

Institute of Economic Development and Research
SCHOOL OF ECONOMICS
University of the Philippines

Discussion Paper No. 76-8 June 1976

TIME ALLOCATION, HOME PRODUCTION AND
LABOR FORCE PARTICIPATION OF MARRIED WOMEN:
AN EXPLANATORY SURVEY

by

Teresa Jayme-Ho

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1. Introduction

The focus of this paper is the concept of time as a productive economic resource. This interest in the allocation of time springs from the development of a body of ideas that has revolutionized the economic theory of the household. These ideas which have come to be known as the 'new home economics' - center around the concept of the household as a producing unit. The products of the household production process are composite goods which constitute the basic welfare needs of the family (e.g., food consumption, education, care of children, etc.) and the inputs to production are broadly classified as 'market-purchasable goods' and 'time', the latter of which is our concern at the moment.^{1/}

*/ The author wishes to acknowledge the valuable assistance of Ms. Rebecca Paz who efficiently supervised the field activities of this project and assisted in data analysis.

^{1/} The major contribution to this field of study was made by Becker (1965) in his well-known article on the allocation of time. The basic ideas of Becker's theory are outlined in section 2 of this paper.

A surprisingly wide variety of economic problems have yielded to analysis in the framework of this theory of household production. The most significant of these have been labor market theory, particularly the labor force participation of married women^{2/}, household welfare and the problem of equity^{3/}, estimation of the economic value of children and its implications on fertility analysis^{4/}, and the revision of national accounts to include the output of household production^{5/}. These areas of concern take on new light in view of the central assertion of the 'new home economics' that productive activities undertaken in the home are no less significant, economically, than those undertaken outside the home. Which brings our attention to that basic decision: the

^{2/} See Mincer (1962), where he explains the labor force participation of married women as dependent on the demand for her home production activities. See also Bowen and Finegan (1969), Cain (1966), and for the Philippines, Encarnación (1973) and Mangahas and Ho (1976).

^{3/} See Mangahas and Ho (1976), especially Chapter 2, Popkin and Hart (1975), and Popkin (1975).

^{4/} See the Journal of Political Economy 81 (supplement), March - April, 1973. The entire issue presents various articles on the problem of fertility discussed in the light of the theory of household production.

^{5/} See Gronau (1973).

allocation of time between home and market production and between production (whether at home or in the market) and consumption (or leisure).

This study is meant to be a first step towards the application of the theory of home production to empirical data and, eventually, to policy making in the areas concerned. Its specific objectives are simple and rather straightforward. These are:

- (1) to test the feasibility of collecting intensive time data through the method of direct observation;
- (2) to explore the scope of home production activities and the extent to which time (specifically the mother's time) is used in each type of activity;
- (3) to investigate the influence on time allocation of certain related factors, viz., the presence of young children, the employment status of the mother, and the availability of electricity in the home.

It must be emphasized that the thrust of this paper is empirical investigation rather than theoretical formulation. The reason behind this is simple. From among the

scores of articles that have been written along these lines in the past decade, there is not one model which has been formulated to present a complete picture of the household production process and its attendant decision making process. Rather, there has been a splintering of models all centered on the basic idea of home production, but each with its own specific focus, e.g., fertility, labor force participation, health, education, and so on. The task of integrating all these aspects into a single model is obviously gargantuan and must wait until all areas of concern have been explored.

The methodology that best suits an exploratory study of this nature is an intensive in-depth study of a small number of households (the case study method) rather than an extensive survey with a larger sample. Thus a sample of only ten households was used, where, for each household, a daily 24-hour time budget of the mother was recorded continuously for a period of one week^{6/}.

The mother, who is the traditional 'homemaker' in the family, is the major contributor of time inputs to the household's production process. In many cases, she

^{6/} Without any logistic constraints, the ideal unit of observation would be the entire household. However, the financial demands of observing each household member for one week would have been formidable.

also contributes market-good inputs by earning income through employment (market production). Her contribution to family welfare thus takes on a new vista when viewed in terms of this new theory. When before, her contribution went only as far as she was able to earn market income, the introduction of the time dimension focuses attention on that aspect of household activities for which she is mainly responsible. Moreover, her allocation of time between household and market production is often a significant determinant of the family's welfare status.

All ten households under study are rural households so that our subject of discussion will be the married woman in the rural household. Working conditions and opportunities for productive participation at home and in the market differ in the urban and rural locales and we can expect significant differences in the time budgets of urban and rural wives^{7/}. A logical, and perhaps interesting, extension of this study would thus be a parallel study of the time budgets of married women in urban households.

In the section that follows, we present the problem of time-allocation within the framework of the theory

^{7/} In Mangahas and Ho (1976), we show that location is a significant determinant of the working hours in market employment of the mother (see Table 3.5, p. 114).

of home production and discuss various factors that may determine the allocation of time resources in the household. In section 3, we report on our field methodology and evaluate its usefulness for future larger-scale inquiries into the allocation of time. Section 4 is a presentation of our findings and in the last section, we make recommendations for further research and list policy areas which may be approached through the analysis of time allocation.

The first part of the paper is devoted to a discussion of the importance of time allocation in the household and the need for a systematic approach to its study.

The second part of the paper is devoted to a discussion of the methodology used in the study.

The third part of the paper is devoted to a presentation of the findings of the study.

The fourth part of the paper is devoted to a discussion of the implications of the findings for policy.

The fifth part of the paper is devoted to a discussion of the limitations of the study and suggestions for further research.

The sixth part of the paper is devoted to a discussion of the conclusions of the study.

The seventh part of the paper is devoted to a discussion of the policy implications of the study.

The eighth part of the paper is devoted to a discussion of the limitations of the study and suggestions for further research.

The ninth part of the paper is devoted to a discussion of the conclusions of the study.

The tenth part of the paper is devoted to a discussion of the policy implications of the study.

The eleventh part of the paper is devoted to a discussion of the limitations of the study and suggestions for further research.

The twelfth part of the paper is devoted to a discussion of the conclusions of the study.

The thirteenth part of the paper is devoted to a discussion of the policy implications of the study.

The fourteenth part of the paper is devoted to a discussion of the limitations of the study and suggestions for further research.

The fifteenth part of the paper is devoted to a discussion of the conclusions of the study.

2. Analytical Framework: Time Allocation as Resource Use In Home Production

2.1 The Household Production Model^{8/}

The household production model is presented diagrammatically in Figure 1 and can be described briefly in terms of five major elements:

- 1) The household attempts to maximize utility (U) by consuming some combination of 'welfare goods' (Z_i) which are the basic determinants of utility. Thus,

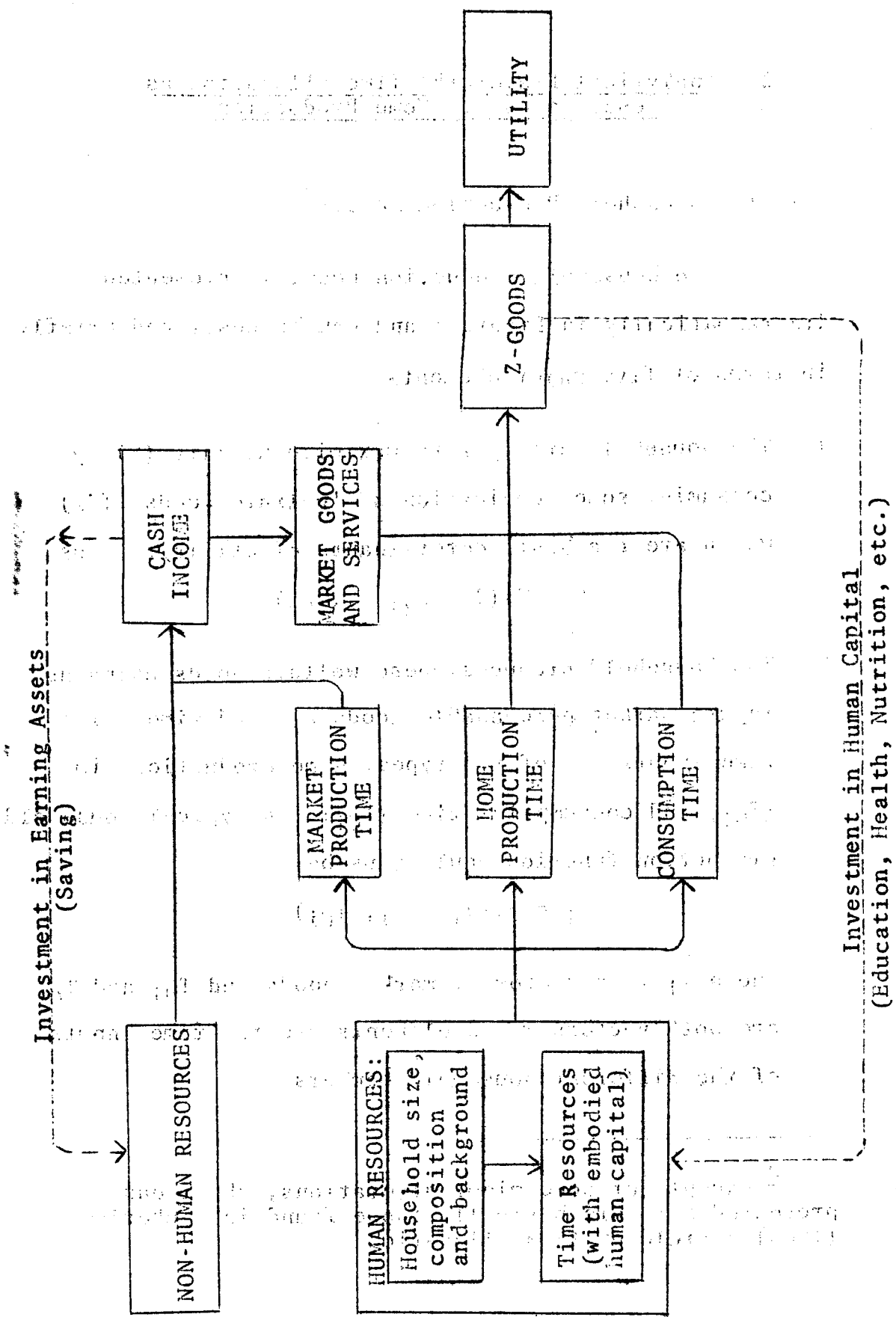
$$U = U(Z_1, Z_2, \dots, Z_m)$$

- 2) The household produces these welfare goods using as inputs market purchasable goods x_i and time. The time inputs are of two types: home production time (T_{Hi}) and consumption time (T_{Ci}). A typical household production function would thus be

$$Z_i = f_i(x_i, T_{Hi}, T_{Ci})$$

Where x_i is a vector of market goods and T_{Hi} and T_{Ci} are both vectors whose elements are the time inputs of the different household members.

^{8/} Except for some minor alterations, the ideas presented here are basically those found in Becker's (1965) article on time allocation.



3) The market provides a medium through which a portion of the household's time resources may be converted into market purchasable goods. This portion of time (T_M) is converted into money resources through market production (employment) and money resources are then converted into market-purchasable goods. The availability of the x_i 's is therefore dependent also on the wage rates of the employed household members and the relative prices of market goods. In addition, non-human resources (V) provide a second source of money resources and, hence, market purchasable goods.

We have

$$x_i = x_i(T_M, W, V, P_i)$$

Where T_M and W are vectors of market production time and wage rates, respectively, of each household member and P_i is a vector of relative prices of the market goods (elements of x_i).

4) The household is finally constrained by its total time resources (T) which are used either at market production (T_M), home production ($T_H = \sum_{i=1}^m T_{Hi}$), or consumption ($T_C = \sum_{i=1}^m T_{Ci}$). Thus

$$T = T_M + T_H + T_C$$

5. In addition to their direct effects on the household's level of utility, welfare goods (Z-goods) have feedback effects on the productive resources of the household, contributing to the maintenance and growth of the human capital stock of the household. This investment in human capital, together with the household's investment in earning assets constitute the household's total investment.

The household and not the individual is the unit of discussion in the household production model and individual household members are assumed not to have separate utility functions. Rather they have one common utility function which they attempt to maximize using their pooled resources of time and market goods.

The Z-goods which constitute the household's utility function represent indicators of the household's welfare such as food consumption, child care, watching TV or just relaxing, and differ from the x goods or market goods that constitute utility in traditional household theory in that they involve time inputs as well as market good inputs. Some of these Z-goods are necessities (sleep, rest, food, etc.) and some of them are luxuries (recreation, watching TV, reading a book, etc.). Furthermore, the composition of the household utility function

may change over time as tastes change or as family size and composition changes. Thus a family without a very young child will not have the Z-good 'child care' in its utility function while one with a young child will have it as a necessity.

Each Z-good is produced with some combination of market goods, home production time and consumption time. Home production time is time which is spent in the provision of a service or the processing of a market good the direct utility from which accrues to one or more household members, not necessarily including the household member who provides the time. This corresponds to what is ordinarily called housework (when this is done by a household member) and its major component is usually the mother's time. Consumption time is time spent receiving the direct utility of a Z-good and is closest to the concept of leisure.

Market goods and time are clearly substitutable inputs. The Z-good food consumption, for example, may be produced with the market goods uncooked food and with home production time for marketing and cooking, or marketing and cooking time may be replaced instead by the purchased services of hired help, or cooked food may be eaten at a restaurant. In the latter two cases, market

goods are substituted for home production time.

The degree of substitutability of home production time and market goods varies among Z-goods. Substitution depends not only on the nature of the production function but also on the relative prices and on the availability of the market good inputs.

2.2 Time allocation in the Household Production Process

The household uses its time resources in three ways: consumption, home production or market production.

Both market and home production time are 'productive' in the sense that they generate additional utility and hence contribute to household welfare. In most cases, they also generate the disutility involved in work effort. They differ, however, in the manner through which they enter the utility function. While home production time enters the utility function directly, market time enters it indirectly through the market goods and services that are purchased using cash income earned in market participation.

Hence, market time can be converted into any market good, including time services (of non-members) that may be substituted for home production time and, consequently, all home production time can be replaced by market goods if these services are available in the market and if the

household has sufficient cash income to purchase them.^{9/} In contrast, it is impossible for the household to replace all market good inputs with home production time because of the wide variety of market goods entering the production functions for Z-goods. Thus, while home production time inputs may be zero, market good inputs cannot be zero. However, the household's market production time may still be zero if its cash income from non-human resources are sufficient to purchase all its market good inputs.

The most obvious constraint on the time resources of the household is that each person has only twenty-four hours in a day. Thus one day's total consumption, home production and market production time for each member must equal twenty-four hours and total household time resources (in hours) in a day will equal twenty-four times the number of household members. In addition, there is a lower limit for each individual to the number of consumption hours necessary for sustaining life and for producing efficiently.

A more important aspect of time resources, however, is the human capital embodied in each individual

^{9/} Even the mother's time for breastfeeding is replaced, in some rare cases, by the services of a wet nurse.

household member. The productivity of each unit of time used in any activity is directly related to the investment in human capital that each member has accumulated over his lifetime. This means that household time resources are actually heterogeneous and that a unit of time of one household member may be more productive than that of another member in one activity but less productive in another activity. Thus the household's time allocation decision involves not only allocation among the three types of time uses but also intra-household allocation of time. The clearest evidence of this is the practice of assigning most home production activities to the mother who is usually better trained for them.

The allocation of each household member's time is thus subject to the optimizing condition that the marginal utilities of the last unit of his time used in the different functions are all equal. These marginal utilities are in turn determined by a host of other variables. The size and composition of the household determine not only the availability of substitute time resources within the household but also the form of the utility function. Thus the presence of a very young child will increase the relative marginal utility of home production time since child care is a time intensive Z-good. Increases in one member's wage rate or poten-

tial wage rate will raise the marginal utility of his market production time relative to his home production time and relative to the home and market times of other household members. Also, an increase in income from non-human resources or an increase in market good prices will reduce the marginal utility of all market time.

It is highly possible, however, that the equality of marginal utilities may not hold. For instance, when the choice function for the allocation of time is not continuous (as when one is subject to fixed working hours in market participation) then it may be impossible to equate marginal utilities. A second instance is when the marginal utility of the last unit of home production time and/or consumption time is so large relative to that of the first unit of market production time that the latter is zero.^{10/} Both these factors, working separately or together, may best explain why most married women prefer to stay out of the labor market altogether, making their market time equal to zero.

^{10/} The reverse may also be true. The marginal utility of the last unit of market production may be so high relative to that of the first unit of home production time that the latter is zero.

3. Methodology

The study involved a sample of ten women from the province of Laguna. They were selected from a larger sample of 576 households that were respondents in an earlier survey ^{11/} and were screened on the basis of three criteria: the presence of a young child, the employment status of the mother and the presence of electricity in the home. As the theory presented above suggests, there are other factors besides these three that affect the allocation of time but, for simplicity, we have chosen to concentrate on those which we felt had the most direct influence.

Table 1 shows the characteristics of each of the ten households in the sample. Five of the households had electricity (odd numbers) and five did not (even numbers). According to employment status, the mother was either employed away from home (households 1 to 4), employed at home (households 5 and 6) or not employed at all (households 7 to 10). Finally, for each combination of the first two criteria, we selected one household with a child less than three years old and one without a

^{11/} This survey is part of a project on "Economic Demographic and Nutritional Factors in Rural Household Behavior". Principal investigators for this project are Dr. Robert Evenson of the Department of Agricultural Economics, UP (Los Baños), and Dr. Barry Popkin, Dr. Bryan Boulier and the author, all of the School of Economics, U.P.

Table 1. Characteristics of the Sample Households

Household No.	With Electricity	Wife is Employed		With a Child < 3 years old
		Away from Home	At Home	
1	x	x		x
2		x		x
3	x	x		
4		x		
5	x		x	
6			x	
7	x			x
8				x
9	x			
10				

child less than three. Unfortunately, there was not a single household in the larger sample with a young child

where the mother was employed at home so that we selected only two households where the mother was employed at home:

one with electricity (No. 5) and one without (No. 6) but both without a young child. In addition to these characteristics, all ten households selected were nuclear households.

To gather the time data needed, each mother was observed continuously for one week by an observer who lived with the family throughout the week. All activities of the mother were recorded in detail on a daily time sheet in which one day was broken down into ten-minute intervals. If two or more activities were performed at the same time, one was classified as a primary activity and the rest as secondary. The primary activity was that to which the mother gave primary attention or with which she was most preoccupied. The secondary activity was that activity done concurrently with another but to which the mother gave only cursory or passive attention. A record was also made of the presence of joint participants (anyone assisting the mother in her current activity) if there were any.

In addition to filling up the time sheets, the

observer was asked to make a record of all other household members who performed home production activities when the mother was not doing them. Thus information on substitute labor for home production activities was also available.

This direct observation method proved to be ideal for collecting accurate and detailed time data. There was no resistance observed on the part of the participants who apparently did not mind being observed so closely. The major difficulty we encountered was that on the first one or two days, the participants seemed to feel obliged to entertain the observers, treating them like guests. However, by the third day they had usually adjusted to the presence of the observer.

There were a number of alternative methods considered for the collection of the time data, specifically the recall method and the self-administered time record. However, both methods call for a high degree of time consciousness on the part of the participants which we felt was not present since time pieces are not commonly found in barrio households. Although either one of these methods could have been applied at much lower costs, the sacrifice of accuracy and detail would have been too valuable a loss.

4. Survey Results

4.1 Patterns of Time Allocation

Each activity of the mother was classified as either consumption, home production or market production according to the definitions set out in section 2 above. Table 2 lists all of the activities classified under each heading. Note that home production time is divided further into time for care of children, time for other housework, and time for supervising housework being done by others. Market production time is also subdivided into traveling time and actual working time.

Table 2 also gives the average time allocation during the survey week for each activity. This reports only primary activities, thus total time equals 168 hours for the survey week. Note that averages were taken over all ten observations regardless of the number of wives who actually performed the activity. It is also important to bear in mind that the sample is not random and is therefore not representative of the population. In our sample, sixty percent of the housewives are employed, obviously over-representing the employed female population in rural areas.^{12/} The primary effect of this

^{12/} The May 1974 NCSO Labor Force Survey reports only 31.4 percent of the female population 10 years old and over in rural areas as employed.

Table 2. Average Time Allocation during Survey Week, by Activity

Activity	Time (in hours) ^{a/}	Percent to Total Time	No. of Wives Who Performed Activity
A. Consumption Time	24.22	56.5	
sleeping	62.17	37.0	10
eating	9.06	5.4	10
attending seminars, lectures			
adult education classes	0.60	0.4	1
other personal activities	22.45	13.4	10
assisting relatives, neighbors with the housework without pay	0.72	0.4	4
B. Home Production Time	52.10	31.0	
B.1 Care of Children	9.55	5.7	
B.1.1 Care of Children 0-2 years old	7.62	4.6	
bottlefeeding	0.17	0.1	1
breastfeeding	1.78	1.1	2
feeding children aged 0-2	0.18	0.1	3
care of children aged 0-2 other than feeding	5.56	3.3	4
B.1.2 Care of Children aged 3 years old and above	1.86	1.1	
care of children aged 3 and above	1.83	1.1	8
assisting children with schoolwork	0.03		1
B.2 Other Housework	41.46	24.7	
marketing, including travel time	1.16	0.7	5
shopping, including travel time	0.76	0.5	5
buying from sari-sari neighborhood store or peddler	1.34	0.8	8
preparing food/cooking for household only	15.05	9.0	10
fetching water/firewood	0.12	0.1	7
feeding livestock/poultry	0.84	0.6	7
taking meals to family members away from home	0.03	b/	1
gardening	0.10	0.1	3
cleaning house, laundering and ironing, sewing and mending for household	21.94	13.1	10
B.3 Supervising Housework	1.06	0.6	
supervising cooking done by others at home	0.25	0.1	4
supervising housework other than cooking done by others at home	0.87	b/	2

Table 2. Average Time Allocation during Survey Week, by Activity
(continuation)

Activity	Time (in Hours) ^{a/}	Percent to Total Time	No. of Wives Who Performed Activity
C. Market Production Time	20.91	12.4	
C.1 Traveling Time	1.52	0.9	
traveling to or from place of work	1.52	0.9	3
C.2 Working Time	19.39	11.5	
working for a wage	6.10	3.6	
practicing profession/occupation	0.48	0.3	1
working on family farm	2.83	1.7	4
preparing food for sale	0.52	0.3	1
selling home-produced goods	1.95	1.2	3
overseeing family enterprise/store	5.73	3.4	2
buying materials for family enterprise	1.78	1.1	3
TOTAL	168.00	100.0	

^{a/} The average is taken over all ten observations for all activities.
The time reported includes only time for primary activities.

^{b/} Less than 0.05 percent.

sampling distribution is to over-estimate the average market production time and to under-estimate average home production and consumption times.

The same table shows that a little more than half (56.5 percent) of the total time of the mothers was spent on consumption and less than half (43.5 percent) on productive activities either at home or in the market. Almost one-third (31.0 percent) of their time was spent on home production while only 12.4 percent of total time was spent on market production. Thus, home production activities occupied almost three times as much time as did market activities, emphasizing the fact that the bulk of the productive activities of married women are overlooked in traditional labor force studies which report only market production. Our earlier note on the sample representation implies that the true population ratio of home production time would be even higher.

Finally, the last column of Table 2 shows the number of wives who performed each activity. Note that only five activities were common to all ten women. Of these, sleeping was the most time consuming, taking 37.0 percent of total time. Next were other personal activities (13.4 percent)^{13/} and cleaning house, laundering,

^{13/} This includes personal hygiene activities, recreation, and socializing, of which the most frequently reported activity was "chatting", which was apparently the most popular pastime among the women in our sample.

etc. (13.1 percent).

The other activities common to all wives were food preparation (9.0 percent) and eating (5.4 percent). Curiously, only five wives did any marketing. In fact, in three of the other five households, no food was bought from the market throughout the week by any household member. In these households, food was either home-produced or bought from ambulant vendors or the sari-sari store. Another interesting point is that as many as four women assisted relatives and neighbors with their housework without pay suggesting some amount of inter-household transfers of time resources. Time spent on this latter activity, however, was minimal.

In Table 3, we show the effects of the presence of young child on the time allocation of the mother. As expected, consumption time was shorter for mothers with young children, but this was not accompanied by longer home production hours as predicted by theory. Home production hours of these mothers were, in fact, slightly shorter than those who had no young child while market production hours were significantly longer. These findings are unexplainable and should be subjected to further testing.

One clear observation, however, is that within

Table 3. Average Time Allocation During Survey Week, By Major Activity Group, By Presence of Young Child

Activity	With child less than 3 years old		Without child less than 3 years old ^{a/}	
	Time (in hours)	Percent of Total Time	Time (in hours)	Percent of Total Time
A. Consumption Time	93.40	55.6	101.63	60.5
B. Home Production Time	53.58	31.9	55.63	33.1
B.1 Care of children	20.42	12.2	3.29	2.0
B.1.1 Care of children aged 0-2	19.23	11.4		
B.1.2 Care of children aged 3 & above	1.19	0.7	3.29	2.0
B.2 Other housework	33.04	19.7	51.71	30.3
B.3 Supervising housework	0.12	0.1	0.62	0.4
C. Market Production Time	20.96	12.5	10.75	6.4
C.1 Traveling time	2.17	1.3	1.62	1.0
C.2 Working Time	18.79	11.2	9.13	5.4
TOTAL	168.00	100.0	168.00	100.0

^{a/} Households 5 and 6 were excluded since there were no corresponding households with the same characteristics in the group of households with a young child.

the group of home production activities, there is an obvious shift of time resources away from other housework when a young child is present. Hence, there could be significant effects on the quality or quantity of other welfare goods produced at home.

Table 4 relates time allocation to the employment status of the mother. From this table, we note that women employed at home had the shortest consumption time and the longest total productive hours. They also had longer market production time than those employed away from home. A probable explanation for this is that employment at home is usually less strenuous (both housewives involved in our study tended family stores) and can therefore be done for longer hours. Also, it can be started at the early hours of the morning, interspersed with housework during the day, and carried on to evening time.

As expected, the mothers who were not employed at all had the longest consumption hours and the longest home production hours.

In addition to the presence of a young child and the employment of the wife, the third factor considered was the presence of electricity. In general, electricity may have two possible effects: first, it may reduce home

Table 4. Average Time Allocation During Survey Week of Women Without a Young Child,^{a/} By Major Activity Group, By Employment Status.

Activity	Employed at Home		Employed Away from Home		Not Employed	
	Time (in hours)	% of Total Time	Time (in hours)	% of Total Time	Time (in hours)	% of Total Time
A. Consumption Time	84.79	50.47	94.08	56.00	109.17	64.98
B. Home Production Time	42.08	25.05	52.42	31.20	58.83	35.02
B.1. Care of children	0.33	0.20	4.00	2.38	2.58	1.54
B.1.1 Care of children aged 0-2	---	---	---	---	---	---
B.1.2 Care of children aged 3 & above	0.33	0.20	4.00	2.38	2.58	1.54
B.2 Other housework	41.42	24.65	47.17	28.08	56.25	33.48
B.3 Supervising housework	0.33	0.20	1.25	0.74	---	---
C. Market Production Time	41.13	24.48	21.50	12.80	---	---
C.1 Traveling time	---	---	3.25	1.93	---	---
C.2 Working time	41.13	24.48	18.25	10.86	---	---
T O T A L	168.00	100.00	168.00	100.00	168.00	100.00

^{a/}Households 1, 2, 7, and 8 were excluded since there were no households where the mother was working at home and there was a young child present.

production time by making possible the use of time-saving electrical appliances, and second, the presence of electric lighting at home may extend home production and/or market production time beyond daylight. The former case is less likely to apply since these appliances are too expensive for most low-income rural households and electricity, when present, is used mainly for lighting.

Among the five households with electricity in our sample, only two had flatirons, two had television sets and one had an electric fan. No other electrical appliances were present.

The effects of electricity on the time budgets of the mothers are shown in Table 5 where wives in homes with electricity are seen to have slightly shorter consumption hours and longer market production time. In the next table (Table 6), we see that these wives spend more time working at night than do the other group of wives at both home and market production.

Finally, Table 6 also shows the quarter day breakdown of time for the three major activities. As expected, the bulk of home and market production time is concentrated in the daylight hours, from six in the morning to six in the afternoon.

Table 5. Average Time Allocation During Survey Week, by Major Activity Group, by Presence of Electricity

Activity	With Electricity		Without Electricity	
	Time (in hours)	Percent of Total Time	Time (in hours)	Percent of Total Time
A. Consumption Time	32.72	55.2	27.27	57.9
B. Home Production Time	51.52	30.7	52.63	31.4
B.1 Care of children	8.90	5.3	10.20	6.1
B.1.1 Care of children aged 0-2	7.43	4.5	7.90	4.7
B.1.2 Care of children aged 3 & above	1.42	0.3	2.30	1.4
B.2 Other housework	42.32	25.2	42.05	25.0
B.3 Supervising housework	0.30	0.2	0.43	0.3
C. Market Production Time	23.76	14.1	18.05	10.7
C.1 Traveling time	1.03	0.6	2.00	1.2
C.2 Working time	22.73	13.5	16.05	9.5
TOTAL	168.00	100.0	168.00	100.0

Table 6. Average Time Allocation During Survey Week,
By Quarter of the Day, By Major Activity,
and By Presence of Electricity

Activity	With Electricity		Without Electricity	
	Time (in hours)	Percent of Total Time	Time (in hours)	Percent of Total Time
I. 12:01 A.M.-6:00 A.M.				
A. Consumption Time	39.63	23.6	38.30	22.8
B. Home Production Time	2.13	1.3	3.27	1.9
C. Market Production Time	0.23	.1	0.43	.3
T O T A L	42.00	25.0	42.00	25.0
II. 6:01 A.M.-12:00 A.M.				
A. Consumption Time	8.07	4.8	8.76	5.2
B. Home Production Time	24.63	14.7	24.15	14.4
C. Market Production Time	9.3	5.5	9.08	5.4
T O T A L	42.00	25.0	42.00	25.0
III. 12:01 P.M.-6:00 P.M.				
A. Consumption Time	13.37	8.0	14.67	8.7
B. Home Production Time	17.20	10.2	20.23	12.1
C. Market Production Time	11.43	6.8	7.10	4.2
T O T A L	42.00	25.0	42.00	25.0
IV. 6:01 P.M.-12:00 P.M.				
A. Consumption Time	31.65	18.8	35.53	21.1
B. Home Production Time	7.55	4.5	5.03	3.0
C. Market Production Time	2.80	1.7	1.43	.9
T O T A L	42.00	25.0	42.00	25.0

4.2 Secondary Activities

Thus far, we have discussed the time budgets only in terms of the primary or main activities of the mother. It is very possible, however, that the mother is occupied with more than one activity at the same time so that a single unit of time is actually used to produce joint products. If secondary activities are considered, then we increase the total time spent on the specific activities involved. On the other hand, we must consider that when two or more activities are done simultaneously, there may be negative effects on the quality of the outputs produced.

Joint production was a common occurrence among the mothers observed in our survey. Frequently, this involved an almost passive consumption or leisure activity such as listening to the radio, smoking or chatting done in conjunction with some home or market production activity. Other characteristic secondary activities were watching food on the fire and looking after a child. The latter one has obvious implications on the quality of child care rendered. Both mothers in the sample who breastfed often did so while they themselves were eating or while doing other things.

Table 7 shows the total time spent by all ten

Table 7. Total Time Spent As Primary and Secondary Activity During Survey Week for Some Select Activities

Activity	Time Spent As Primary Activity (P) (in hours)	Time Spent As Secondary Activity (S) (in hours)	P + S	$\frac{S}{P + S}$
Breastfeeding	17.8	1.0	18.8	0.053
Care of child other than feeding	55.6	27.6	83.2	0.332
Cooking/ preparing food	150.5	12.3	162.8	0.076

mothers on breastfeeding, care of children other than feeding, and cooking as both primary and secondary activities. Note that a significant portion of total time spent on child care is secondary time.

4.3 Substitute Time in Home Production Activities

An important aspect of the time allocation decision of the household is the intra-household assignment of various economic activities. As explained in section 2.2, this involves a complex decision making process wherein the major consideration is the marginal utility of each unit of time of each household member in each activity. One significant consequence of such a decision is the labor force status of the wife: whether or not any of her time is to be devoted to market production. A second one, which is our concern at the moment, is the extent to which other household members participate in home production activities.

In all of the households observed, the mother was obviously the person mainly responsible for home production activities.^{14/} However, in all cases, other house-

^{14/} One exception was household number 2 wherein the fifteen year-old daughter (who was neither employed nor in school) did much of the housework while the mother was away at work.

Table 8. Number of Households In Which Household Work Was Done By Others Besides the Wife, By Activity, By Position in Household.

Activity	Household Member			Non-household Member		
	Husband	Son	Daughter	Relatives	Others	
					Hired	Not Hire
Feeding children aged 0-2	1		1		1 ^{c/}	
Care of children aged 0-2 other than feeding	4	2	2	1 ^{a/}	1 ^{c/}	
Care of children aged 3 and above	4		2			
Assisting children with schoolwork	1					
Marketing	2		1		1 ^{c/}	
Shopping		1	1			
Buying from sari-sari store	1	8	6			
Cooking/preparing food for household	6	3	6	2 ^{b/}		
Fetching water/firewood	5	4	3			
Feeding livestock/poultry	8	3	2			
Taking meals to member away from home		1	1			
Gardening	2					
Cleaning house, laundering and ironing, sewing and mending	3	4	6			

^{a/} Mother-in-law

^{b/} Same mother-in-law as in footnote (a) and in a second household, a niece.

^{c/} Neighbor

hold members shared in the housework in varying degrees. Table 8 shows the number of households where each home production activity was done by other household members, either jointly with the mother or apart from her. Here we see that the activities most commonly performed by the husband were feeding livestock and poultry, cooking, and fetching water and firewood. The husband also assisted in the care of children and, in a few cases, in the other house chores. Both sons and daughters ran errands to the sari-sari store although this task was more commonly performed by the sons. Cooking was more often assigned to daughters, perhaps an indication of the early differentiation in training (accumulation of human capital) between the sexes.

Finally, we find additional evidence of inter-household transfers of time where relatives or neighbors provide assistance in home production activities.

5. Some Final Remarks

Our results reinforce some basic implications of the theory home production. First is the importance of using social indicators as measures of welfare to supplement the traditional income and wealth measures. While income and wealth mainly reflect the returns to market production time, welfare indicators (such as indices of health) reflect the integrated effects of home and market production times as well as consumption time. We have shown, for example, that the average time spent by mothers on home production activities is at least three times that spent on market production. Measures based on market production alone may thus underestimate a household's true welfare level considerably.

In conjunction with this, attempts to maximize the productive opportunities of mothers must be aimed at allowing greater flexibility in their work schedules. For instance, generating part-time employment opportunities or initiating income-earning activities that can be done at home would serve this purpose well. Our findings suggest also that in addition to having longer productive hours, a mother who works at home has more opportunities for joint production.

Our results lend new insight into a second area of

economic interest: the cost of having children. We have presented evidence showing that although the presence of a young child may not reduce the market production hours of employed women, it may significantly affect the time they spend on home production activities other than child care. If we can show similar effects on the time budgets of unemployed women, then we can conclude that a significant cost of raising children would be a reduction in time spent on other home production activities and, hence, a probable decline in the quality of these home produced goods and the utility derived from them.

Finally, although we have not studied in detail the inter-household sharing of resources, we have uncovered some evidence of this phenomenon among our households. Inter-household transfers of time (as well as non-human) resources may yet prove to be an important factor in the determination of household welfare.

Much of the results presented here are tentative and require further verification. Our analysis is gross and should be refined not only in terms of statistical technique but also in accounting for a host of other factors related to time allocation that have been left out in this study. Further research along this line will hopefully, aid policymakers in understanding the complex

decision of the allocation of household time in particular, the mother's time and create opportunities for greater productivity for married women both in the market and at home.

It is a well known fact that the time of the mother is divided between her household and her work. The time spent in the household is used for the care of the children, the preparation of food, the cleaning of the house, etc. The time spent in the market is used for the purchase of goods and services. The time spent in the workplace is used for the production of goods and services. The time spent in the community is used for the participation in social activities. The time spent in the family is used for the care of the family members. The time spent in the neighborhood is used for the participation in neighborhood activities. The time spent in the city is used for the participation in city activities. The time spent in the country is used for the participation in country activities. The time spent in the world is used for the participation in world activities.

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