.2	23.9	45.4	8.3	1.1	2.2	2.0	16.6	15.9
17-19	44.9	39.8	28.9	47.4		11.2	18.7		16.7	15.7
20+	45.5	51.8	32.6	51.7		12.5	14.5		18.3	16.5
Husband's schooling										
0-1	5.8	44.7	24.4	44.3	1.4	13.8	15.7	1.1	22.7	19.0
2-5		46.3	29.2	50.0		7.3	19.2		19.1	17.6
6		53.8	28.0	45.5		12.0	15.7		16.6	14.2
7+		40.5	27.1	42.2		12.2	16.9		13.7	15.2

TABLE 3. (Continued) Current work, adjusted means and  $\eta^2$  by area

	Rural Areas					Urban and Metropolitan Areas				
	15-24	25-34	35-44	Total		15-24	25-34	35-44	Total	
	$\bar{x}_{adj} \eta^2$	$\bar{x}_{adj} \eta^2$	$\bar{x}_{adj} \eta^2$	$\bar{x}_{adj} \eta^2$	$\bar{x}'_{adj} \eta^2$	$\bar{x}_{adj} \eta^2$	$\bar{x}_{adj} \eta^2$	$\bar{x}_{adj} \eta^2$	$\bar{x}_{adj} \eta^2$	$\bar{x}_{adj} \eta^2$
Husband's income			3.5	2.8	1.9					
0-99	43.4	47.5	27.6	48.2		12.2	26.4	21.3	21.1	
100-199	32.4	(48.8)	28.5	46.7		11.0	17.4	16.6	15.8	
200+	27.7	34.6	18.9	35.9		10.2	14.8	16.5	14.8	
Socio-economic status			1.3	1.2						
U+UM	21.2	39.7	17.3	35.5		9.4	22.3	12.3	17.6	
M	45.7	36.4	23.6	42.3		12.5	17.8	14.6	15.8	
LM+L	40.3	49.4	27.8	48.1		10.0	15.3	20.3	15.8	
Marriage to first birth			1.7							
-12	38.4	49.0	27.9	46.2		7.9	16.5	17.9	14.7	
13-36	40.7	47.4	26.3	46.8		13.7	18.4	17.8	17.1	
37+	43.0	42.3	26.8	48.3		21.8	14.1	15.0	17.6	
Children ever born			1.9							
0-2	39.4	51.8	20.2	41.1		9.7	20.4	27.6	16.6	
3-5	43.2	45.4	28.0	47.6		12.9	16.3	18.2	15.8	
6+	29.1	47.0	27.5	50.9		41.1	15.4	14.2	16.0	
Additional children wanted: husband			1.1							
More	41.4	48.7	28.6	48.7		10.9	21.0	14.1	17.5	
No more	36.9	44.7	25.7	44.8		10.9	12.9	18.2	14.9	

TABLE 3. (Continued) Current work, adjusted means and  $\eta^2$  by area

		Rural Areas				Urban and Metropolitan Areas			
	15-24	25-34	35-44	Total	15-24	25-34	35-44	Total	
Additional children wanted: wife		2.7							
More	43.4	46.4	26.8	48.0	10.3	15.9	18.8	14.6	
No more	27.2	47.6	27.0	45.3	14.1	19.0	16.8	17.6	
N	877	1435	981	3292	207	561	396	1164	
R <sup>2</sup>	23.1	29.5	42.6	27.2	11.6	16.1	11.1	13.9	

TABLE 4. -- Work since marriage, control on age and level of education,  $\bar{x}_{adj}$  and  $\sigma^2_{adj}$ ,  
in parentheses

	Age:		15-24		25-34		35-44		Total	
	Education:		Low	High	Low	High	Low	High	Low	High
Race										
Malay			(4.1)	34.6	(3.4)	39.5	(4.3)	42.1	(3.4)	38.2
Chinese			38.5	12.8	42.0	38.8	49.3	27.2	43.6	28.5
			45.5		43.6		48.7		46.1	
School										
Lower			39.3	30.1	45.7	33.1	50.3	(8.7)	46.3	30.8
Higher			49.1	30.6	43.9	47.0	53.8	41.3	48.2	39.8
Premarital work										
No			(11.0)	(28.3)	(20.0)	(38.8)	(28.6)	(45.9)	(20.2)	(35.8)
Yes			30.4	13.1	27.7	10.0	31.6	11.0	29.5	11.5
			61.5	61.4	67.8	70.7	79.9	75.2	70.5	67.8
Age at first marriage										
-16			43.5	16.9	45.0	39.6	51.6	32.8	46.0	27.1
17-19			43.4	36.4	41.9	41.4	51.2	29.8	45.3	35.8
20+			50.7	52.7	50.1	37.5	49.9	30.0	51.7	39.0
Husband's schooling			(3.3)	(4.0)	(2.1)		(2.5)		(1.8)	
0-5			48.2	33.8	44.9	36.6	51.3	48.4	47.9	36.8
6			33.8	28.5	49.3	40.2	50.4	43.8	44.9	33.8
7+			47.3	29.5	38.6	39.6	50.6	22.0	42.2	33.6
Husband's income			(2.7)	(7.4)	(7.2)	(4.7)	(7.6)	(6.8)	(5.9)	(4.0)
0-99			48.5	42.9	48.1	48.8	53.7	37.9	50.3	46.4
100-199			35.8	22.6	45.2	36.2	51.3	30.5	45.3	28.4
200+			26.4	17.7	31.1	36.2	41.4	29.8	33.8	29.8

TABLE 4. (Continued) Work since marriage, control on age and level of education,  
 $\bar{x}_{adj}$  and  $\sigma^2_{adj}$ , in parentheses

	Age:		15-24		25-34		35-44		Total	
	Education:		Low	High	Low	High	Low	High	Low	High
Socio-economic status				(1.7)	(2.1)		(4.8)	(5.3)	(2.2)	
U+UM			48.9	14.7	40.7	38.5	36.0	28.5	40.7	31.6
M			49.5	31.1	40.1	37.9	44.7	39.6	43.0	34.3
LM+L			43.4	31.4	46.5	40.3	53.4	26.2	48.1	35.3
Marriage to first birth				(3.1)				(5.3)		
-12			42.2	31.6	47.2	38.4	51.9	32.6	46.6	35.0
13-36			44.6	31.4	44.4	38.4	50.7	37.1	46.8	34.8
37+			46.5	12.8	43.4	46.4	50.8	7.5	47.7	28.6
Children ever born				(4.2)		(5.5)		(4.7)		(1.8)
0-2			44.4	21.4	47.3	38.3	40.4	44.5	42.6	28.3
3-5			44.2	48.7	43.0	43.6	51.5	26.2	45.2	41.0
6+			41.3	-	47.7	23.6	52.9	28.3	52.0	33.2
Additional children wanted: wife								(2.6)		
More			46.4	35.2	45.2	40.8	53.3	27.0	47.8	37.4
No more			34.3	8.6	44.9	35.8	49.6	32.2	45.7	28.3
Open interval										
1-36			36.2	29.7	53.5	35.6	51.6	22.6	52.3	30.6
37-72			44.4	41.5	41.9	42.1	51.6	25.5	53.2	39.1
73-99			43.6	-	51.8	56.8	50.2	37.6	43.5	54.2

TABLE 4. (Continued) Work since marriage, control on age and level of education,  $\bar{x}_{adj}$  and  $\eta^2$ , in parentheses

	Age:		15-24		25-34		35-44		Total	
	Education:		Low	High	Low	High	Low	High	Low	High
Area			(7.3)	(5.8)	(7.6)	(2.2)	(12.5)	(1.3)	(8.7)	(1.8)
Metropolitan			14.8	24.0	24.9	33.5	36.5	24.9	27.6	30.6
Urban			8.9	22.4	26.9	29.4	32.3	42.1	25.5	30.3
Rural			49.5	34.2	50.6	50.0	56.8	25.0	52.6	38.8
N			822	262	1693	304	1229	83	3815	649
R <sup>2</sup>			26.2	45.8	30.9	46.0	38.3	44.5	31.1	43.3



TABLE 5. -- Current work, control on age and level of education,  $\bar{x}_{adj}$  and  $\eta^2$ ,  
in parentheses

	Age:		15-24		25-34		35-44		Total	
	Education:		Low	High	Low	High	Low	High	Low	High
Race										
Malay			33.7	29.2	36.8	35.6	42.7	28.3	38.1	32.8
Chinese			30.6	9.2	37.5	28.1	39.3	24.1	37.5	21.4
Indian			65.0	21.7	60.2	32.3	64.5	15.7	62.6	27.7
School										
Lower			31.2	25.7	40.1	27.6	44.3	17.4	40.2	26.1
Higher			44.2	25.5	38.7	38.7	42.7	32.8	41.6	32.3
Premarital work										
No			(8.2)	(23.5)	(19.1)		(28.1)	(35.4)	(18.9)	(26.2)
Yes			25.3	11.2	22.9	9.1	24.7	8.8	23.8	9.8
			53.2	51.6	61.7	57.8	72.4	58.9	63.4	56.0
Age at first marriage										
-16			35.9	12.9	40.5	34.0	42.3	25.3	39.3	21.5
17-19			40.5	30.9	34.7	36.6	50.9	25.0	40.7	31.3
20+			40.1	48.0	44.6	29.4	41.9	23.3	44.2	31.9
Husband's schooling										
0-5			(2.8)	(4.8)	(2.0)		(2.1)			
6			41.9	32.4	39.4	32.7	44.1	42.5	41.6	33.9
7+			28.2	20.2	43.7	33.1	45.0	42.2	39.3	26.4
			36.5	25.8	33.0	31.9	41.6	13.9	36.9	27.2
Husband's income										
0-99			(1.9)	(4.5)	(6.4)		(5.9)	(4.9)	(4.6)	(2.7)
100-199			40.5	35.3	41.6	39.2	45.3	27.8	42.9	36.7
200+			31.0	21.9	40.1	33.6	45.3	(19.9)	39.8	25.4
			29.5	14.1	29.3	29.1	37.1	25.4	31.4	25.0

TABLE 5. (Continued) Current work, control on age and level of education,  
 $\bar{x}_{adj}$  and  $\sigma^2_{adj}$ , in parentheses

	Age:		15-24		25-34		35-44		Total	
	Education:		Low	High	Low	High	Low	High	Low	High
Socio-economic status										
U+UM			33.5	13.7	(1.8)		(2.9)	(3.6)	35.5	29.0
M			42.9	29.7	38.5	35.8	32.5	26.2	37.9	29.6
LM+L			37.2	24.7	33.9	32.6	41.6	25.1	41.5	27.7
					41.1	30.2	45.2	21.1		
Marriage to first birth				(2.4)	(1.9)			(3.4)		
-12			35.9	21.5	40.9	32.6	42.4	24.9	39.5	28.0
13-36			37.2	30.5	40.0	29.9	44.1	31.3	40.9	29.3
37+			42.6	14.2	36.4	46.4	45.3	31.5	41.6	27.5
Children ever born				(2.7)				(3.1)		
0-2			37.1	18.0	41.1	35.4	35.3	34.4	36.1	24.6
3-5			39.0	41.4	37.5	35.4	45.5	20.4	39.9	33.5
6+			33.6	185	42.4	14.4	44.8	22.9	44.7	25.6
Additional children										
wanted: wife							(2.0)	(4.3)		
More			40.4	30.9	40.2	34.7	46.9	26.9	42.4	32.1
No more			25.1	23.5	38.6	28.2	42.0	22.9	38.2	21.4
Open interval										
0-36			37.0	25.2	36.1	54.2	40.5	21.1	48.2	24.2
37-72			43.8	32.6	47.8	27.3	45.1	27.4	36.4	36.6
73-99			36.9		47.5	38.6	46.5	24.6	47.5	47.0

TABLE 5. (Continued) Current work, control on age and level of education,  $\bar{x}_{adj}$  and  $\eta^2$ , in parentheses

	Age:		15-24		25-34		35-44		Total	
	Education:		Low	High	Low	High	Low	High	Low	High
Area			(5.5)	(5.0)	(8.5)	(11.1)	(8.4)	(2.3)		
Metropolitan			13.4	16.9	16.0	25.7	28.5	19.1	20.1	22.6
Urban			12.1	18.2	20.6	25.4	27.1	30.4	21.0	24.6
Rural			41.7	30.0	45.7	42.3	49.5	25.8	46.2	34.0
N			822	262	1693	304	1299	83	3815	649
R <sup>2</sup>			21.5	37.0	30.7	34.5	37.9	25.5	29.3	33.3

TABLE 6. -- Percent of variance explained by all variables together, for work since marriage and current work, by age and number of marriages

	Married once	Married more than once
Work since marriage		
15-24	31.5	26.1
25-34	34.2	28.6
35-44	38.5	47.6
Total	33.4	30.6
Current work		
15-24	27.2	32.4
25-34	32.0	28.1
35-44	35.3	49.5
Total	30.3	30.2

TABLE 7. -- Mean work rates for work since marriage and current work, by age and number of marriages

	Married once	Married more than once
Work since marriage		
15-24	40.7	41.0
25-34	43.5	47.3
35-44	49.3	49.8
Total	44.4	47.5
Current work		
15-24	35.1	32.2
25-34	37.8	41.5
35-44	43.3	40.0
Total	38.6	39.5
N	3616	784

TABLE 8. -- Percent who have worked since marriage and percent working currently,  
by number of marriages, and selected characteristics

	Work since marriage		Current work	
	Married once	Married more than once	Married once	Married more than once
Race				
Malay	41.5	46.8	36.7	39.1
Chinese	42.6	44.8	34.4	36.3
Indian	61.5	92.8	55.7	72.7
Years of school				
0-1	44.6	43.3	38.9	36.8
2-5	43.1	57.7	37.4	46.2
6+	46.0	69.2	40.2	53.9
Prenatal work				
No	25.8	28.6	21.7	19.8
Yes	69.9	73.5	61.9	66.6
Age at first marriage				
10-16	42.9	45.1	36.7	37.6
17-19	42.4	48.0	38.2	40.9
20+	49.4	62.2	42.6	49.7
Husband's schooling				
0-5	46.3	45.9	40.8	37.9
6	39.8	54.7	34.8	45.4
7+	43.6	53.2	36.1	49.1

TABLE 8. (Continued) Percent who have worked since marriage and percent working currently, by number of marriages, and selected characteristics

	Work since marriage		Current work	
	Married once	Married more than once	Married once	Married more than once
Husband's income				
\$0-99	49.2	48.4	41.7	40.7
\$100-199	41.1	51.8	36.5	39.9
\$200+	36.4	30.5	33.5	26.1
Socio-economic status				
Upper, upper middle	40.7	33.7	35.8	32.2
Middle	42.0	37.6	36.5	38.0
Lower middle, lower	45.4	49.0	39.5	39.8
Marriage to first birth				
0-12	43.3	54.8	37.2	42.5
13-36	44.4	48.3	38.8	41.2
37+	46.9	43.2	41.5	36.7
Children ever born				
0-2	39.5	49.1	34.2	39.4
3-5	43.6	46.3	38.0	41.8
6+	49.7	47.9	43.2	36.3
More children wanted				
More	46.2	47.6	41.1	40.1
No more	41.8	47.3	35.2	38.4

TABLE 8. (Continued) Percent who have worked since marriage and percent working currently, by number of marriages, and selected characteristics

	Work since marriage		Current work	
	Married once	Married more than once	Married once	Married more than once
Months since last birth				
0-36	50.3	53.2	46.0	47.2
37-72	41.9	40.7	35.1	32.3
73-99	48.4	62.1	45.0	52.2
Area				
Metropolitan	29.6	12.7	22.1	5.1
Urban	27.9	14.8	23.1	12.2
Rural	51.1	50.9	45.5	42.5



TABLE 9. -- Work rates by age, area and number of marriages

	Married once				Married more than once		
	15-24	25-34	35-44		15-24	25-34	35-44
Work since marriage							
Metropolitan	21.9	28.4	37.5		21.4	-	27.3
Urban	17.5	28.8	35.6		10.9	12.8	14.6
Rural	46.4	50.4	56.3		41.9	52.1	53.0
Current work							
Metropolitan	18.7	18.4	30.2		17.3	-	11.3
Urban	18.0	22.0	29.8		5.4	16.8	.6
Rural	39.6	45.9	50.7		33.0	45.2	43.5

TABLE 10. -- Years worked and current work for ever worked by age and area,  
raw and adjusted means

	15-24		25-34		35-44		Total	
	$\bar{x}$	$\bar{x}_{adj}$	$\bar{x}$	$\bar{x}_{adj}$	$\bar{x}$	$\bar{x}_{adj}$	$\bar{x}$	$\bar{x}_{adj}$
Years worked								
Metropolitan	2.2	3.7	4.5	5.7	8.9	10.1	6.0	7.1
Urban	3.2	4.9	6.7	6.7	11.2	12.2	7.8	7.8
Rural	5.3	5.2	9.9	9.8	16.7	16.6	11.1	11.1
Current work								
Metropolitan	71.1	78.1	67.8	63.8	73.3	74.7	70.2	70.2
Urban	93.8	98.7	75.4	71.6	76.7	81.4	78.1	77.8
Rural	85.2	84.8	90.0	90.7	87.5	87.1	88.0	88.0

TABLE 11. -- Current work of ever worked, adjusted means and  $\eta^2$ 

	15-24		25-34		35-44	
	$\bar{x}_{adj}$	$\eta^2$	$\bar{x}_{adj}$	$\eta^2$	$\bar{x}_{adj}$	$\eta^2$
Race		1.5				
Malay	87.0		86.8		85.5	
Chinese	61.4		86.0		82.9	
Indian	89.8		89.7		91.3	
School		1.1				2.2
0-1	78.8		87.2		87.7	
2-5	93.0		86.7		76.5	
6	83.8		86.5		89.9	
7+	75.5		89.7		85.8	
Premarital work						3.5
No	81.0		81.4		77.6	
Yes	87.2		89.6		90.0	
Age at first marriage		1.4		1.0		2.3
-16	79.5		89.9		81.8	
17-19	96.4		82.9		95.6	
20+	86.7		87.0		84.7	
Husband's school						
0-1	100.0*		87.6		78.8	
2-5	84.6		87.3		92.3	
7+	80.4		84.2		78.6	
Husband's income						
0-99	82.1		86.0		85.6	
100-199	88.5		87.6		86.7	
200+	100.0*		93.5		85.2	
Socio-economic status						
Upper, upper m.	62.0		96.5		89.8	
Middle	89.5		84.6		89.3	
Lower m., lower	85.1		87.1		85.1	
Marriage to first birth						
-12	80.2		86.5		81.1	
13-36	85.6		88.8		87.0	
37+	93.2		84.2		89.3	

TABLE 11. (Continued) Current work of ever worked,  
adjusted means and eta<sup>2</sup>

	15-24		25-34		35-44	
	$\bar{x}_{adj}$	eta <sup>2</sup>	$\bar{x}_{adj}$	eta <sup>2</sup>	$\bar{x}_{adj}$	eta <sup>2</sup>
Children ever born						1.3
0-2	82.7		87.4		87.3	
3-5	89.1		86.2		89.0	
6+	84.4		88.9		83.9	
Additional children wanted: wife		2.1				1.3
More	87.4		88.2		87.6	
No more	70.0		85.5		84.3	
Open interval						
1-36	82.8		84.9		80.2	
37-72	100.0*		91.9		87.4	
73-99	100.0*		90.8		90.3	
Area				4.2		1.6
Metropolitan	78.1		63.8		74.7	
Urban	98.7		71.6		81.4	
Rural	84.8		90.7		87.1	
R <sup>2</sup>		13.3		5.8		11.7
N	443		882		689	

\*Adjusted mean exceeds 100 percent.

TABLE 12. -- Years worked for ever worked, adjusted means and eta<sup>2</sup>

	15-24		25-34		35-44		Total	
	$\bar{x}_{adj}$	$\eta^2$	$\bar{x}_{adj}$	$\eta^2$	$\bar{x}_{adj}$	$\eta^2$	$\bar{x}_{adj}$	$\eta^2$
Race		3.3		3.0		2.3		1.7
Malay	5.2		8.9		15.1		10.5	
Chinese	3.9		10.4		18.8		11.5	
Indian	5.4		9.4		16.4		10.2	
School		3.6		7.4		5.8		10.8
0-1	5.2		9.6		16.2		11.2	
2-5	5.3		8.4		13.9		9.6	
6	4.7		8.2		14.9		8.5	
7+	4.4		10.2		16.2		10.8	
Premarital work		1.6		1.4		6.8		2.3
No	3.9		7.7		12.6		8.4	
Yes	5.8		9.9		17.4		11.7	
Age at first marriage		17.8		11.7		6.1		4.2
-16	5.5		10.7		18.1		11.6	
17-19	4.8		8.7		14.6		9.8	
20+	3.9		7.6		12.8		9.5	
Husband's school		4.2		4.8		4.9		7.9
0-1	5.4		10.4		17.0		11.9	
2-5	5.2		8.8		15.6		10.1	
6	4.9		8.9		14.3		9.8	
7+	4.8		9.5		13.4		10.6	

TABLE 12. (Continued) Years worked for ever worked, adjusted means and eta<sup>2</sup>

	15-24		25-34		35-44		Total	
	$\bar{x}_{adj}$	$\eta^2$	$\bar{x}_{adj}$	$\eta^2$	$\bar{x}_{adj}$	$\eta^2$	$\bar{x}_{adj}$	$\eta^2$
Husband's income		2.0		5.9		3.1		1.8
0-99	4.8		9.6		16.4		10.9	
100-199	5.9		8.7		15.1		10.2	
200+	6.6		8.5		13.3		9.3	
Socio-economic status		4.1						
Upper, upper m.	6.6		11.2		21.6		14.3	
Middle	4.0		9.3		17.2		10.9	
Lower m., lower	5.2		9.1		15.4		10.4	
Marriage to first birth		6.9		3.8				2.0
-12	4.3		8.6		16.7		10.2	
13-36	5.1		9.0		15.5		10.1	
37+	6.9		11.2		15.4		12.3	
Children ever born		14.4		5.1				11.7
0-2	4.0		7.0		14.1		7.0	
3-5	6.9		9.5		15.2		10.4	
6+	7.2		10.5		16.4		13.7	
Additional children wanted: wife				2.0				3.0
More	5.2		9.0		15.7		10.3	
No more	4.7		9.7		15.9		11.0	

TABLE 12. (Continued) Years worked for ever worked, adjusted means and  $\eta^2$

	15-24		25-34		35-44		Total	
	$\bar{x}_{adj}$	$\eta^2$	$\bar{x}_{adj}$	$\eta^2$	$\bar{x}_{adj}$	$\eta^2$	$\bar{x}_{adj}$	$\eta^2$
Open interval		9.9		1.1		5.1		12.8
1-36	4.8		8.7		14.0		8.8	
37-72	8.5		10.4		14.1		11.6	
73-99	10.5		9.8		18.7		15.6	
Area		3.1		8.1		6.7		3.5
Metropolitan	3.7		5.7		16.6		7.1	
Urban	4.9		6.7		12.1		7.8	
Rural	5.1		9.8		16.6		11.1	
$R^2$		46.0		26.9		25.5		38.1
N	443		882		689		2013	

TABLE 13. -- Percent of married life worked

	Rural sample Percent $\eta^2$	Total sample Percent $\eta^2$
Race	2.5	1.5
Malay	52.5	51.0
Chinese	70.9	65.4
Indian	62.1	59.6
School		
0-1	56.0	54.8
2-5	54.0	54.2
6+	51.5	57.3
Premarital work	5.4	6.1
No	46.9	46.4
Yes	61.4	60.9
Age at first marriage		1.7
-16	55.8	55.8
17-19	51.5	51.7
20+	58.3	56.8
Husband's schooling		
0-5	55.9	56.0
6	52.5	51.6
7+	52.1	53.1
Husband's income		
\$0-99	56.1	55.8
\$100-199	52.4	51.8
\$200+	48.0	56.1
Socio-economic status		1.4
Upper, upper middle	70.6	71.4
Middle	56.3	56.9
Lower middle, lower	54.8	54.0
Marriage to first birth	1.9	1.9
-12	60.4	60.8
13-36	54.7	54.6
37+	49.0	46.6
Children ever born		
0-2	49.2	56.7
3-5	55.7	55.0
6+	57.6	53.9



TABLE 13. (Continued) Percent of married life worked

	Rural sample Percent $\eta^2$	Total sample Percent $\eta^2$
Additional children wanted: wife	1.0	
More	57.4	57.5
No more	51.6	51.3
Last interval		
0-36	54.7	51.0
37-72	53.1	55.1
73-99	61.5	58.2
Age	1.2	Area
15-24	67.3	Met. 43.0
25-34	52.8	Urban 45.0
35-44	51.7	Rural 57.6
N	260	886
$R^2$	11.6	11.9

## CHAPTER VIII

## CONCLUSION

The present study sets out to investigate the correlates of female work, more precisely that of married women, in a developing area, West Malaysia. We find a larger proportion of variance explained with macro-level than with micro-level data. The variables used in the macro-level analysis give an indication of the general level of economic development. In fact, the most powerful predictor in the analysis, the proportion of the labor force employed in agriculture, can be taken as a direct index of economic development (Boserup). The fluctuations are large--only partly a function of different quality data --and a large proportion of the variance in female labor force participation is explained.

Our micro-level data explain less of the variance in female work. In part this can be attributed to the more limited sample: married women age 15-44, with husband present rather than all females age 10 and above as in the macro-level study. In part it may also be attributed to the frequently higher correlations or amount of variance explained in ecological correlations than individual ones. Since the two parts of the study not only use somewhat different analysis techniques, but deal with very different variables, this caution is less applicable than usual.

The general level of economic development, as studied in the series of censuses from 1921 to 1957, does, however, explain more variance than the individual's socio-economic correlates. These also explain a fairly large percentage of the variance, in large part through the core variables of race, age and area. Of the other variables the strongest explanatory variable or predictor variable for work, however measured, is not a social one indicating need, skill or family size, but an employment variable: premarital work. Premarital work itself is not well explained in the analysis. Level of qualification accounts for as much as 6.2 percent of the variance for urban and metropolitan Malays, but zero for Chinese and Indians in these areas (Table V.1). In rural areas the variance explained is in the order of one or two percent only. Thus, it is not only economic development, but past economic behavior by the individual that appears most influential in determining present work participation. Another economic variable, husband's income corroborates this influence of economic variables upon work.

As hypothesized, but less strongly, the non-economic variables also influence work. Education is associated with work in two ways, women with little education work more, and women with a lot of education work more than other women, but in urban areas only. Fertility explains but little variance in work. Work, on the other hand, is a slightly better predictor of fertility, in two ways: 1) women with

high cumulative fertility tend to have high work participation, 2) women with low fertility also work more than other women, but only in urban areas, or for educated women.

Thus, while the U-curve of labor force participation does not hold up very well in the analysis of the time series of period data, there is a definite indication of a U-shaped association between work and education, fertility and work, as well as work, education and fertility in some sections of Malaysian society.

This relationship, which is only faintly indicated, would suggest that labor force participation is suitable as a policy variable influencing fertility downwards only under very limited circumstances. Given the general level of economic development, some socio-economic forces on the individual level are associated with employment, which, under certain circumstances, is associated with lower fertility. It is in the more developed sectors of the economy, in urban areas or for educated women that employment is associated with lower fertility. It is only under these specific conditions that employment policies could become fertility policies as well. It is therefore unlikely that female labor force participation will have much currency as a means of fertility reduction in developing countries. In West Malaysia women who work generally have higher fertility, and only in a small sector of society is there a negative relationship between

work and fertility. While the information in the present study is limited to West Malaysia, the inference that conditions in other developing countries are more similar to those in Malaysia than to those in developed countries, also with respect to this relationship, is not entirely unwarranted. While female labor force participation cannot be abandoned as a fertility policy measure, the present study suggests that it is only a small scale policy. Ironically, it may also work best under conditions in which the need for fertility reduction is considerably diminished. Policies promoting female labor force participation may likely have sufficient merit on grounds other than fertility reduction--social as well as economic--to be vigorously pursued by governments. This, however, is not the concern of the present study.

Within the limited context of female labor force participation, its social, economic and demographic determinants, of the present study, a number of questions remain unanswered. This is true of the study as a whole, as well as for several of the individual variables studied. The causal links between work and its correlates have not been firmly established. Temporal relationships do however allow the following causal inferences: education → premarital work → work after marriage → lower fertility, under certain conditions, but the relationship is subject to other influences of equal or greater magnitude.

In most cases only half or less of the total variance is explained by the independent variables in the analysis. At least half of the variance remains unaccounted for. While it is unrealistic to expect to explain 100 percent of the variance, less than half of the variance explained is of limited use for prediction or policy purposes. The determinants of female labor force participation need to be better understood also in terms of variables extraneous to the present analysis.

Of individual variables, the effects of income and income per family member are not well explained. In part this is because income in kind is not elaborated in the interview, in part it is also because of the general looseness of the concept as employed here. A crucial variable, the income as well as the income potential of the woman is not available in the present study.

The interval measures of fertility, as well as the dependency burden measured in individual terms, give internally inconsistent results. A more thorough study of these measures may better illuminate their relationship to work, or lack of one.

A general problem of the study is not being able to examine work and fertility at the same point in time. Work variables are vague with respect to time and decisions to work or not cannot be directly related to fertility status or plans. Unfortunately, the present data set does

not devote the same detail to work variables that it does to fertility variables, and a meaningful construction becomes difficult.

Since the present study focuses on the work of married women, premarital work is treated largely as an independent variable. While educational differentials (Chapter V) partly account for the variance in premarital work, a direct explication of premarital work is not included in the present study. For a full understanding of the factors influencing work after marriage, an understanding of premarital work is desirable. However, the present data set is not the ideal vehicle for such an investigation, again because of limited coverage of work variables and also because its main focus is on the present, or the very least upon the period since marriage.

#### Recommendation for Further Research

Having reached rather limited and tentative conclusions, the present study gives ample room and suggestions for further research. A better grip on the problems at hand can best be had by gathering data more appropriate for the purpose. First of all, it is desirable to have a better mesh between the macro and micro-level measurements of factors affecting the work of women. They should refer to the same population and to the same time period. In addition, they should give a wider range of information on

economic variables. Particularly the micro-level analysis has suffered from a lack of information on even such elementary measures as the number of hours or number of weeks worked by a woman, her pay, her level of household expenditure, etc. Besides giving information on a woman's use and need for money, it gives some information on her use of time. Some elaboration on information regarding time and time-use might prove very fruitful, in illuminating women's work participation.

While the present study provides information on fertility attitudes, it gives none on work attitudes, of the woman, of her husband or of her friends and relatives. This is another important aspect of the investigation of female work patterns.

It is obvious that if more cross-sectional data are good, cross-sectional cum longitudinal data are better. In the study of strongly life-cycle related phenomena such as labor force participation and fertility, and particularly in their relationship to each other, longitudinal data are very desirable. The present study has been hampered by referents to different or unspecified points in time on a number of variables, especially fertility and work.

A suitable focus for such additional research are the groups of women where the relationship between fertility and work is negative, coupled with the groups where the relationship is strongly positive. Such a sharpening of



contrasts might facilitate the definition of, on the one hand, the economic, and, on the other hand, socio-psychological factors that surround the socio-demographic factors isolated here for their explanation of the work of married women.

APPENDIX  
SAMPLING ERRORS

(Source: National Family Planning Board, Report on the West  
Malaysian Family Survey 1966-67, p. 46-48, 51-58, 60.)

TABLE 1. -- Approximate sampling errors\* of percentages: metropolitan stratum

Estimated Percentages	Number of interviews on which percentage is based						
	200	300	400	500	700	1000	3372
50	7.1-9.3	5.8-7.7	5.0-6.7	4.5-6.1	3.8-5.2	3.2-4.5	2.2-3.3
40 or 60	6.9-9.1	5.7-7.5	4.9-6.5	4.4-5.9	3.7-5.1	3.1-4.3	2.2-3.3
30 or 70	6.5-8.5	5.3-7.0	4.6-6.1	4.1-5.5	3.5-4.8	2.9-4.1	2.1-3.2
20 or 80	5.7-7.5	4.6-6.1	4.0-5.3	3.6-4.8	3.0-4.1	2.5-3.5	1.8-2.7
10 or 90	4.3-5.6	3.5-4.6	3.0-4.0	2.7-3.6	2.3-3.1	1.9-2.7	1.3-2.0
5 or 95	3.1-4.1	2.5-3.3	2.2-2.9	2.0-2.7	1.6-2.2	1.4-2.0	1.0-1.5
							0.8-1.3

\*The figures in this table represent two standard errors. Hence, the chances are 95 out of 100 that a complete census would yield a figure within the range equal to the estimated percentage plus or minus the sampling error.

TABLE 2. -- Approximate sampling errors\* of percentages: small towns and rural strata

Estimated Percentages	Number of interviews on which percentage is based							
	200	300	400	500	700	879	1000	3372
50	7.1-11.1	5.8-9.3	5.0-8.2	4.5-7.6	3.8-6.7	3.4-6.2	3.2-6.0	2.9-5.6
40 or 60	6.9-10.8	5.7-9.1	4.9-8.0	4.4-7.4	3.7-6.5	3.3-6.0	3.1-5.8	2.8-5.4
30 or 70	6.5-10.1	5.3-8.5	4.6-7.5	4.1-6.9	3.5-6.1	3.1-5.6	2.9-5.4	2.6-5.0
20 or 80	5.7- 8.9	4.6-7.4	4.0-6.6	3.6-6.0	3.0-5.3	2.7-4.9	2.5-4.7	2.3-4.4
10 or 90	4.3- 6.7	3.5-5.6	3.0-4.9	2.7-4.5	2.3-4.0	2.0-3.6	1.9-3.5	1.7-3.3
5 or 95	3.1- 4.8	2.5-4.0	2.2-3.6	2.0-3.4	1.6-2.8	1.5-2.7	1.4-2.6	1.3-2.5

\*The figures in this table represent two standard errors. Hence, the chances are 95 out of 100 that a complete census would yield a figure within the range equal to the estimated percentage plus or minus the sampling error.

TABLE 3. --- Approximate sampling errors\* of percentages: total West Malaysia

Estimated Percentages	Number of interviews on which percentage is based									
	200	300	400	500	700	1000	2000	4000	5457	
50	7.1-9.6	5.8-8.7	5.0-8.1	4.5-7.9	3.8-7.5	3.2-7.3	2.2-6.7	1.6-6.7	1.4-6.7	
40 or 60	6.9-9.3	5.7-8.5	4.9-8.0	4.4-7.7	3.7-7.3	3.1-7.0	2.2-6.7	1.5-6.3	1.3-6.3	
30 or 70	6.5-8.7	5.3-7.9	4.6-7.5	4.1-7.2	3.5-6.9	2.9-6.6	2.1-6.4	1.4-5.9	1.2-5.9	
20 or 80	5.7-7.7	4.6-6.9	4.0-6.5	3.6-6.3	3.0-5.9	2.5-5.7	1.8-5.5	1.3-5.5	1.1-5.4	
10 or 90	4.3-5.8	3.5-5.2	3.0-5.9	2.7-4.7	2.3-4.5	1.9-4.3	1.3-4.0	0.9-3.8	0.8-3.8	
5 or 95	3.1-4.2	2.5-3.7	2.2-3.6	2.0-3.5	1.6-3.2	1.4-3.2	1.0-3.1	0.7-3.0	0.6-2.9	

\*The figures in this table represent two standard errors. Hence, the chances are 95 out of 100 that a complete census would yield a figure within the range equal to the estimated percentage plus or minus the sampling error.

TABLE 4. -- Approximate sampling errors\* of differences between percentages:  
metropolitan stratum

Number of interviews on which percentage is based	Number of interviews on which percentage is based					
	200	300	400	500	700	1000
	For percentages from 35 to 65					
200	10.0-13.2	9.1-12.1	8.7-11.4	8.4-11.1	8.0-10.7	7.7-10.3
300		8.2-10.8	7.6-10.2	7.3-9.7	6.9-9.2	6.6-8.8
400			7.1-9.4	6.7-9.0	6.3-8.5	5.9-8.1
500				6.3-8.5	5.9-8.0	5.5-7.4
700					5.3-7.3	5.0-6.9
1000						4.4-6.2
2000						3.9-5.6
						3.2-4.7
	For percentages around 20 and 80					
200	8.0-10.5	7.3-9.6	6.9-9.2	6.7-8.9	6.4-8.5	6.2-8.2
300		6.5-8.7	6.1-8.1	5.8-7.8	5.5-7.4	5.3-7.1
400			5.7-7.6	5.4-7.2	5.0-6.8	4.7-6.4
500				5.1-6.8	4.7-6.4	4.4-6.0
700					4.3-5.9	4.0-5.5
1000						3.9-5.5
2000						3.6-5.0
						3.1-4.5
						2.5-3.8

TABLE 4. (Continued) Approximate sampling errors\* of differences between percentages: metropolitan stratum

Number of interviews on which percentage is based	Number of interviews on which percentage is based					
	200	300	400	500	700	1000 2000
	For percentages around 10 and 90					
200	6.0-7.9	5.5-7.2	5.2-6.9	5.0-6.7	4.8-6.4	4.6-6.2
300		4.9-6.5	4.6-6.1	4.4-5.8	4.1-5.5	4.0-5.3
400			4.2-5.7	4.0-5.4	3.8-5.1	3.6-4.8
500				3.8-5.1	3.5-4.8	3.3-4.5
700					3.2-4.4	3.0-4.1
1000						2.6-3.7
2000						2.3-3.3
						1.9-2.9
	For percentages around 5 and 95					
200						
300		3.6-4.7	3.8-5.0	3.7-4.8	3.5-4.6	3.4-4.5
400			3.3-4.4	3.2-4.2	3.0-4.0	2.9-3.9
500			3.1-4.1	2.9-3.9	2.7-3.7	2.6-3.5
700				2.8-3.7	2.6-3.5	2.4-3.3
1000					2.3-3.2	2.2-3.0
2000						2.1-3.0
						1.9-2.7
						1.7-2.4
						1.4-2.1

\*The values shown are the differences required for significance (two standard errors) in comparisons of two different subgroups in the survey.

TABLE 5. -- Approximate sampling errors\* of differences between percentages:  
small towns and rural strata

Number of interviews on which percentage is based	Number of interviews on which percentage is based					
	200	300	400	500	700	879 1000
	For percentages from 35 to 65					
200	10.0-15.6	9.1-14.5	8.7-13.7	8.4-13.4	8.0-12.9	7.8-12.7
300		8.2-13.1	7.6-12.4	7.3-11.9	6.9-11.4	6.7-11.1
400			7.1-11.6	6.7-11.1	6.3-10.6	6.0-10.3
500				6.3-10.6	5.9-10.1	5.6-9.7
700					5.3-9.4	5.1-9.0
879						4.8-8.7
1000						4.6-8.5
						4.5-8.4
	For percentages around 20 and 80					
200	8.0-12.5	7.3-11.5	6.9-11.0	6.7-10.7	6.4-10.3	6.3-10.1
300		6.5-10.5	6.1-9.9	5.8-9.5	5.5-9.1	5.3-8.9
400			5.7-9.3	5.4-8.9	5.0-8.5	4.8-8.2
500				5.1-8.5	4.7-8.0	4.5-7.8
700					4.3-7.5	4.1-7.2
879						3.8-7.0
1000						3.7-6.8
						3.6-6.7



TABLE 5. (Continued) Approximate sampling errors\* of differences between percentages: small towns and rural strata

Number of interviews on which percentage is based	Number of interviews on which percentage is based					
	200	300	400	500	700	879 1000
	For percentages around 10 and 90					
200	6.0-9.4	5.5-8.7	5.2-8.3	5.0-8.0	4.8-7.7	4.7-7.6
300		4.9-7.9	4.6-7.4	4.4-7.2	4.1-6.8	4.0-6.7
400			4.2-7.0	4.0-6.7	3.8-6.3	3.6-6.2
500				3.8-6.4	3.5-6.0	3.4-5.8
700					3.2-5.6	3.0-5.4
879						2.9-5.2
1000						2.7-5.0
	For percentages around 5 and 95					
200						2.9-4.8
300				2.9-4.9	2.7-4.6	2.6-4.5
400				2.8-4.6	2.6-4.4	2.4-4.2
500					2.3-4.1	2.2-3.9
700						2.1-3.8
879						2.0-3.7
1000						1.9-3.6

\*The values shown are the differences required for significance (two standard errors) in comparisons of two different subgroups in the survey.



TABLE 6. (Continued) Approximate sampling errors\* of differences between percentages: total West Malaysia

Number of interviews on which percentage is based	Number of interviews on which percentage is based					
	200	300	400	500	700	1000
	For percentages around 10 and 90					
200	6.0-8.1	5.5-7.7	5.2-7.5	5.0-7.4	4.8-7.3	4.6-7.2
300		4.9-7.3	4.6-7.1	4.4-7.0	4.1-6.9	4.0-6.7
400			4.2-6.9	4.0-6.8	3.8-6.6	3.6-6.5
500				3.8-6.7	3.5-6.5	3.3-6.4
700					3.2-6.3	3.0-6.2
1000						2.6-6.1
2000						2.3-6.0
4000						1.9-5.8
						1.6-5.7
						1.3-5.7
						4.3-7.0
						3.6-6.5
						3.1-6.3
						2.8-6.2
						2.5-6.0
						2.1-5.9
						1.6-5.7
						1.3-5.7
						2.6-4.8
						2.3-4.6
						2.1-4.5
						1.8-4.4
						1.5-4.3
						1.2-4.2
						1.0-4.1
						2.7-4.8
						2.4-4.6
						2.2-4.5
						1.9-4.4
						1.7-4.3
						1.4-4.2
						1.0-4.1
						2.9-4.9
						2.6-4.7
						2.4-4.6
						2.1-4.5
						1.9-4.4
						1.7-4.3
						1.4-4.2
						1.0-4.1

\*The values shown are the differences required for significance (two standard errors) in comparisons of two different subgroups in the survey.

TABLE 7. -- Approximate sampling errors\* of averages and differences between two averages for number of living children: total West Malaysia

Number of interviews on which average is based	Number of interviews on which average is based										5457
	200	300	400	500	700	879	1000	1206	2000	3372	4000
	.48	.43	.41	.39	.37	.36	.36	.35	.34	.34	.33
	Sampling errors of averages**										
	Sampling errors of differences between two averages***										
200	.68	.64	.63	.62	.61	.60	.60	.59	.59	.59	.58
300		.61	.59	.58	.57	.56	.56	.55	.55	.55	.54
400			.58	.57	.55	.55	.55	.54	.53	.53	.53
500				.55	.54	.53	.53	.52	.52	.52	.51
700					.52	.52	.52	.51	.50	.50	.50
879						.51	.51	.50	.50	.50	.49
1000							.51	.50	.50	.50	.49
1206								.49	.49	.49	.48
2000									.48	.48	.47
3372										.48	.47
4000											.47

\*The figures in the table represent two standard errors.

\*\*For most items the chances are 95 in 100 that the population value would be included within a range equal to the estimated averages plus or minus the sampling error.

\*\*\*The values shown are the differences required for significance (two standard errors) in comparisons of averages of two different subgroups in the survey.

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