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THE COMPATABILITY OF CHILD CARE WITH LABOR FORCE PARTICIPATION  
AND NONMARKET ACTIVITIES: PRELIMINARY EVIDENCE  
FROM MALAYSIAN TIME BUDGET DATA

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PREFACE

Recently there has been increased interest in how persons in developing countries spend their time and how their time allocation patterns change during economic development and in response to particular public policies. This stems from several considerations:

- o Time is the most important resource available to poor people.
- o Conventional measures of family incomes consider only monetary components or returns from formal labor force participation; they typically ignore productive activities, such as housework or cottage industry, in the nonmarket sector. The latter may make up a substantial fraction of a family's "full income" in developing countries.
- o Since supply of time to the labor market is a mirror image of the demand for that time at home, an understanding of the factors underlying home production should contribute to a better understanding of labor supply, especially for women.
- o Analyses of fertility often assume that market work is incompatible with child care, and use foregone market earnings as a measure of the opportunity cost of time spent with children. However, several studies suggest that the degree of incompatibility is not so great in many situations in developing countries as it is in a more developed country.

This paper presents the results of preliminary analyses of time budget data from Malaysia. Its purpose is to shed new light on how households allocate their time between market and nonmarket activities and among household members.

The research on which this paper is based was performed during a collaborative visit to The Rand Corporation by Donald L. P. Lee, Economics Department, University of Malaya, between November 1977 and January 1978.

That visit was funded by the Office of Population of the Agency of International Development, under its contract with The Rand Corporation, as part of a much larger survey and research project investigating the influence of public-program and family characteristics on couples' fertility, breastfeeding, and use of contraceptives in Malaysia. Other outputs of the project include the following:

William P. Butz and Julie DaVanzo, *Economic and Demographic Family Behavior in Malaysia: A Conceptual Framework for Analysis*, The Rand Corporation, R-1834-AID, September 1975;

William P. Butz and Julie DaVanzo, *The Malaysian Family Life Survey: Summary Report*, The Rand Corporation, R-2351-AID, March 1978;

William P. Butz, Julie DaVanzo, Dorothy Z. Fernandez, Robert Jones, and Nyle Spoelstra, *The Malaysian Family Life Survey: Appendix A, Questionnaires and Interviewer Instructions*, The Rand Corporation, R-2351/1-AID, March 1978;

Terry Fain and Tan Poh Kheong, *The Malaysian Family Life Survey: Appendix B, Round One Codebook*, The Rand Corporation, R-2351/2-AID, March 1978;

Robert Jones and Nyle Spoelstra, *The Malaysian Family Life Survey: Appendix C, Field and Technical Report*, The Rand Corporation, R-2351/3-AID, March 1978;

Fahmi Omar, *The Malaysian Family Life Survey: Appendix D, Descriptions of Sample Communities*, The Rand Corporation, R-2351/4-AID, March 1978;

William P. Butz and Julie DaVanzo, *Contracepting, Breastfeeding, and Birthspacing in Peninsular Malaysia: A Model of Decisionmaking Subject to Economic and Biological Constraints*, The Rand Corporation, R-2352-AID, forthcoming;

Iva MacLennan, *RETRO: A Computer Program for Processing Life History Data*, The Rand Corporation, R-2363-AID/RF, March 1978.

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INTRODUCTION

Becker's (1965) seminal paper on time allocation formalized the treatment of time costs as a component of the "full price" of all commodities produced by individuals. This generalization of the traditional labor-leisure choice model recognized that the alternatives open to an individual were those of market work, home production, and leisure. This approach offers many new insights for the analysis of female labor supply, because, in most societies, many women are heavily committed to household production. The division of a woman's time between market and home production depends on her (potential) market wage rate, her productivity in the home, and the price of available substitutes for her time in the home. Since a woman's supply of time to the labor market is a mirror-image of the demand for her time at home, an understanding of the factors underlying women's home production should contribute to improved analyses of female labor supply.

Another important application of the household production model has been in the analysis of fertility. But here, as in current work on female labor supply, an important assumption is that market work is incompatible with household production, in particular child care. Based on this assumption, foregone market earnings (often expressed by a potential wage) are used as the measure of the opportunity costs of time spent with children. However, it has been typically assumed, and evidence (e.g., Goldstein, 1972) suggests, that the degree of incompatibility is not so great in many situations in developing countries

as it is in the more developed ones.\* This, however, is rarely if ever explicitly investigated.

Recent analyses of time budget data for Laguna province in the Philippines (Boulier, 1976; Ho, 1976a, 1976b; and Quizon and Evenson, 1978) have examined the effect of young children upon the mother's time allocation. They find that the presence of young children (in the household) tends to increase the time that the mother spends in household production and to decrease the amount of time she allocates to market production. These studies also find that there is very little difference between employed and non-employed women in the amount of time allocated to home production. This again suggests that the incompatibility between market work and child care may not be as great as that found in more developed societies. These papers are an example of the growing interest in household production and time allocation in the developing world.

In this paper, time budget data from the Malaysian Family Life Survey are used to investigate household demand for time devoted to various household activities, intrahousehold allocation of time to these activities, and the compatibility of these activities and various market activities with child care. These data afford a unique opportunity to examine this last topic, for they contain information on whether children of various ages accompany the mother when she performs market and out-of-home nonmarket tasks. Among the questions addressed here are the following:

- o How does family size and composition and the presence of modern labor-saving devices affect the amount of housework done?

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\* Goldstein's study of Thailand demonstrated that the fertility differentials that existed between housewives and working women were more pronounced in Bangkok and other urban centers than in the rural, agricultural areas. While fertility was high in the rural areas, the fertility differentials between workers and housewives were negligible.

- o How do wages of household members affect their allocation of time to various household tasks?
- o With what activities and in what settings are husbands and children most likely to help?
- o Which home activities lose more of the mother's attention when she enters the labor force?
- o Which types of market and nonmarket activities are most compatible with child care? How does this compatibility vary with the age of the children?
- o How does the accompaniment of young children affect the efficiency with which a mother performs a particular task?
- o Everything else the same, is the amount of time that a woman devotes to housework or child care positively or negatively related to her education?

The analyses presented here must be regarded as preliminary. They are primarily descriptive, use relatively simple statistical techniques (cross-tabulations and ordinary least squares regressions), and do not address some important questions, e.g., what types of women take their children with them when they perform various market and nonmarket activities or how the sex of the child affects his or her contribution to various types of household production. Nonetheless, we feel that this paper provides a useful first step toward a better understanding of families' time allocation in Malaysia.

### UNDERLYING CONCEPTUAL FRAMEWORK

In this section, we briefly sketch the model of time allocation within the household underlying this research.

The household is viewed as consuming "commodities," such as meals or clean clothes, that it produces by combining its members' time inputs with market goods. Household members can either devote their time to this type of nonmarket production, or they can sell that time on the labor market and earn a wage. The household will allocate the time of its members and its expenditures on market goods in such a way that it will produce that combination of commodities that maximizes its utility.

An important determinant of a household's "demand" for a given commodity, say, clean clothes, is the number of persons in the household.\* Age composition of the household is another important influence, as persons of different ages have different preferences or requirements (e.g., the household's "demand" for child care will be greater the more children in the family, and probably the younger they are).

In equilibrium, the household supplies to the production of each commodity the number of hours necessary to produce the amount of the commodity it demands. Each person will devote more hours (specialize) to the production of those commodities in which he or she has a comparative advantage, relative to other commodities and other household members. Persons who are relatively more productive in the labor market (i.e., can command higher wages) will devote more time to labor market activities and less time to nonmarket activities compared with persons who are relatively more productive in nonmarket activities.

A number of factors might affect an individual's productivity in performing an activity. For example, more highly educated persons may have higher productivity in all types of activities; this increased

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\* This is analogous to the case of the market demand for any good, wherein an important determinant of the position of the market demand curve is the number of demanders, or the size of the market.

efficiency may be neutral across activities, or it may be greater in certain pursuits. (For example, a more highly educated woman may be able to type more letters per hour and wash more clothes per hour than a less well-educated woman, but the relative difference may be greater for letters than for clothes, in which case we would expect to see her spend more time in market activities compared with her less well-educated counterpart. \*)

One factor that may affect a woman's efficiency in performing certain tasks is whether her children accompany her while she performs these tasks. Other things the same we would expect women who have children along to be less efficient in an absolute sense (i.e. produce less) compared with women who don't have them along, although child accompaniment might affect relative efficiencies in various activities differently.

It seems reasonable to presume that mothers are most likely to have their children accompany them when they are performing activities in which the child's presence impairs the mother's efficiency least, and that they are least likely to take them along when the opposite is true. \*\* The reason is that in the former case, the efficiency loss is likely to be less than the cost of making alternative child care arrangements, whereas the opposite is likely to be true in the latter case.

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\* Certain assumptions about income elasticities and the elasticity of substitution between goods and time underly this expectation. See Leibowitz (1972, pp. 25-28).

\*\* Accordingly, women who are relatively more efficient when their children accompany them compared with other women may be more likely to take their children along. Consideration of this possible "selectivity bias" is beyond the scope of this paper.

DATA

The empirical analyses in this paper use data from the Round I Female Time Budget (MF4) of the Malaysian Family Life Survey\* (although a few explanatory variables derive from other Round I instruments). This time budget questionnaire, which is reproduced in the appendix of this paper,\*\* was administered to ever-married women less than 50 years of age, and elicited information on their time use in the 4-month period preceding the interview.\*\*\* For all market activities and for nonmarket activities of interest, including all jobs, unpaid family work, schooling, training, cottage industry, housework, and child care (but excluding recreational activities and sleep), the questionnaire documents the number of hours spent at the activity in the last 7

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\*This survey was designed by William P. Butz and Julie DaVanzo of The Rand Corporation in collaboration with, initially, persons at the Department of Statistics of the Government of Malaysia, and subsequently, the staff of Survey Research Malaysia, Sdn. Bhd. The survey was designed to provide data to investigate the influence of public-program and family characteristics on couples' fertility, breastfeeding, and contraceptive use. Because fertility, breastfeeding, and contraceptive-use decisions are made jointly with many other family decisions, the underlying research approach emphasized the interrelatedness among life areas. Therefore, in addition to detailed retrospective data on pregnancy outcomes, durations of breastfeeding and postpartum amenorrhea, and types of contraceptives used and durations of use, extensive data were also collected on other related life areas, such as marriages, separations from spouse, characteristics of houses lived in, child care, income and wealth, and employment and nonmarket time use of all family members.

The survey consisted of three rounds, each 4 months apart. Twelve hundred sixty-two households completed Round I; 1207 of these were also interviewed in Rounds II and III. The sample households are contained in 52 areas of Peninsular Malaysia (called Primary Sampling Units, or PSUs). Forty-nine of these areas were selected by area probability sampling methods. Three areas were purposely selected to give additional representation to Indian families and to families living in fishing communities. For more information about the survey see Butz and DaVanzo (1978).

\*\*The other questionnaires are reproduced in Butz, DaVanzo, Fernandez, Jones, and Spoelstra (1978).

\*\*\*Round I lasted 4 months, from August to December 1976; hence the 4-month reference period varies from April through August 1976 to August through December 1976, depending on when the household was interviewed for Round I.

days it was performed, the number of weeks the activity was performed in the last 4 months, the rate of pay (if any) in cash and/or kind for the activity, distance from home to the place of the activity, amounts of help received and from whom, and presence of children less than 11 years old while the activity was being performed. The Female Time Budget documents the time use of female respondents and of their children living with them.\*

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\* Another questionnaire (MF5), not used for this paper, elicited information on husbands' time use. However, we do use here information from the Female Time Budget questionnaire on the help that the husband gives to his wife with activities she performs.

PREVIEW OF THE EMPIRICAL ANALYSES

Two types of empirical analyses are presented in this paper. The first is concerned with the compatibility of market and nonmarket activities with child care and presents cross-tabular information showing the likelihood that women with children of particular ages will have these children along when they perform these activities, by type of activity and ages of the children. We also consider how the accompaniment of children affects the number of hours that the woman spends performing the activity.

In the second type of analysis, we estimate ordinary least squares regression equations to explain variations in the amount of time the household as a whole devotes to five household activities (washing and ironing clothes, shopping, cooking and preparing meals, cleaning, and caring for children), as a function of the size and age structure of the household, presence of modern labor-saving devices (such as washing machines), area of residence, and husband's and wife's education. These can be viewed, roughly speaking, as equations explaining the household's "demand" for the commodities (e.g., clean clothes, meals) produced by time devoted to the activities in question.\* We also estimate equations to explain the number of hours and proportion of total activity hours that the wife, husband, and children devote to these activities. These time inputs are a function of the explanatory variables just discussed, as well as of some variables measuring the relative opportunity costs of the time of various household members, since we have hypothesized that these costs should be a major influence on *intra-household* allocation of time.\*\*

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\* In adding the hours spent by various household members and using that total input as a proxy for the amount of output, we implicitly assume that the hours various household members spend on household tasks are equally productive.

\*\* Time and money constraints precluded us from attempting any joint estimation of the demand and supply equations for a given activity or across activities for a given individual. Although such procedures should improve the efficiency of resulting estimates, the single-equation approach used here should produce unbiased estimates

as long as all independent variables are uncorrelated with the equation's error. (However, this assumption is questionable for several of our explanatory variables.)

We would like to note here several other shortcomings of the particular empirical specifications used in the preliminary analyses presented in this paper:

(1) The samples for equations explaining husbands' and children's hours of help with various household activities contain all households in the survey sample, including households that do not contain husbands or children (of helping ages). In all regressions, we include explanatory variables that tell whether the household includes a husband or children (of helping ages); these provide a crude way of correcting for the fact that some households have a dependent variable whose value is zero simply because they do not include the members whose contribution is being explained.

(2) Wage rates (of wives, husbands, or children) are set equal to zero for persons who did not work for pay (in cash or kind) in the 4-month reference period, and hence do not measure the value of market opportunities for nonworkers.

(3) The number of hours the wife works outside the home for pay, in cash or kind, is treated as exogenous in the equations explaining the number of hours she and other household members devote to nonmarket production, despite the fact that decisions regarding the number of hours the woman works outside her home are likely to be made jointly with the decisions under consideration.

(4) Equations explaining proportions of the total activity done by the wife or husband are estimated by ordinary least squares, so some predicted values may fall outside the possible 0-to-1 range.

EMPIRICAL RESULTS

COMPATIBILITY OF VARIOUS MARKET ACTIVITIES WITH CHILD CARE

The proportion of women with children less than 11 years of age who have them along when they perform various market activities is shown in column 2 of Table 1. Nearly half of the women who have sales occupations or production occupations (mostly weavers, food and beverage processors, and dressmakers), and have children aged 10 or younger, have their children with them when they work. On the basis of this crude measure, sales and production occupations appear to be the most compatible with child care--perhaps because these activities can often be performed at home--whereas other occupations (including agricultural jobs) are less compatible. The lesser compatibility of agricultural activities with child care is a bit surprising. It is often presumed that child care and market work are more compatible in developing countries than in developed countries precisely because more women engage in agricultural activities, which are assumed to be very compatible with child care.

Table 1  
COMPATIBILITY OF VARIOUS OCCUPATIONS WITH CHILD CARE: OCCUPATIONAL CHOICE  
AND INCIDENCE OF CHILD ACCOMPANIMENT

Occupational Group (Codes)	Number (Percent) of Women With Children Aged $\leq$ 10 Who Engage in This Activity (% base = 1073) <sup>a</sup>	Percent of These Women Whose Children Accompany Them When They Perform the Activity	Number (percent) of Women With No Children Aged $\leq$ 10 Who Engage in This Activity (% base = 189) <sup>a</sup>
Professionals (1-19)	33 (3.1%)	9.1%	9 (4.8%)
Managers (21-22)	2 (0.2%)	(b)	1 (0.5%)
Clerical (30-39)	9 (0.8%)	0.0%	7 (3.7%) <sup>c</sup>
Sales (40-46)	123(11.5%)	48.8%	25(13.2%)
Service (50-59)	41 (3.8%)	22.0%	7 (3.7%)
Agricultural (60-65)	1203(112.%)	2.4%	205(108.%) <sup>a</sup>
Production (70-98)	246(22.9%)	49.2%	43(22.8%)

<sup>a</sup>Many women report more than one market activity; each activity is separately considered here. Hence the number of activities of a certain type can exceed the number of women in the sample. For this reason, the percentages in columns (1) and (3) for agriculture exceed 100 percent.

<sup>b</sup>Base = 2.

<sup>c</sup>Is significantly greater (5-percent level) than the corresponding percentage for women with children aged  $\leq$  10. No other differences are significant at the 5-percent level.

Further analyses of accompaniment of children when the mother performs various market activities should seek to explain (a) which women "choose" to take their children with them, including an explicit consideration of the distance of the place of work from home; (b) how these considerations may affect occupational choice. The percentages in columns 1 and 3 of Table 1 do suggest that women with young children are less likely to have occupations, such as clerical or professional occupations, that are relatively incompatible with child care (although the difference between the percentages in columns 1 and 3 is statistically significant only for clerical occupations).

In Table 2 we look in more detail at the three broad occupational groups (agriculture, production, and sales) to which Malaysian women with children less than 11 years old (and indeed Malaysian women in general) are most likely to belong. (Small sample sizes preclude us from considering the other occupational groups.) We consider (a) how the likelihood that the child(ren) will accompany the mother when she performs the activity in question varies with the age(s) of the child(ren) and (b) how child accompaniment and the child(ren)'s age(s) are related to the number of hours the woman devotes to the activity over the 4-month reference period. (Full-time work would be approximately 680 hours [40 hours/week x 17 weeks].)

First, considering the proportions of women with accompanying children who are less than 11 years of age, we see that for all three occupations, women with one or more children aged 2 to 5 are generally the most likely to take the child(ren) along. This is generally true regardless of whether the women have other children aged 10 or less. Six- to ten-year-olds are typically least likely to accompany the mother, presumably because they are better able to take care of themselves, or they may be in school.

Next we consider the number of hours that women devote to these three market activities and how these hours vary by type of activity and the ages of the woman's children, and by whether these children are with her when she works. Child accompaniment may affect the number of hours a woman devotes to an activity because it affects her "efficiency" in performing the activity. If the number of hours when a child

accompanies the mother are less "effective," i.e., produce less output, than the same number of hours spent without the child, her marginal productivity and hence her wage rate will be reduced. Whether she works more or less will depend on whether the income or substitution effect predominates.

First, we note that women spend about twice as many hours in sales occupations as they spend in agricultural or production activities. Second, we consider how the ages of children affect the number of hours that a woman works in these three activities when no children accompany her (see the second column in Table 2). In agricultural occupations, women with infants at home work less than other women engaged in the same occupation. The sample sizes for the other occupations are too small to permit valid comparisons, but they do suggest that women with children aged 10 or less at home spend less time in sales activities but more time in production activities compared with women in those occupations who have no children under age 10 at home. Numbers of children at home (as judged from the number of age groups represented) do not reduce hours markedly, except for those in agricultural occupations with children aged <2 and 6 to 10. Having three (or more) children at home, all in different age groups, does appear to cause a substantial reduction (to around 3-1/2 hours a week) in the amount of time devoted to production activities.

Third, we consider how child accompaniment affects mothers' hours of work. Women whose children accompany them when they perform agricultural activities do usually work fewer hours than those with similarly aged children who do not accompany the mother while she performs these tasks. Accompaniment of younger children appears to reduce hours worked more than accompaniment of older children (in fact, women with 6- to 10- year-olds work more hours when those children go along). The number of children accompanying (as judged from the number of age groups represented) does not appear to have much additional effect.\*

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\* Sample sizes are too small to permit similar comparisons for other occupational groups, although figures not shown here for sales activities suggest that women who take children along work *more* hours than those who don't.

Table 2  
 AVERAGE TIME THAT THE FEMALE HEAD OF HOUSEHOLD SPENT IN PARTICULAR MARKET ACTIVITIES,  
 BY AGES OF ACCOMPANYING CHILDREN\*

Market Activity/Type of Family	Age Group of Children Accompanying Mother								Total	
	None		Youngest Only		Eldest Only		Both			
	Percent of Row Total	Average Hours	Percent of Row Total	Average Hours	Percent of Row Total	Average Hours	Percent of Row Total	Average Hours	Number of Women	Average Hours
<i>Agriculture</i>										
No children aged ≤ 10	na	224.5	na	---	na	---	na	---	205	224.5
Have children aged ≤ 10										
Children aged <2 only	83	209.4	17	(a)	na	---	na	---	52	190.8
Children aged 2-5 only	69	278.6	31	152.7	na	---	na	---	144	239.3
Children aged 6-10 only	85	229.1	15	244.4	na	---	na	---	302	231.4
Children aged <2 and 2-5	68	230.6	4	(a)	17	121.8	11	(a)	79	204.2
Children aged <2 and 6-10	86	156.3	3	(a)	11	(a)	0	---	36	177.1
Children aged 2-5 and 6-10	72	278.0		129.7	4	200.0	12	124.0	391	237.7
			1 Age Group Accompanied		2 Age Groups Accompanied		All Age Groups Accompanied			
Children aged <2, 2-5 and 6-10	73	209.5	15	129.6	9	108.1	3	116.2	199	185.9
<i>Production</i>										
No children aged ≤ 10	na	156.1	Youngest Only		Eldest Only		Both			
Have children aged ≤ 10			na	---	na	---	na	---	43	156.1
Children aged <2 only	57	(a)	43	(a)	na	---	na	---	14	273.3
Children aged 2-5 only	36	(a)	64	175.2	na	---	na	---	28	169.9
Children aged 6-10 only	82	273.8	18	(a)	na	---	na	---	50	242.2
Children aged <2 and 2-5	41	213.5	9	(a)	22	(a)	28	(a)	32	144.6
Children aged <2 and 6-10	50	(a)	42	(a)	0	---	8	(a)	12	181.3
Children aged 2-5 and 6-10	52	182.2	30	75.6	2	(a)	16	(a)	63	148.8
			1 Age Group Accompanied		2 Age Groups Accompanied		All Age Groups Accompanied			
Children aged <2, 2-5 and 6-10	30	58.1	32	50.0	28	356.7	11	(a)	47	156.0
<i>Sales</i>										
No children aged ≤ 10	na	636.5	Youngest Only		Eldest Only		Both			
Have children aged ≤ 10			na	---	na	---	na	---	25	636.5
Children aged <2 only	75	(a)	25	(a)	na	---	na	---	8	(a)
Children aged 2-5 only	63	(a)	37	(a)	na	---	na	---	8	(a)
Children aged 6-10	77	474.6	23	(a)	na	---	na	---	31	556.7
Children aged <2 and 2-5	50	(a)	0	---	10	(a)	40	(a)	10	340.3
Children aged <2 and 6-10	42	(a)	17	(a)	8	(a)	33	(a)	12	614.8
Children aged 2-5 and 6-10	36	339.5	28	468.6	13	(a)	23	(a)	39	494.0
			1 Age Group Accompanied		2 Age Groups Accompanied		All Age Groups Accompanied			
Children aged <2, 2-5 and 6-10	27	(a)	13	(a)	40	(a)	20	(a)	15	297.2

na = not applicable.

(a) = Sample size < 10.

\* Hours data are for a four-month reference period.

COMPATIBILITY OF NONMARKET ACTIVITIES WITH CHILD CARE

Table : presents figures for two housework activities--shopping and washing--usually performed outside the home in Malaysia. Here, number and ages of children may affect the household's demand for the commodities (clean clothes and groceries) produced by time inputs to washing and shopping; e.g., more children mean more clothes to be washed. In addition, child accompaniment while the activity is performed may affect the amount of time spent on it. Child accompaniment may increase the amount of time it takes the mother to produce a given amount of a commodity. However, it may also affect the amount demanded (through income and substitution effects). We cannot predict *a priori* whether women whose children accompany them will spend more or less time in accomplishing these tasks than otherwise similar women whose children do not accompany them.

First, looking at the likelihood of child accompaniment, we see that, for all except one age group (6 to 10 only), children are less likely to be with mothers when they go shopping than when they do washing, perhaps because the former activity is more likely to be (farther) away from home than the latter.

In both of these activities 2- to 5-year-olds are most likely, and 6- to 10-year-olds least likely, to accompany their mothers. Women with the greatest numbers of children under 11 years of age are the most likely to take some children along when they do their washing.

Surprisingly, women with no children under age 11 spend more hours washing clothes than women with young children (regardless of whether those children accompany the mother), though the former may have older children (a fact that we control for later in our regression analyses). Among women with children less than age 11, women with 6- to 10-year-olds typically spend relatively more time performing these activities (this is especially true for women who do not take their children along).

Of women with young children, those whose children accompany them almost always spend more hours performing these activities than women whose children don't accompany them. The relative differences are nearly always greater for shopping than for washing. For both activities, 2- to 5-year-olds, the group most likely to accompany the

Table 3

AVERAGE TIME THAT THE FEMALE HEAD OF HOUSEHOLD SPENT IN PARTICULAR HOUSEHOLD ACTIVITIES,  
BY AGES OF ACCOMPANYING CHILDREN \*

Household Activity/Type of Family	Age Group of Children Accompanying Mother								Total	
	None		Youngest Only		Eldest Only		Both		Number of Women	Average Hours
	Percent of Row Total	Average Hours	Percent of Row Total	Average Hours	Percent of Row Total	Average Hours	Percent of Row Total	Average Hours		
<i>Washing</i>										
No children aged <10	na	213.8	na	---	na	---	na	---	189	213.8
Have children aged <10										
Children aged < 2 only	56	115.8	44	132.0	na	---	na	---	86	123.0
Children aged 2-5 only	53	106.9	47	156.8	na	---	na	---	126	130.2
Children aged 6-10 only	88	133.0	12	137.8	na	---	na	---	242	133.5
Children aged <2 and 2-5	62	128.5	10	128.5	13	128.2	16	140.3	102	130.3
Children aged <2 and 6-10	75	106.5	23	164.9	0	---	2	(a)	43	120.3
Children aged 2-5 and 6-10	55	132.0	27	161.8	5	109.8	13	153.4	296	142.0
			1 Age Group Accompanied	2 Age Groups Accompanied	All Age Groups Accompanied					
Children aged <2, 2-5 and 6-10	50	146.2	21	154.0	21	214.1	9	124.3	178	159.6
<i>Shopping</i>			Youngest Only	Eldest Only	Both					
No children aged ≤ 10	na	58.9	na	---	na	---	na	---	189	58.9
Have children aged ≤ 10										
Children aged < 2 only	66	45.2	34	73.9	na	---	na	---	86	54.9
Children aged 2-5 only	60	48.3	40	86.6	na	---	na	---	126	63.5
Children aged 6-10 only	84	66.5	16	85.2	na	---	na	---	242	69.5
Children aged <2 and 2-5	64	50.9	9	(a)	18	91.4	10	72.7	102	63.0
Children aged <2 and 6-10	88	52.8	9	(a)	2	(a)	0	---	43	55.2
Children aged 2-5 and 6-10	61	59.3	25	110.9	5	68.5	9	88.5	296	75.3
			1 Age Group Accompanied	2 Age Groups Accompanied	All Age Groups Accompanied					
Children aged <2, 2-5 and 6-10	65	46.3	23	65.5	11	72.0	1	(a)	178	53.7

na = not applicable

(a) = Cell size ≤ 10

\*Hours data are for a four-month reference period.

mother, most impair her efficiency (i.e., increase her hours), whereas 6- to 10-year olds, the group least likely to accompany, have the smallest effect.

These results on compatibility of nonmarket activities with child care are generally consistent with those in the previous subsection on market activities: (a) children are less likely to accompany the mother as the distance from home to the place where the activity is conducted increases; (b) 2- to 5-year-olds are the most likely, 6- to 10-year olds the least likely, to accompany their mother. However, unlike market activities, where women typically devote less time to an activity when their children go along, women whose children accompany them when they perform nonmarket tasks typically take longer. We see in the regressions below that this may be because women who take their children along do so for lack of other household or nonhousehold members to help them either with the activity in question or with child care.

#### REGRESSIONS EXPLAINING VARIATIONS IN HOUSEHOLD MEMBERS' TIME INPUTS TO NONMARKET PRODUCTION

Next we turn to regressions explaining the number of hours the wife devotes to the nonmarket activities just discussed (washing clothes and shopping). We also estimate equations explaining variations in the number of hours the household as a whole spends on these activities (household "demand") and equations explaining variations in the numbers of hours that the household as a whole, the wife, husband, and (older) children spend preparing and cooking meals, cleaning house, and caring for children, as well as equations explaining the wife's and husband's shares of total activity hours.

Before discussing the regressions, let's look, in Table 4, at the mean number of hours that households and their members devote to the five nonmarket activities considered in the regressions.

Child care is the activity to which the household and its various members devote the most time (48 hours per week for the household), followed by cooking and preparing meals (28 hours per week); washing, cleaning, and shopping each take from 9 to 13 hours a week.

Table 4

MEAN NUMBER OF HOURS HOUSEHOLDS AND THEIR MEMBERS SPEND IN PARTICULAR NONMARKET ACTIVITIES  
IN THE FOUR-MONTH REFERENCE PERIOD

Activity	Entire Household <sup>a</sup>		Wife		Husband		Children	
Washing and ironing	216	(12%)	151 (70%)	(13%)	1.76 (0.8%)	(1.1%)	54.4 (25%)	(15%)
Shopping	151	(8%)	80.1 (53%)	(6.7%)	55.8 (37%)	(35%)	20.6 (14%)	(5.7%)
Cooking and preparing meals	480	(26%)	313 (65%)	(26%)	7.43 (1.5%)	(4.7%)	100 (21%)	(28%)
Cleaning house	202	(11%)	132 (65%)	(11%)	4.09 (2.0%)	(2.6%)	71.3 (35%)	(20%)
Child care	817	(44%)	522 (64%)	(44%)	89.9 (11%)	(57%)	116 (14%)	(32%)
<b>Total</b>	<b>1866</b>		<b>1198 (64%)</b>		<b>159 (8.5%)</b>		<b>362 (19%)</b>	

Note: Numbers in parentheses beneath hours figures are percentages of the row total. Numbers in parentheses to the right of hours figures are column percentages. The mean number of hours for the entire household will be greater than the sum of the wife's, husband's, and children's hours if other household or non-household members help with the activity. For shopping and housecleaning the sum of the wife's, husband's, and children's hours slightly exceeds the number of hours for the entire household because of round-off error.

<sup>a</sup>Includes nonhousehold help.

Wives contribute around two-thirds of all hours that the household devotes to these nonmarket activities, children nearly 20 percent, and husbands less than 10 percent. Both in absolute terms and relative to total household hours, husbands' contributions are greatest in child care (around 5 hours a week) and in shopping (3-1/4 hours a week). Husbands contribute around three-eighths of the family's total shopping hours, but give little help with washing, cooking, and cleaning.

About 21 hours of nonmarket activity are performed each week by the household's children. Children help at least an hour per week with each of the five listed activities. Sixty percent of their time is spent caring for siblings and helping with the cooking. Another twenty percent is spent helping to clean the house; they contribute one-third of all household hours to this task. They also contribute one-fourth of all household hours spent washing and ironing.

Nonhousehold members (including paid helpers) and household members other than the wife, husband, and children frequently help with child care and cooking. For these two activities, the total number of hours spent by the wife, husband, and children are less than 90 percent of the total number of hours that the activity is performed for the household.

Total Number of Household Hours Devoted to Various Nonmarket Activities ("Demand")

Household size and composition appear to be the most important determinants of the total number of hours that the household as a whole devotes to nonmarket activities, with the exception of shopping (where race and location of residence are the main correlates). For example, we see in Table 8 that it is the numbers of persons in the household, rather than the number of rooms per se, that affect the number of hours that household members spend in cleaning. It is interesting that households spend significantly more time cleaning when their houses are provided by their employers. Households with washing machines (1.8 percent of the sample) spend nearly 25 percent less time washing clothes (although the difference is not statistically significant at the 5 percent level). No other house characteristic (e.g., type of toilet

Table 5

DETERMINANTS OF TIME SPENT WASHING AND IRONING BY HOUSEHOLDS AND HOUSEHOLD MEMBERS

Explanatory Variables	Total Household Hours		Wife's Hours		Children's Hours		Wife's Proportion of Total Hours	
	Coefficient	"t"	Coefficient	"t"	Coefficient	"t"	Coefficient	"t"
<i>Household Composition</i>								
No. children aged <2	10.34	( 0.92)	- 5.19	(-0.25)	- 1.22	(-0.12)	-0.053	( -3.05)
No. children aged 2-5	- 1.10	(-0.15)	-10.63	(-0.79)	9.40	( 1.48)	-0.012	( -1.07)
No. children aged 6-10	16.19	( 1.85)	5.57	( 0.34)	7.15	( 0.86)	0.001	( 0.09)
No. children aged 10-14	25.82	( 2.59)	17.40	( 0.94)	25.96	( 2.68)	-0.065	(- 4.33)
No. children aged 15+	37.58	( 6.98)	8.23	( 0.81)	51.00	( 9.61)	-0.11	(-13.25)
No. Relatives aged 15-49 <sup>a</sup>	30.44	( 5.32)	14.80	( 1.33)	- 6.90	(-1.19)	-0.049	(- 5.28)
No. Relatives aged 50+ <sup>a</sup>	27.25	( 2.81)	30.48	( 1.68)	7.98	( 0.84)	-0.033	(- 2.22)
No. Other Adults <sup>b</sup>	-34.26	(-0.63)	-25.56	(-0.25)	8.64	( 0.16)	-0.125	(- 1.52)
No. Servants <sup>b</sup>	128.69	( 1.80)	-12.48	(-0.09)	-27.24	(-0.39)	-0.205	(- 1.89)
Dummy = 1 if woman has husband <sup>b,c</sup>	31.19	( 0.54)	65.79	( 0.61)	-16.25	(-0.29)	0.185	( 2.10)
No. children in school <sup>d</sup>	- 7.99	(-0.81)	- 6.70	(-0.37)	-11.78	(-1.23)	0.015	( 1.05)
<i>Area of Household's Residence</i>								
Metropolitan <sup>e</sup>	1.34	( 0.08)	38.59	( 1.33)	-12.97	(-0.85)	0.001	( 0.05)
Other town <sup>f</sup>	-30.03	(-2.04)	10.54	( 0.39)	-15.09	(-1.05)	0.006	( 0.28)
East coast	6.75	( 0.34)	- 2.18	(-0.05)	0.90	( 0.05)	.023	( 0.76)
<i>Education (Years of Schooling)</i>								
Wife	0.73	( 0.38)	- 0.93	(-0.26)	-0.28	(-0.15)	-0.011	(- 3.70)
Husband	5.51	( 3.05)	- 1.42	(-0.42)	0.77	( 0.43)	-0.006	(- 2.29)
<i>Race</i>								
Chinese	-56.45	(-4.00)	-74.51	(-2.82)	-24.14	(-1.74)	-0.003	(- 0.11)
Indian	- 5.85	(-0.32)	-32.02	(-0.93)	25.48	( 1.41)	-0.013	(- 0.42)
Other than Chinese, Indian, or Malay	48.72	( 0.99)	-27.74	(-0.31)	48.06	( 1.00)	-0.109	(- 1.46)
<i>Month of Interview</i>								
August	15.53	( 0.55)	90.54	( 1.74)	37.11	( 1.36)	0.061	( 1.44)
September	3.65	( 0.15)	54.97	( 1.27)	-28.21	(-1.24)	0.106	( 3.01)
October	-28.47	(-1.24)	2.00	( 0.04)	- 7.14	(-0.32)	0.065	( 1.86)
November	-37.68	(-1.63)	18.95	( 0.44)	-22.56	(-0.99)	0.101	( 2.87)
Wife's Age	0.72	( 0.83)	- 3.33	(-2.04)	0.01	( 0.00)	-0.004	(- 3.06)
<i>Children Accompanying Mother Washing</i>								
No. aged <2	18.77	( 1.00)	37.59	( 1.08)	---	---	0.041	( 1.42)
No. aged 2-5	14.07	( 1.36)	- 2.93	(-0.15)	---	---	0.038	( 2.33)
No. aged 6-10	- 8.15	(-0.60)	54.62	( 2.18)	---	---	0.043	( 2.08)
<i>Water Supply and Washing Machine</i>								
Dummy = 1 if household has washing machine	-50.87	(-1.25)	-19.72	(-0.26)	-11.60	(-0.29)	0.045	( 0.72)
Water supply scale <sup>g</sup>	- 1.18	(-0.32)	1.09	( 0.10)	5.64	( 1.54)	0.005	( 0.83)
<i>Wife's Work Outside Home</i>								
Distance from home to work <sup>h</sup>	---	---	- 3.50	(-0.34)	8.70	( 1.60)	-0.023	(- 2.70)
No. Hours <sup>i</sup>	---	---	- 0.03	(-1.07)	0.02	( 1.62)	-0.001	(- 4.80)
<i>Wage Rates of Family Members<sup>j</sup></i>								
Wife	---	---	- 3.96	(-0.71)	- 2.71	(-0.92)	-0.003	(- 0.40)
Children (average)	---	---	-14.70	(-1.16)	- 4.06	(-0.61)	0.029	( 2.78)
Husband	---	---	- 3.07	(-0.66)	1.53	( 0.63)	-0.015	(- 3.96)
Constant	158.51		248.98		- 6.82		1.154	
R <sup>2</sup>	.147		.036		.160		.345	
$\bar{R}^2$	.127		.009		.138		.326	
Mean of dependent variable	216.1		151.		54.4		.734	

Notes to Table 5

- a. Does not include husband, wife, or their offspring.
- b. "No. other adults" includes all adults other than relatives and children of the husband and wife; hence it includes the husband and wife as well as servants and a few boarders and lodgers. Therefore the total effect for husband and servants is the coefficient of those variables plus the coefficient of "no. other adults."
- c. This dummy equals 1 if a husband is listed as a household member in the household roster.
- d. To compare the effect of having children in school with that of having no children at all, add this coefficient to that of the appropriate "number of children" variable.
- e. A dummy that equals 1 if the household resides in one of the three largest cities in Malaysia --Kuala Lumpur, Ipoh, or Penang.
- f. A dummy that equals 1 if the household resides in a town or village whose population was over 10,000 in 1967 (other than the three largest cities in Malaysia) or in an area of less than 10,000 where it is estimated that at least 50 percent of the work force is engaged in non-agricultural occupations.
- g. A scale that = 0 if household (HH) has no piped water,  
= 1 if HH has piped water outside the home and not exclusive to it,  
= 2 if HH has piped water outside the home exclusive to the HH,  
= 3 if HH has indoor piped water, not exclusive to this HH,  
= 4 if HH has indoor piped water exclusively for its use.
- h. A scale that = 0 if wife doesn't work or works at home,  
= 1 if her place of work is less than a mile from home,  
= 2 if distance to work is 1 to 3 miles,  
= 3 if distance to work is 3 miles or more.
- i. Number of hours wife worked outside her home for pay (in cash or kind) in the 4-month reference period.
- j. Hourly wage rate (includes payments in kind, as well as cash).

Table 6

DETERMINANTS OF TIME SPENT SHOPPING BY HOUSEHOLDS AND HOUSEHOLD MEMBERS

Explanatory Variables	Total Household Hours		Wife's Hours		Husband's Hours		Wife's Proportion		Husband's Proportion	
	Coefficient	"t"	Coefficient	"t"	Coefficient	"t"	Coefficient	"t"	Coefficient	"t"
<i>Household Composition</i>										
No. children aged <2	- 4.52	(-0.34)	24.60	( 1.26)	12.70	( 1.36)	-.049	(-2.31)	.039	( 2.18)
No. children aged 2-5	- 2.47	(-0.29)	-14.51	(-1.19)	- 5.33	(-0.93)	-.009	(-0.68)	-.004	(-0.31)
No. children aged 6-10	6.44	( 0.85)	4.11	( 0.38)	7.02	( 1.37)	-.001	(-0.10)	.003	( 0.33)
No. children aged 10-14	11.36	( 1.52)	2.01	( 0.19)	- 6.78	(-1.26)	-.010	(-0.86)	-.020	(-1.89)
No. children aged 15+	6.74	( 1.00)	11.45	( 1.19)	3.79	( 0.78)	-.009	(-0.87)	-.038	(-0.45)
No. relatives aged 15-49 <sup>a</sup>	11.80	( 1.69)	- 1.29	(-0.12)	- 7.05	(-1.34)	-.025	(-2.16)	-.038	(-3.66)
No. relatives aged 50+ <sup>a</sup>	9.48	( 0.78)	- 8.19	(-0.47)	5.39	( 0.62)	-.099	(-5.19)	-.029	(-1.70)
No. other Adults <sup>b</sup>	18.40	( 0.28)	26.67	( 0.28)	- 6.48	(-0.13)	-.022	( 0.21)	-.012	(-0.14)
No. servants <sup>b</sup> Dummy = 1 if woman has husband <sup>b,c</sup>	-22.69	(-0.26)	61.96	( 0.49)	129.70	( 2.05)	.001	( 0.00)	-.043	(-0.35)
-11.01	(-0.16)	-14.26	(-0.14)	56.75	( 1.11)	-.163	(-1.48)	.288	( 2.95)	
<i>Area of Household Residence</i>										
Metropolitan <sup>e</sup>	0.08	( 0.00)	74.45	( 2.67)	4.18	( 0.30)	.174	( 5.76)	-.103	(-3.83)
Other town <sup>f</sup>	- 2.39	(-0.13)	30.06	( 1.17)	6.18	( 0.48)	.043	( 1.54)	-.035	(-1.43)
East coast	62.82	( 2.56)	18.20	( 0.52)	- 3.80	(-0.21)	.055	( 1.45)	-.039	(-1.15)
<i>Education (Years of Schooling) of</i>										
Wife	-0.088	(-0.03)	0.97	( 0.29)	- 0.64	(-0.37)	-.001	(-0.35)	.001	( 0.16)
Husband	0.47	( 0.21)	- 2.29	(-0.72)	0.33	( 0.20)	-.004	(-1.22)	.0003	( 0.12)
<i>Race</i>										
Chinese	-34.41	(-1.89)	-19.05	(-0.76)	-52.50	(-4.15)	.166	( 6.08)	-.153	(-6.34)
Indian	-34.35	(-1.51)	2.48	( 0.08)	14.34	( 0.87)	-.096	(-2.71)	.128	( 4.03)
Other than Chinese, Indian, or Malay	-91.46	(-1.53)	-29.41	(-0.34)	-59.50	(-1.38)	.045	( 0.48)	-.159	(-1.91)
<i>Month of Interview</i>										
August	7.62	( 0.22)	106.32	( 2.16)	24.35	( 0.98)	.055	( 1.02)	-.038	(-0.78)
September	22.55	( 0.77)	30.72	( 0.75)	26.95	( 1.30)	-.034	(-0.74)	.064	( 1.60)
October	-28.37	(-0.99)	-13.16	(-0.32)	8.46	( 0.41)	-.050	(-1.14)	.08	( 1.54)
November	12.71	( 0.44)	- 8.93	(-0.21)	27.80	( 1.33)	-.102	(-2.26)	.089	( 2.21)
Wife's age	0.25	( 0.24)	- 2.07	(-1.35)	- 0.39	(-0.50)	-.004	(-0.19)	-.001	(-0.66)
<i>Children Accompanying Mother Shopping</i>										
No. aged < 2	14.30	( 0.53)	-25.10	(-0.64)	---	---	.140	( 3.33)	---	---
No. aged 2-5	31.08	( 2.27)	17.27	( 0.88)	---	---	.081	( 3.83)	---	---
No. aged 6-10	- 0.64	(-0.03)	- 4.97	(-0.19)	---	---	.088	( 3.03)	---	---
<i>Other</i>										
No. Cars owned by household	23.31	( 1.05)	33.11	( 1.04)	28.04	( 1.75)	-.082	(-2.38)	.055	( 1.79)
Dummy = 1 is household eats homegrown crops	33.91	( 1.88)	-13.24	(-0.51)	15.48	( 1.18)	.049	( 1.71)	-.081	(-3.24)
Dummy = 1 if household eats homegrown animals	-20.49	(-1.28)	-10.18	(-0.44)	- 6.04	(-0.52)	.034	( 1.37)	-.006	(-0.24)
Dummy = 1 if household runs a food store or business	38.18	( 0.38)	- 8.86	(-0.06)	18.27	( 0.25)	-.128	(-0.80)	.114	( 0.81)
House quality scale <sup>k</sup>	- 3.28	(-1.25)	---	---	---	---	---	---	---	---
<i>Wife's Work Outside Home</i>										
Distance from home to work <sup>h</sup>	---	---	- 0.33	(-0.03)	- 0.07	(-0.00)	.004	( 0.35)	.013	( 1.35)
No. hours <sup>i</sup>	---	---	0.02	( 0.56)	0.02	( 1.40)	-.0001	(-3.52)	.0001	( 2.78)
<i>Wage Rates of Family Members<sup>j</sup></i>										
Wife	---	---	- 5.79	(-1.10)	- 3.62	(-1.36)	.0001	( 0.00)	.007	( 1.28)
Children (average)	---	---	- 6.53	(-0.54)	- 4.18	(-0.70)	-.006	(-0.44)	-.007	(-0.56)
Husband	---	---	- 1.35	(-0.31)	- 0.34	(-0.15)	.008	( 1.70)	-.003	(-0.66)
Constant	80.74		62.86		- 3.38		.756		.049	
R <sup>2</sup>	.050		.026		.071		.234		.255	
R̄ <sup>2</sup>	.026		.000		.047		.212		.235	
Mean of Dependent Variable	151.1		80.1		55.8		.532		.281	

Notes: For footnotes a through j, see "Notes to Table 5," p. 20.

<sup>k</sup> A scale ranging from 0 to 13, with a mean of 3.7, where higher values indicate better housing quality (house has indoor piped water exclusively for its use, has walls of brick or concrete, has a shower or a long bath, has an indoor flush toilet exclusively for this household's use, has a higher rooms-per-person ratio).

Table 7  
DETERMINANTS OF TIME SPENT PREPARING AND COOKING MEALS BY HOUSEHOLDS AND HOUSEHOLD MEMBERS

Explanatory Variables	Total Household Hours		Wife's Hours		Children's Hours		Wife's Proportion of Total Hours	
	Coefficient	"t"	Coefficient	"t"	Coefficient	"t"	Coefficient	"t"
<i>Household Composition</i>								
No. children aged <2	53.31	(1.67)	41.29	(2.17)	-2.40	(-0.18)	-.015	(-1.09)
No. children aged 2-5	35.09	(2.80)	-6.66	(-0.57)	14.08	(1.72)	-.005	(-0.54)
No. children aged 6-10	4.23	(0.26)	21.17	(1.97)	7.94	(1.06)	-.012	(-1.54)
No. children aged 10-14	32.81	(1.71)	10.61	(0.96)	36.40	(4.76)	-.033	(-4.18)
No. children aged 15+	78.19	(7.56)	-8.91	(-0.91)	73.94	(10.79)	-.085	(-11.97)
No. relatives aged 15-49 <sup>a</sup>	70.95	(6.51)	-7.83	(-0.73)	-6.23	(-0.83)	-.076	(-9.85)
No. relatives aged 50+ <sup>a</sup>	88.79	(4.77)	8.83	(0.50)	-3.28	(-0.27)	-.093	(-7.36)
No. other adults <sup>b</sup>	174.41	(1.67)	110.16	(1.12)	-13.74	(-0.20)	.081	( 1.16)
No. servants <sup>b</sup>	-58.42	(-0.43)	-173.31	(-1.34)	-35.45	(-0.39)	-.385	(-4.15)
Dummy = 1 if woman has husband <sup>b,c</sup>	-103.11	(-0.93)	-73.87	(-0.71)	40.04	(0.55)	-.091	(- 1.21)
No. children in school <sup>d</sup>	22.22	(1.18)	---	---	---	---	---	---
<i>Area of Household's Residence</i>								
Metropolitan <sup>c</sup>	-74.95	(-2.54)	50.56	(1.81)	-28.70	(-1.48)	.016	( 0.83)
Other town <sup>f</sup>	4.91	(0.18)	25.05	(0.96)	-18.22	(-1.01)	.014	( 0.72)
East coast	25.24	(0.66)	40.37	(1.12)	3.33	(0.13)	.026	( 1.02)
<i>Education (Years of Schooling) of</i>								
Wife	7.56	(2.07)	-2.96	(-0.85)	1.25	(0.52)	-.010	(- 3.88)
Husband	1.22	(0.36)	1.41	(0.43)	2.38	(1.04)	-.0002	(- 0.10)
<i>Race</i>								
Chinese	-40.49	(-1.58)	-25.10	(-1.03)	-9.45	(-0.56)	-.002	(- 0.13)
Indian	85.33	(2.47)	36.00	(1.10)	16.15	(0.71)	.012	( 0.51)
Other than Chinese, Indian, Malay	-7.41	(-0.08)	-61.41	(-0.70)	123.58	(2.01)	-.071	(- 1.13)
<i>Month of Interview</i>								
August	-146.85	(-2.75)	-9.54	(-0.19)	-118.86	(-3.39)	.09	( 2.49)
September	-131.67	(-2.95)	6.05	(0.14)	-107.57	(-3.68)	.091	( 3.02)
October	-102.50	(-2.32)	-21.77	(-0.53)	-66.22	(-2.30)	.04	( 1.36)
November	-76.93	(-1.73)	33.38	(0.80)	-62.41	(-2.14)	.066	( 2.21)
<i>Wife's Age</i>	2.42	(1.46)	0.68	(0.43)	1.61	(1.47)	-.004	(- 3.11)
<i>Wife's Work Outside Home</i>								
Distance from home to work <sup>h</sup>	---	---	-10.07	(-1.00)	0.17	(0.03)	-.00001	(-1.67)
No. hours <sup>f</sup>	---	---	-0.095	(-3.43)	0.042	(2.16)	-.0001	(- 6.53)
<i>Wage Rates of Family Members<sup>j</sup></i>								
Wife	---	---	-7.07	(-1.30)	1.60	(0.42)	-.00001	(-0.00)
Children (average)	---	---	-11.32	(-0.92)	-4.42	(-0.51)	.039	( 0.44)
Husband	---	---	-3.40	(-0.76)	-2.23	(-0.72)	.002	( 0.69)
<i>Household owns a food-related business (dummy)</i>	-189.89	(-1.18)	---	---	---	---	---	---
Constant	15.95		145.97		-11.75		.968	
R <sup>2</sup>	.188		.043		.228		.354	
$\bar{R}^2$	.172		.021		.211		.340	
Mean of dependent variable	489		313		100		.730	

Note: For footnotes, see "Notes to Table 5," p. 22.

Table 8

## DETERMINANTS OF TIME SPENT CLEANING BY HOUSEHOLDS AND HOUSEHOLD MEMBERS

Explanatory Variables	Total Household Hours		Wife's Hours		Children's Hours		Wife's Proportion	
	Coefficient	"t"	Coefficient	"t"	Coefficient	"t"	Coefficient	"t"
<i>Household Composition</i>								
No. children aged < 2	16.76	(1.52)	55.26	(2.78)	15.66	(0.78)	-.022	(-1.40)
No. children aged 2-5	19.00	(2.76)	11.64	(0.95)	23.31	(1.78)	.0011	(0.11)
No. children aged 6-10	3.98	(0.63)	2.16	(0.19)	6.10	(0.54)	-.009	(-0.95)
No. children aged 10-14	24.85	(3.86)	4.36	(0.38)	26.81	(2.31)	-.050	(-5.55)
No. children aged 15+	25.29	(4.43)	-10.15	(-0.98)	39.57	(3.79)	-.091	(-11.14)
No. relatives aged 15-49 <sup>a</sup>	25.63	(4.22)	-7.59	(-0.67)	-9.23	(-0.81)	-.066	(-7.35)
No. relatives aged 50+ <sup>a</sup>	24.03	(2.31)	-7.55	(-0.41)	-6.40	(-0.34)	-.071	(-4.79)
No. other Adults <sup>b</sup>	57.24	(0.99)	-13.23	(-0.13)	-2.43	(-0.03)	-.039	(-0.48)
No. servants	-46.41	(-0.62)	-38.39	(-0.28)	-42.06	(-0.31)	-.201	(-1.89)
Dummy = 1 if woman has husband <sup>c</sup>	-60.57	(-0.99)	45.19	(0.41)	43.67	(0.39)	.014	(0.16)
<i>Area of Household's Residence</i>								
Metropolitan <sup>e</sup>	6.12	(0.38)	28.34	(0.97)	16.36	(-0.55)	.033	(1.39)
Other town <sup>f</sup>	-5.41	(-0.35)	-4.70	(-0.17)	-14.31	(-0.52)	.016	(0.75)
East coast	9.31	(0.44)	18.12	(0.48)	6.10	(0.16)	.039	(1.30)
<i>Education (Years of Schooling) of</i>								
Wife	4.36	(2.17)	6.20	(1.71)	6.23	(1.69)	-.011	(-3.68)
Husband	2.08	(1.10)	-2.12	(-0.62)	-1.61	(-0.46)	.002	(0.61)
<i>Race</i>								
Chinese	-58.26	(-4.11)	-67.98	(-2.66)	-16.96	(-0.66)	-.090	(-4.44)
Indian	2.58	(0.13)	-36.08	(-0.98)	57.69	(1.55)	-.021	(-0.75)
Other than Chinese, Indian, or Malay	82.95	(1.61)	-14.21	(-0.15)	45.65	(0.49)	-.184	(-2.52)
<i>Month of Interview</i>								
August	-10.83	(-0.37)	-18.02	(-0.34)	13.68	(0.25)	.085	(2.03)
September	-52.44	(-2.11)	-8.89	(-0.20)	-78.98	(-1.76)	.125	(3.68)
October	-53.94	(-2.19)	-58.29	(-1.33)	-52.14	(-1.17)	.053	(1.51)
November	-61.20	(-2.48)	-78.35	(-1.78)	-78.18	(-1.75)	.095	(2.71)
<i>Wife's Age</i>	2.08	(2.29)	2.19	(1.33)	2.86	(1.71)	-.003	(-2.44)
<i>Characteristics of House</i>								
House provided by employer	24.26	(1.30)	69.17	(2.08)	50.87	(1.51)	-.010	(-0.36)
No. rooms	0.33	(0.09)	-2.47	(-0.36)	-0.94	(-0.13)	.006	(1.04)
<i>Wife's Work Outside Home</i>								
Distance <sup>h</sup>	---	---	-10.98	(-1.04)	1.39	(0.13)	-.018	(-2.14)
No. hours <sup>i</sup>	---	---	0.014	(0.50)	0.078	(2.65)	-.0001	(-6.17)
<i>Wage Rates of Family Members<sup>j</sup></i>								
Wife	---	---	-7.10	(-1.25)	-6.56	(-1.14)	-.003	(-0.59)
Children (average)	---	---	-0.33	(-0.03)	3.84	(0.29)	.003	(0.29)
Husband	---	---	-1.60	(-0.34)	-1.97	(-0.41)	-.012	(-3.22)
Constant	29.46		84.43		-113.50		8.50	
R <sup>2</sup>	0.113		0.038		0.075		0.333	
$\bar{R}^2$	0.095		0.014		0.053		0.317	
Mean of dependent variable	202		132		71		.680	

Note: For footnotes, see "Notes to Table 5," p. 20.

Table 9

Explanatory Variables	DETERMINANTS OF TIME SPENT ON CHILDCARE BY HOUSEHOLDS, HOUSEHOLD MEMBERS, AND NONHOUSEHOLD MEMBERS															
	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)	
	Total Household Hours		Total Household Hours		Wife's Hours		Husband's Hours		Children's Hours		Total Hours by All Except Husband and Wife*		Wife's Proportion		Husband's Proportion	
	Coefficient	"t"	Coefficient	"t"	Coefficient	"t"	Coefficient	"t"	Coefficient	"t"	Coefficient	"t"	Coefficient	"t"	Coefficient	"t"
<i>Household Composition</i>																
No. children aged < 2	528.49	(11.29)	526.16	(11.19)	293.22	(7.71)	63.23	(3.84)	60.65	(2.43)	0.51	(0.46)	.076	(4.08)	.024	(3.23)
No. children aged 2-5	212.52	(7.31)	209.83	(7.21)	148.60	(6.40)	14.74	(1.46)	66.62	(4.38)	0.48	(0.70)	.106	(9.25)	.009	(1.97)
No. children aged 6-10	117.81	(3.05)	118.74	(3.08)	21.90	(0.71)	-6.61	(-0.50)	37.79	(1.88)	0.70	(0.78)	.044	(2.84)	-.005	(-0.80)
No. children aged 10-14	47.02	(1.05)	44.60	(0.99)	29.99	(0.84)	-12.71	(-0.82)	85.45	(3.64)	1.26	(1.21)	-.040	(-2.22)	-.016	(-2.47)
No. children aged 15+	-80.49	(-3.35)	-76.45	(-3.13)	-65.98	(-3.40)	-16.09	(-1.91)	17.49	(1.38)	0.18	(0.32)	-.038	(-3.87)	-.008	(-2.27)
No. relatives aged 15-49 <sup>a</sup>	11.07	(0.43)	30.82	(1.11)	-30.96	(-1.44)	-12.95	(-1.39)	-19.97	(-1.41)	-1.25	(-2.00)	-.021	(-2.01)	-.008	(-2.08)
No. relatives aged 50+ <sup>a</sup>	-28.60	(-0.64)	-32.82	(-0.73)	-36.96	(-1.03)	-40.78	(-2.63)	-14.05	(-0.60)	-1.35	(-1.30)	-.079	(-4.47)	-.024	(-3.57)
No. other adults <sup>b</sup>	318.37	(1.32)	325.31	(1.32)	62.23	(0.32)	-49.76	(-0.59)	35.12	(0.28)	-2.43	(-0.43)	-.049	(-0.50)	-.040	(-1.09)
No. servants <sup>b</sup>	-55.44	(-0.17)	-43.29	(-0.13)	-147.86	(-0.57)	104.08	(0.93)	-65.88	(-0.39)	10.62	(1.42)	-.109	(-0.85)	.053	(1.08)
Dummy = 1 if woman has husband <sup>b,c</sup>	-347.98	(-1.36)	-363.13	(-1.38)	-20.76	(-0.10)	134.40	(1.51)	-32.58	(-0.24)	-1.35	(-0.23)	.089	(0.87)	.095	(2.44)
No. children in school <sup>d</sup>	-85.09	(-1.93)	-86.54	(-1.96)	-17.91	(-0.51)	-8.71	(-0.57)	-29.30	(-1.27)	-1.55	(-1.51)	.021	(1.22)	.002	(0.30)
<i>Area of Household's Residence</i>																
Metropolitan <sup>e</sup>	-56.12	(-0.79)	-54.89	(-0.76)	33.58	(0.59)	-16.56	(-0.67)	16.34	(0.44)	0.23	(0.14)	-.074	(-0.26)	-.003	(-0.30)
Other town <sup>f</sup>	54.42	(0.83)	61.08	(0.93)	20.05	(0.38)	-3.89	(-0.17)	79.18	(2.30)	-0.80	(-0.52)	-.015	(-0.55)	.002	(0.21)
East coast	-71.24	(-0.80)	-71.80	(-0.81)	121.98	(1.72)	31.89	(1.04)	-51.45	(-1.11)	-0.034	(-0.00)	-.005	(0.15)	-.019	(-1.37)
<i>Education (Years of Schooling) of</i>																
Wife	-9.97	(-1.16)	-8.83	(-1.00)	-5.30	(-0.76)	1.22	(0.40)	-0.80	(-1.80)	-0.079	(-0.39)	-.019	(-0.54)	-.0004	(-0.34)
Husband	3.96	(0.50)	4.73	(0.58)	0.22	(0.03)	-2.66	(-0.94)	-1.28	(-0.30)	0.042	(0.22)	.001	(0.39)	-.0004	(-0.34)
<i>Race</i>																
Chinese	219.98	(3.70)	220.90	(3.67)	86.39	(1.79)	-19.65	(-0.94)	-40.40	(-1.28)	2.01	(1.43)	-.098	(-4.10)	-.048	(-5.29)
Indian	377.17	(4.63)	370.92	(4.55)	116.30	(1.76)	39.93	(1.40)	24.71	(0.58)	2.45	(1.28)	-.074	(-2.24)	.002	(0.13)
Other than Chinese, Indian, or Malay	250.08	(1.15)	225.46	(1.03)	132.77	(0.76)	22.03	(0.29)	13.06	(0.11)	-2.30	(-0.46)	-.019	(+0.22)	-.016	(-0.32)
<i>Month of Interview</i>																
August	416.42	(3.35)	428.82	(3.40)	195.07	(1.96)	28.10	(0.65)	106.06	(1.63)	0.92	(0.32)	.059	(1.20)	-.009	(-0.47)
September	272.04	(2.60)	270.07	(2.56)	193.70	(2.31)	10.23	(0.28)	28.80	(0.52)	0.90	(0.37)	.089	(2.14)	-.012	(-0.78)
October	353.75	(3.44)	345.21	(3.34)	177.29	(2.16)	21.86	(0.61)	102.07	(1.90)	2.54	(1.06)	.084	(2.06)	-.003	(-0.21)
November	249.99	(2.42)	243.54	(2.35)	191.73	(2.31)	19.29	(0.54)	86.62	(1.60)	1.91	(0.79)	.041	(1.00)	.031	(0.80)
Wife's Age	-6.44	(-1.67)	-5.75	(-1.46)	-7.29	(-2.34)	-1.39	(-1.03)	0.48	(0.24)	0.23	(2.56)	-.003	(-1.91)	-.0008	(-1.38)

Table 9--Continued

Explanatory Variables	(1) Total Household Hours		(2) Total Household Hours		(3) Wife's Hours		(4) Husband's Hours		(5) Children's Hours		(6) Total Hours by All Except Husband and Wife*		(7) Wife's Proportion		(8) Husband's Proportion	
	Coefficient	"t"	Coefficient	"t"	Coefficient	"t"	Coefficient	"t"	Coefficient	"t"	Coefficient	"t"	Coefficient	"t"	Coefficient	"t"
<i>Type of Other Child Care</i> (Dummy = 1 for each type used)																
Own children	273.61	(3.74)	280.58	(3.83)	4.82	(0.68)	24.88	(0.98)	299.01	(7.80)	27.45	(16.15)	-.079	(-2.71)	-.0002	(0.00)
Wife's or husband's parents	261.33	(3.51)	267.30	(3.60)	52.91	(0.89)	-6.68	(-0.26)	66.60	(1.70)	32.80	(18.94)	.019	(0.64)	.003	(0.27)
Other relatives	226.37	(2.30)	208.84	(2.11)	-26.62	(-0.34)	18.02	(0.53)	-33.59	(-0.65)	29.02	(12.67)	-.055	(-1.41)	.010	(0.65)
Neighbors	215.16	(1.10)	216.07	(1.10)	-45.61	(-0.29)	164.45	(2.42)	-80.60	(-0.78)	36.25	(7.96)	-.189	(-2.43)	.071	(2.43)
Servants	444.96	(2.71)	499.35	(2.95)	235.36	(1.78)	-71.70	(-1.21)	54.76	(0.63)	44.13	(11.49)	.016	(0.25)	-.035	(-1.40)
Institutional help	251.21	(1.78)	254.65	(1.80)	191.47	(1.69)	142.67	(2.91)	357.94	(4.84)	49.18	(14.98)	-.056	(-1.01)	.025	(1.20)
Other	-51.87	(-0.24)	-44.79	(-0.20)	-15.56	(-0.09)	-35.38	(-0.47)	11.97	(0.10)	72.76	(14.44)	.036	(0.42)	-.020	(-0.63)
<i>Wife's Work Outside Home</i>																
Distance <sup>h</sup>	---	---	---	---	-17.63	(-0.88)	-5.35	(-0.62)	-9.45	(-0.72)	-0.74	(-1.26)	-.019	(-1.87)	-.003	(-0.69)
No. hours <sup>i</sup>	---	---	---	---	-0.17	(-3.11)	0.037	(1.56)	0.29	(0.80)	0.0056	(3.49)	-.0002	(-7.01)	.00002	(1.93)
<i>Wage Rates of Family Members<sup>j</sup></i>																
Wife	---	---	---	---	-7.58	(-0.70)	-0.30	(-0.60)	-4.62	(-0.65)	0.61	(1.96)	.002	(0.32)	.003	(0.72)
Children (average)	---	---	---	---	-10.50	(-0.43)	6.31	(0.06)	3.53	(0.22)	-1.59	(-2.24)	.012	(0.99)	.003	(0.73)
Husband	---	---	---	---	1.14	(0.13)	-1.10	(-0.28)	6.72	(1.16)	0.013	(0.05)	.003	(0.58)	.002	(1.15)
<i>Television</i> (Dummy = 1 if household has TV)	23.70	(0.39)	21.71	(0.35)	19.02	(0.38)	34.19	(1.58)	7.86	(0.24)	-1.71	(-1.18)	.013	(0.52)	.016	(1.72)
<i>Income</i>																
Wife	---	---	-0.059	(-1.23)	---	---	---	---	---	---	---	---	---	---	---	---
Children	---	---	-0.034	(-1.58)	---	---	---	---	---	---	---	---	---	---	---	---
Husband	---	---	-0.0046	(-0.30)	---	---	---	---	---	---	---	---	---	---	---	---
Value of property	---	---	0.0008	(1.31)	---	---	---	---	---	---	---	---	---	---	---	---
Constant	-105.31		-118.79		304.02		104.54		-225.74		-1.97		.581		.173	
R <sup>2</sup>	0.304		0.308		0.194		0.089		0.169		0.589		0.277		0.157	
$\bar{R}^2$	0.286		0.287		0.169		0.062		0.143		0.577		0.255		0.132	
Mean of dependent variable	816		816		522		89.9		116		16.4*		.506		.065	

Note: For footnotes a through i, see "Notes to Table 5," p. 20.

\*The dependent variable in column (6) is hours per week. All other columns refer to a four-month reference period.

or water supply) appears to affect the number of hours that household members devote to household chores.\*

The number of additional hours due to the presence of an additional household member is positively related to that member's age for washing and cooking, and negatively related to members' ages for child-care time. An (additional) infant increases total household hours devoted to child care by 31 hours per week, while that infant increases washing and cleaning hours each by about an hour per week, and cooking hours by around 2 hours per week. Two- to five-year olds appear to require 12-1/2 hours of child care each week, and 6- to 10-year olds about half that amount.\*\* Households that contain nonrelative adults other than servants (typically boarders) devote considerably more time to child care (and cooking) than those without such persons. Households with children in school spend less time on child care than those with similarly aged children not in school, presumably because schools are a type of child care substitute.

Households with servants spend considerably more time washing, but not in the other activities considered, suggesting that servants' main contribution is in washing clothes and that, for a given family size and composition, households that hire servants may be those with relatively greater demands for clean clothes.\*\*\*

Husbands' and wives' education have little effect on the amount of time allocated to most household activities, although we do find that households spend significantly more time washing clothes the more highly educated the husband and that they devote significantly more time to cooking and cleaning the more highly educated the wife.

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\* The data also contain information on types of stoves, cookers, and irons, and whether the household has electricity, all of which could be investigated in further research.

\*\* The specification of the equation does not allow for economies of scale in child care by explicitly considering combinations of children through interactions or by allowing for nonlinearities within age groups.

\*\*\* The number of households with servants is small. The 1262 households in the sample have 20 servants altogether.

The reason for the former result may be that more highly educated husbands are likely to have jobs for which clean and pressed "white collars" are required. It is noteworthy that, when family composition is held constant, households headed by highly educated husbands and wives spend no more time with their children than those in which the parents have less education.\*

Chinese households spend significantly less time than the Malays in all nonmarket activities except child care, for which they spend significantly more time. Other things the same, Indians spend the most time with their children; they also spend significantly more time preparing meals than either the Malays or the Chinese.

The significant coefficients of the month dummies suggest either seasonal variation and/or regional variation, since different areas were interviewed in different months. Households interviewed in December (many of which were the purposively selected households in fishing communities) spent significantly more time cooking and cleaning, and significantly less time caring for children, other things the same. Families living on the east coast of Malaysia spent over 3-1/2 hours more per week shopping than those in other parts of the country, whereas those in metropolitan areas spent significantly less time preparing meals.\*\*

#### Intrahousehold Allocation of Time to Nonmarket Activities

In Tables 5 through 9 we present equations explaining the number of hours that wives, husbands, and children devote to the five non-market activities considered here.\*\*\* We also present regressions on

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\* Time budget data for the United States show that more educated women devote more time, both overall and per child, to child care than their less educated counterparts (Leibowitz, 1974).

\*\* It is puzzling that families that consume homegrown crops spend significantly more time shopping; perhaps they live farther from markets.

\*\*\* We do not present equations for the hours spent by husbands in washing, cooking, or cleaning or those spent by children in shopping, since the average levels are very low (see Table 4).

the husbands' and wives' *shares* of total household hours spent in these activities, which should better measure allocation among household members than the absolute number of hours spent in activities (the latter may reflect taste factors). Indeed we are always able to explain more of the variation ( $R^2$ ) in shares than in the corresponding number of hours.

We see in Tables 5 and 6 that in terms of absolute hours wives often spend more time on washing and shopping when accompanied by their children, but that they always spend significantly larger shares of total household hours on these activities when their children accompany them. That the effects are usually stronger on her share than on her absolute number of hours suggests that the woman who takes her children along receives less help from other members of her household than the woman whose children don't accompany her. It may be that the woman who takes her children with her has fewer substitutes available for her own time in performing these activities or for watching her children while she performs these activities away from home.

Another noteworthy result in the regressions explaining the wives', husbands', and children's contributions to nonmarket production is the strong evidence of substitution among household members and between market and nonmarket activities for wives. The wife devotes less time, and especially a smaller proportion of total household time, to most nonmarket activities the greater the number of hours she works outside her home for pay (in cash and/or kind). Her wage rate and the distance to her place of employment are also usually negatively related to her hours of nonmarket work, although the coefficients are typically not significant (perhaps because much of their effect is picked up through the variable measuring the wife's hours of market work).

In absolute terms, child care is the activity that suffers the greatest reduction in the mother's time input when she works outside the home. Relative to women's mean hours in the activity, women also substantially reduce the time they devote to cooking the more they work outside the home.\*

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\* The distance elasticity is largest in absolute magnitude for cleaning, whereas the wife's wage elasticities are largest for shopping and cleaning.

Husbands and children help more hours in household activities the greater the number of hours the wife is employed outside the home, indicating a substitution among household members. Further evidence of substitution among household members is seen in the positive child wage coefficient in the equation explaining wives' share of washing hours, suggesting that, for a given household composition, wives perform a greater share of certain activities when their children have good opportunities outside the home.\*

In addition to helping with shopping and child care, and also with the other activities (in regressions not shown here), when their wives are employed outside the home, husbands are most likely to help when there are infants at home. Husbands help less in families with older children, presumably because these children help instead.\*\* Indeed, children's hours of nonmarket work are generally greatest in families with children 10 years of age or older. Chinese children typically help less around the house compared with Malays, whereas Indian children and those of other races help more.

Children in towns are most likely to help care for siblings. Also, the less educated the children's mothers, the more likely the children are to care for other children in the family. Older children and institutional care appear to be used complementarily in caring for younger children (i.e., children's hours spent in child care are greater in households that also use institutional care).

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\* The significantly negative coefficient of the husband's wage in explaining the number of hours that the wife spends on washing is probably the result of an income effect (whereby higher-income families can afford servants and laundry services).

\*\* Also, husbands are more likely to help with shopping in families with servants and in families that own cars. Chinese husbands are significantly less likely to help with the shopping. Husbands spend more time with their children in households that have television sets (which we thought might provide a substitute for human child care). Watching children and watching television appear to be complementary activities for fathers. Alternatively, this might be a measurement of an income effect; i.e., wealthier fathers (as indexed by the presence of a television set) choose to spend more time with their children. We do see in column (2) of Table 9 that wealthier families, as measured by the value of their property, spend more time in child care, but we have not investigated whether it is all, or only particular, family members that increase their child care time.

Child Care by Others

In addition to equations explaining the number of hours (in the 4-month reference period) that the entire household, wife, husband, and older children spent caring for children, we also include in Table 9 an equation (Column (6)) explaining the number of hours spent (in a typical week) in child care by persons other than the husband and wife, i.e., by their children, parents, other relatives, neighbors, servants, and institutional help.\* We include dummies in all regressions in Table 9 to indicate the types of alternative care used (several types may be used simultaneously).

Coefficients of dummies for types of child care used show the additional number of hours spent in child care by households that use one of these types of care compared with households in which the husband and wife are the only ones who care for children, when all other independent variables are held constant. Child care provided by older children, husbands' or wives' parents, neighbors, and institutional help, each increase the total number of child care hours by 12 to 16 hours per week. Households with servants spend an extra 26 hours per week with children; number of servants appears to have no effect.

The number of hours that persons other than the husband and wife spend in child care is positively related to the wife's wage and the number of hours she works away from home; the higher the cost of her own time spent on child care, the more likely she is to use alternative means of care. If some of her children work or are in school, she is less likely to use them or others to care for younger children. Alternative child care is also used more frequently by older mothers and by Chinese and Indians.\*\*

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\* This latter information derives from the Female Retrospective questionnaire(MF2).

\*\* Chinese and Indian households, and those of other races, appear to spend more time with their children than Malay households. Non-Malay mothers and fathers each spend more hours in child care than Malays. In addition, Chinese and Indians supplement this care with that provided by nonhousehold members to such an extent that, despite the mother's larger number of hours, her share is smaller, especially in Chinese families.

CONCLUDING SUMMARY AND SUGGESTIONS FOR FURTHER RESEARCH

MAIN FINDINGS

The most interesting findings of this research are the following:

- o Agricultural activities appear to be less compatible with child care than sales or production occupations. Nearly 50 percent of women with children aged 10 or less who have sales or production occupations have (some of) these children with them when they work, as compared with 24 percent of such women for agricultural activities and 22 percent for service activities. Very few women engaging in other market occupations have their children with them when they work.
- o Two- to five-year-olds are more likely to accompany the mother when she performs market and out-of-home nonmarket activities than are older or younger children.
- o Women who take their children with them generally spend less time in market activities and more time in nonmarket activities compared with women with similarly aged children not accompanying them. Women who have their children along when they perform nonmarket activities may do so because of fewer available substitutes for the mother's time in the activity in question or in child care.
- o The presence of young children greatly increases the number of hours a household spends doing housework activities. An additional infant (aged 0-2 years) increases total household hours devoted to washing, shopping, cooking, cleaning, and child care by around thirty-five hours a week.
- o Women work less in the home, and husbands, children, and others (including nonhousehold members) help more, the greater the number of hours that the wife works outside the home. Husbands help more in families that include infants and less in families with older children.

- o In absolute terms, child care is the activity that loses most of the mother's attention when she increases the number of hours that she works outside her home. In relative terms, child care and cooking exhibit the greatest reductions.
- o Household size and age composition are the most important determinants of the number of hours that the household as a whole spends in nonmarket production. Although other family members help in large families, and the wife's share of total hours is less in such instances, the *number* of hours that she devotes to nonmarket production is generally positively related to family size. This suggests that higher fertility increases her obligations at home and reduces the number of hours she can participate in the labor force.\*

#### SUGGESTIONS FOR FURTHER RESEARCH

There seem to be a number of potentially interesting directions in which one could extend the very preliminary analyses presented here:

- o Market labor supply decisions should be integrated into the model and treated as a dependent variable. The Malaysian Family Life Survey data contain relevant information on women's previous work experience and on local labor market characteristics. Such an analysis could yield estimated values of time for nonworkers that could be used as explanatory variables in the equations explaining time spent in nonmarket activities.
- o Type of child care chosen (including decisions to have children accompany the mother when she performs various activities) could be treated as dependent variables to explore what types of women choose various types of child care. Included here should be further analyses of characteristics of jobs most compatible with child care (e.g., distance from home, whether self-employed or working in family business, etc.).
- o Whether the sex of children affects their inputs to household

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\* Of course, it is possible that the causation runs the other way: Women who are relatively more productive in the home than in the market may choose to have larger families.

activities when they are older or the number of hours they are cared for when young is another interesting topic that could be explored with these data. This aspect of nonmarket activity has potential implications about the "quality" and economic value of children. Also, interaction variables could be used to investigate whether particular age or sex combinations of children have especially detrimental or beneficial effects on family members' productivity. Such an analysis may have implications about the optimal spacing of children.

QUESTIONNAIRE MF 4: FEMALE TIME BUDGET

MF4 - FEMALE TIME BUDGET

SK OR VERIFY

- . During the past 4 months did you ...
- (a) ... have any job which pays a wage or salary, either in cash or kind?
- (b) ... have any other job, including any part-time jobs?
- (c) ... work in your own business or in a family business or farm?  
PROBE : Were you the head of the business?  
Paying wages?  
IF YES TO BOTH, CODE AS 'EMPLOYER'
- (d) ... earn any income from any home industry or activity?  
PROMPT : Sales of fruits/vegetables/animals? Handicrafts? Services?
- (e) ... grow fruits/vegetables/animals or make clothes for use in your own household?
- (f) ... attend any school/college/university or job-related training programme (including night school or adult education classes?)  
RECORD FULL DESCRIPTION OF EACH ACTIVITY FOR EACH ACTIVITY DONE (EXCEPT SCHOOLING/TRAINING) ASK :
- (g) Did you do \_\_\_\_\_ (ACTIVITY) alone or did other household members help?  
IF OTHERS HELP, PROBE FOR NAME(S); RECORD AS 'OBSERVATION'.

ASK ALL

- 2. During the past 4 months did any of your children under 15 years living at home ...
  - (a) ... have any job which pays a wage or salary, either in cash or kind?
  - (b) ... have any other job, including any part-time jobs?
  - (c) ... attend any school/college/university or job-related training programme (including night school or adult education classes?)
- Apart from the activities that you yourself have been engaged in, during the past 4 months are any of your children ...
- (d) ... work in their own business or in a family business or farm?
  - (e) ... earn any income from any home industry or activity?  
PROMPT : Sales of fruits/vegetables/animals? Handicrafts? Services?
  - (f) ... grow fruits/vegetables/animals or make clothes for use in your own household?  
RECORD FULL ACTIVITY DESCRIPTION, NAME OF CHILD, AND CODE 'P'

PROBE FOR ANY ACTIVITIES OF ANY CHILDREN UNDER 15 NOT MENTIONED

SK ALL

- . Did any other member of your household excluding yourself, your husband and your children under 15 years living at home have any activities which added to the income of your household in the last 4 months?
- PROMPT, USING LIST IN Q.1  
RECORD DESCRIPTION OF ANY ACTIVITY NOT ALREADY LISTED, NAME OF HOUSEHOLD MEMBER AND CODE 'P'  
IF ACTIVITY LISTED FOR Q.1 or Q.2, THEN NOTE OTHER HOUSEHOLD MEMBERS INVOLVED UNDER 'OBSERVATIONS'  
PROBE FOR ACTIVITIES OF CHILDREN AGED 15 YEARS AND OVER WHO LIVE AT HOME  
GIVE ACTIVITY CODE FOR EACH HH MEMBER EXCLUDING HUSBAND

SK (OR VERIFY) FOR RESPONDENT

What has been your main occupation during the last 4 months?  
ONE CODE ONLY (1-6,9) IN COL.16

- a) Have you spent any time in the past 4 months looking for a job or for a different job?

IF YES

- (b) How many weeks have you spent looking for a job or a different job in the past 4 months?  
RECORD NUMBER OF WEEKS
- (c) How many hours per week did you spend actively looking for work during these weeks?  
PROMPT : That is, seeing employers/agents, making applications, writing letters, making telephone calls, etc.  
RECORD HOURS PER WEEK

COMPLETE KEY  
(1) WRITE 'P' FOR EACH CODE 1-8 IN COL.14  
(11) WRITE 'W' FOR EACH CODE 1-7 IN COL.14. IF COL.15 IS ALSO CODED '1'

-36-  
PINK PAGE QUESTIONS

ASK FOR FIRST ACTIVITY CODED 'P' - FOR SCHOOLING ASK Q.6(a-d) ONLY

6(a) Did \_\_\_\_\_ (YOU/PERSON) do this \_\_\_\_\_ (ACTIVITY) at home?

IF YES CODE '0' IN DISTANCE TO WORK

IF NO

(b) How many miles do/does \_\_\_\_\_ (YOU/PERSON) have to travel (one way) from your house to this job/activity.  
CODE DISTANCE TO WORK.

(c) How many hours in total did \_\_\_\_\_ (YOU/PERSON) do \_\_\_\_\_ (ACTIVITY) during the past 7 days? Please exclude travel time and lunch time.

IF NONE, PROMPT : How many hours during the most recent week \_\_\_\_\_ (YOU/PERSON) did do the activity?

RECORD NUMBER OF HOURS

(d) How many weeks during the last 4 months did \_\_\_\_\_ (YOU/PERSON) do this activity?

PROMPT : Please include any weeks of paid holiday or vacation leave.  
PROMPT IF NECESSARY : Was it less than  $\frac{1}{2}$  of the weeks, about  $\frac{1}{2}$  of the weeks,  $\frac{1}{3}$ ,  $\frac{1}{2}$ ,  $\frac{2}{3}$ ,  $\frac{3}{4}$ , more than  $\frac{3}{4}$ , all of the weeks?

RECORD OR CODE NUMBER OF WEEKS

(e) Did \_\_\_\_\_ (YOU/PERSON) receive any pay in cash for doing this activity during the last 4 months?

IF NO, CODE '0' AND GO TO Q.6(g)

IF YES

(f) How much? Please tell me the case earnings before any deductions.  
RECORD AMOUNT; CODE TIME UNIT

(g) Did \_\_\_\_\_ (YOU/PERSON) receive any pay in kind, a bonus or gratuity for doing this activity during the last 4 months?

IF NO, CODE '0' IN TYPE OF KIND

IF YES

(h) What type(s) of payment(s)?  
CODE TYPE OF KIND

(i) What was the total value of those payments in kind?

RECORD AMOUNT; CODE TIME UNIT

IF ACTIVITY DONE BY RESPONDENT

(j) Were any of your children 10 years old or younger normally with you when you did \_\_\_\_\_ (ACTIVITY)? By 'normally' I mean half the time or more.

IF YES, PROMPT : How many under 2 years? How many 2 to 5 years?  
How many 6 to 10 years?

RECORD NUMBER OF CHILDREN

REPEAT Q.6 FOR NEXT ACTIVITY CODED 'P'

MR4/1/02

WHITE PAGE QUESTIONS

ASK FOR FIRST ACTIVITY CODED 'W'

7(a) How many other people have done \_\_\_\_\_ (ACTIVITY) in the past 4 months?

PROMPT : Has your husband, children, other household members done any of this activity?

RECORD TOTAL NUMBER EXCLUDING RESPONDENT

(b) Who did most of \_\_\_\_\_ (ACTIVITY)?

(c) Who did second-most?

(d) And who did the next-most after that?

RECORD NAMES AND RELATIONSHIP TO HEAD OF HH OF THE THREE PERSONS DOING THE MOST (IN ADDITION TO RESPONDENT).

(e) Considering the total amount of this activity which was done for your household in the past 4 months, what proportion have (has) \_\_\_\_\_ (YOU/PERSON) done?

PROMPT : Is it less than  $\frac{1}{4}$ ,  $\frac{1}{3}$ ,  $\frac{1}{2}$ ,  $\frac{2}{3}$ ,  $\frac{3}{4}$ , more than  $\frac{3}{4}$ , or all of the activity?

CODE PROPORTION OF TIME FOR EACH PERSON.

CHECK THAT PROPORTIONS ADD TO 1;  
PROBE AND CORRECT AS NECESSARY

REPEAT Q.7 FOR EACH ACTIVITY CODED 'W'

BLUE PAGE QUESTIONS

ASK ALL

12. Now I would like to ask you about some other activities. In the past 4 months, have you yourself ...

(a) Washed or ironed clothes?

(d) Cleaned the house?

(b) Done any shopping?

(e) Cared for children?

(c) Prepared any food or cleaned up after meals?

(f) Carried out any other household activities?

DO NOT ASK Q.12(n)

ASK FOR ALL SIX ACTIVITIES:

(g) How many (other) people have done \_\_\_\_\_ (ACTIVITY) in the past 4 months?

PROMPT : Has your husband, children, other household members or non-household members, including people you pay, done any of this activity?

RECORD TOTAL NUMBER EXCLUDING RESPONDENT

IF NO OTHERS, RECORD '8' FOR RESPONDENT, THEN GO TO O.12(1)  
IF ANY OTHER

(h) Who did most?

(i) Who did second most?

(j) Who did next most?

(k) Considering the total amount of this activity which was done for your household in the past 4 months, what proportion have (has) \_\_\_\_\_ (PERSON) done?

PROMPT : Is it 1/4 or less, 1/4, 1/3, 1/2, 3/4, more than 3/4 all?  
CODE PROPORTION OF TIME FOR EACH PERSON

CHECK THAT PROPORTIONS ADD TO 1; PROBE AND CORRECT AS NECESSARY

IF RESPONDENT DID ANY OF ACTIVITY AT ALL

(l) How many hours did you (do) \_\_\_\_\_ (ACTIVITY) during the past 7 days?  
IF NONE, PROMPT : How many hours did you do \_\_\_\_\_ (ACTIVITY) during the most recent week you did do it?  
RECORD NUMBER OF HOURS

(m) How many weeks during the last 4 months did you do \_\_\_\_\_ (ACTIVITY)?  
RECORD OR CODE NUMBER OF WEEKS

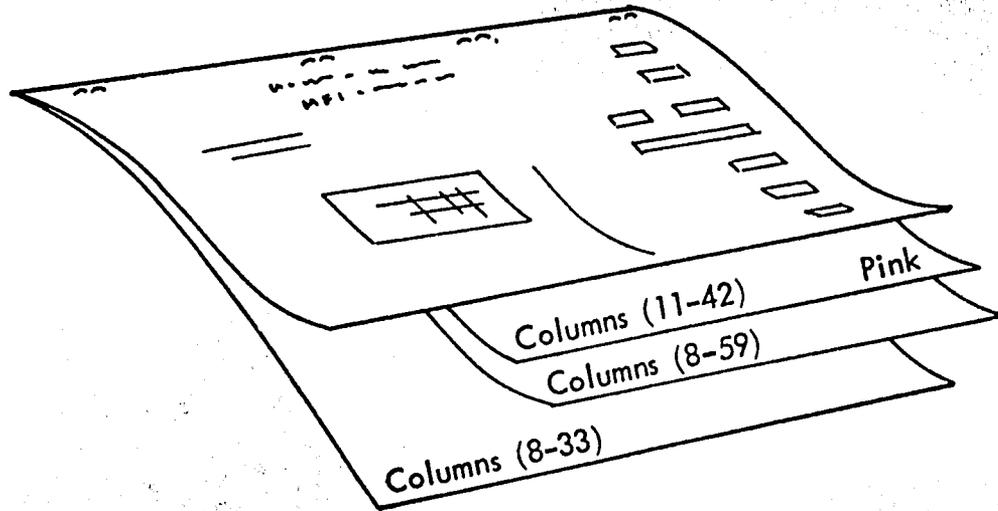
(n) Were any of your children aged 10 years or younger normally with you when you did \_\_\_\_\_ (ACTIVITY). By 'normally' I mean half the time or more.  
IF YES, PROMPT : How many under 2 years? How many 2 to 5 years?  
How many 6-10 years?  
RECORD NUMBER OF CHILDREN

IF RESPONDENT DID NONE OF ACTIVITY ASK Q.12(o)-(p)  
FOR PERSON DOING THE MOST OF THE ACTIVITY

(o) How many hours did \_\_\_\_\_ (PERSON) do \_\_\_\_\_ (ACTIVITY) during the past 7 days?  
IF NONE, PROMPT : How many hours did he/she do \_\_\_\_\_ (ACTIVITY) during the most recent week he/she did do it?  
RECORD NUMBER OF HOURS

(p) How many weeks during the past 4 months did \_\_\_\_\_ (PERSON) do \_\_\_\_\_ (ACTIVITY)?  
RECORD OR CODE NUMBER OF WEEKS

REPEAT Q.12(g) FOR NEXT ACTIVITY



Format of the MF4 Recording Form

Survey Research Malaysia Sdn. Bhd.,  
 SRM House, Jalan Terap,  
 P.O. Box 2231, Kuala Lumpur.

MALAYSIAN FAMILY LIFE SURVEY (SRM 9338)

MF4 FEMALE TIME BUDGET

Main Respondent : \_\_\_\_\_ Other Respondents: \_\_\_\_\_

Address: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Interviewer's Name: \_\_\_\_\_ Number: \_\_\_\_\_

Witnessed By: \_\_\_\_\_ Number: \_\_\_\_\_

Call Record:

	<u>Date</u>	<u>Day</u>	<u>Time Started</u>	<u>Time Ended</u>
First :				
Second:				
Third :				
Fourth:				
Fifth :				

Language:	Malay	01	Mandarin	06
	Tamil	02	Hakka	07
	English	03	Hainanese	08
	Cantonese	04	Teochew	09
	Hokkien	05	Other (SPECIFY)	
				10

"I hereby certify that this interview has been conducted honestly and to the best of my ability."

Date: .....

Interviewer's signature: .....

OFFICE USE

Round  (01)

Q. No.  4 (02)

Summary Card  C (03)

CASE NO.     (04-07)

SKIP (08-11)

P.S.U. No.  /  /   /  (12-17)

Primary Respondent No.    (18-20)

Supplementary Respondent No.    (21-23)    (24-26)

Interviewer's No.   (27-28)

Witness (Supervisor's No.)   (29-30)

SKIP (31-33)

Interview Completed at Call No:  (34)

Date Completed   /   /   (35-40)

Total Length of Interview (Minutes)    (41-43)

Language of Interview   (44-45)



ASK RESP. IF RE/SHE DID ACTIVITY OTHERWISE ASK ABOUT PERSON DID MOST

ALL THE TIME = 17  
 MORE THAN 3/4 OF THE TIME = 18  
 3/4 OF THE TIME = 19  
 2/3 OF THE TIME = 20  
 1/2 OF THE TIME = 21  
 1/3 OF THE TIME = 22  
 1/4 OF THE TIME = 23  
 LESS THAN 1/4 OF THE TIME = 24

NO. OF CHILDREN WITH RESPONDENT WHEN DOING ACTIVITY

LESS THAN 2 YEARS (31)  
 2-5 YEARS (32)  
 6-10 YEARS (33)

OBSERVATIONS

PUNCHES: START NEW EVENT CARD REPEAT	ACTIVITY DESCRIPTION	RESP. DID ACTIVITY YES = 1 NO = 0	PROPORTION		NAME OF ANOTHER PERSON WHO ALSO DID THIS ACTIVITY	IDENTIFICATION CODE	PROPT. DONE BY ANOTHER	NAME OF ANOTHER PERSON WHO ALSO DID THIS ACTIVITY	IDENTIFICATION CODE	PROPT. DONE BY ANOTHER	NAME OF ANOTHER PERSON WHO ALSO DID THIS ACTIVITY	IDENTIFICATION CODE	PROPT. DONE BY ANOTHER	NO. OF HOURS ACTIVITY DONE IN LAST 7 DAYS (OR MOST RECENT 7 DAYS)	NO. OF WEEKS ACTIVITY DONE IN LAST 4 MONTHS	NO. OF CHILDREN WITH RESPONDENT WHEN DOING ACTIVITY			SKIP #34-80
			LESS THAN 1/4 = 1 AROUND 1/4 = 2 AROUND 1/3 = 3 AROUND 1/2 = 4 AROUND 2/3 = 5 AROUND 3/4 = 6 MORE THAN 3/4 = 7 ALL = 8 NONE = 0	TOTAL NO. EXCLUDING RESPONDENT												PROPT. DONE BY RESP.	LESS THAN 2 YEARS	2-5 YEARS	
(03-10)		(11)	(12-13)	(14)		(15-17)	(18)		(19-21)	(22)		(23-25)	(26)	(27-29)	(29-30)	(31)	(32)	(33)	
0 2 2	WASHING AND IRONING CLOTHES																		
1 2 3	SHOPPING																		
2 2 4	PREPARING FOOD, CLEANING UP AFTER MEALS																		
3 2 5	CLEANING HOUSE																		
4 2 6	CARING FOR CHILDREN																		
5 2 7	OTHER HOUSEHOLD ACTIVITIES																		



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