

THE VALUE OF NONMARKET HOUSEHOLD PRODUCTION:
OPPORTUNITY COST VERSUS MARKET
COST ESTIMATES

BY MARTIN MURPHY

University of Lowell, Lowell, Massachusetts

This paper discusses the problem of valuing the time spent on household production and presents estimates of that production for the United States in 1960 and 1970. The estimates are derived by using both opportunity cost and market cost valuations of household time. A comparative analysis of these estimates concludes first that opportunity cost estimates exceeded market cost estimates by 1.0 to 3.0 percent of the GNP. Second, the ratio of household production to the GNP, although declining slightly between 1960 and 1970, may in the long run tend to be relatively stable. These conclusions do not support the popular views that over time household production will decline in relative magnitude, or that the opportunity cost method of valuing household time, relative to the market cost method, is significantly upward biased.

I. INTRODUCTION

Among the many activities excluded from the official GNP statistics, nonmarket household production ranks, quantitatively at least, as one of the more important.¹ Despite its importance some of the most basic conceptual, theoretical, and methodological problems are still unresolved. Particularly intractable are those associated with valuing the time households or individuals allocate to such production.

Consequently, this article first explores some theoretical issues involved in valuing the time which individuals allocate to nonmarket (home) production and attempts to determine what is in some sense the appropriate valuation of this time. Second, empirical estimates of home production are derived for the United States for the years 1960 and 1970. Since, however, opinions differ as to the appropriate valuation of nonmarket time, the estimates were derived by applying two of the most widely used valuation methods, opportunity costs and market costs. By market cost is meant the wage rate of persons performing the market counterpart of the nonmarket task.² These empirical results are of interest for a variety of reasons. First, given the relative scarcity of empirical estimates of home production and the variety of methodologies employed, it is

¹In a recent survey article by Hawrylyshyn [6] it was shown that non-casual estimates adjusted for variability in estimating procedures ranged from 28 percent to 39 percent of the GNP. See also Kendrick [7] and Reid [14]. Clearly, the omission of such a large volume of productive activity from the national accounts presents an incomplete and perhaps seriously distorted view of the economy and of the economic activities of households.

²This is not to be confused with replacement costs. Some researchers, for example, have valued housewives' home production on the basis of annual earnings of full-time domestic servants. See Mitchell [11], Kuznets [8], and Reid [14]. In effect, though, this is really a variation of the market cost approach.

difficult to draw precise conclusions about the independent effect of the method of valuation. Generally, as the attempt by Hawrylyshyn [6] shows, comparative analysis is hindered since virtually all studies done to date have differed not only in terms of the method of valuation but also in terms of population base, scope of household activity, and time budget estimates.³ Moreover, with the exception of Sirageldin [15] all previous studies have applied only one method of valuation. In brief, any attempt to isolate the independent effect of the method of valuation involves inter-study comparisons of what are in many respects noncomparable studies. By contrast, the market cost and opportunity cost estimates presented here are identical in all respects except for the method of valuation. Second, as is often acknowledged but seldom done, opportunity cost estimates should be adjusted downward on the basis of marginal tax rates.⁴ The present estimates are so adjusted on the basis of Internal Revenue Service data. Third, with the exception of Nordhaus and Tobin [12], Kendrick [7], and Weinrobe [31], all recent estimates have been for a single point in time.⁵ Consequently, more information is needed about the movement over time of the relative magnitude of home production. There is a view, for example, that over time the ratio of home production to GNP will decline. But, as has been noted elsewhere, the limited empirical evidence to date is inconclusive on that point.⁶ Since the estimates presented in this study cover a 10 year time span they will provide additional information on the intertemporal aspects of home production. Moreover, since they have the virtue of consistency with respect to population base, scope of household activities and time budget data, hopefully they will allow more precise conclusions to be drawn about the independent effect of the method of valuation both at a point in time and over time.

II. HOUSEHOLDS AS PRODUCER-CONSUMERS: THE VALUE AND ALLOCATION OF TIME

As noted, in recent times, basically two methods have been used to value time spent in home production. The first is based on the concept of market costs. According to this method, time spent on tasks such as housecleaning, cooking, home repairs, child care, and so on should be valued at the hourly wage of persons performing the same task in the market because that is the price the household would pay for these services if it purchased them on the market.

³For example, in some studies the population base is restricted to housewives only and in others covers the entire civilian noninstitutional population 16 years old and over. Similarly, the kinds of activities included in the definition or concept of household production vary from study to study. Finally, estimates of the number of hours spent in these activities are either based on different time budget studies or in some cases simply assumed.

⁴Sirageldin did adjust his opportunity cost estimates for marginal tax rates. Also Hawrylyshyn made some rough adjustments to several opportunity cost estimates for purposes of comparison.

⁵There are some earlier time-series estimates covering the periods 1909–18 (see Mitchell [11], p. 59; p. 64) and 1940–45 (see Reid [14]). In both cases time was valued at replacement costs.

⁶To the extent that omission of home production generates distorted information about the economy it is of some importance whether or not these distortions can be expected to diminish automatically with the passage of time. This point is pursued further in section IV.

The second method is based on opportunity costs. The rationale behind this approach is based on the view that individuals allocate their time in much the same way they allocate their income: that is, till the marginal yield on the last hour spent is the same whether it is spent on work, leisure, or home production. Thus, to the extent that the marginal wage rate net of taxes represents the value of time spent at work, then in equilibrium it also represents the value of time spent in home production.⁷ Accordingly, time allocated to household tasks such as those mentioned above would be valued at the hourly wage rate net of taxes of the individual performing the task. A basic question arises, however, as to which valuation, if either, is appropriate. In short, should the time spent on household work be valued at foregone earnings net of taxes, at the hourly wage of persons performing similar tasks in the market, or at some other rate? This question is discussed briefly below.

Consider an individual who spends an hour cooking at home. Ignoring non-labor costs the individual gains product worth W_d , the wage rate, say, of cooks, plus the utility (disutility) associated with the activity. The opportunity cost of that decision is W , the individual's hourly wage rate net of taxes, plus the utility (disutility) of work. Hence, at the margin

$$(1) \quad W + U_w = W_d + U_d = U_L$$

where U_w , U_d , and U_L are, respectively, the marginal utility of work, home production, and leisure.

Equation (1) says that time spent in home production yields both output and net utility, but does not tell us what the appropriate valuation of that time is. Moreover, (1) reflects the equilibrium value of time to the utility maximizing individual. This need not be the same, however, as the value society places on that time. Society, or perhaps the national income statistician or economic planner, may feel that only output should be counted. After all, the utility or disutility associated with market production is not counted in the GNP. Following that logic the appropriate valuation would be market costs because that reflects the value of the output produced. Second, even if (1) does apply, that is, if time is being valued from the viewpoint of consumer welfare, its equilibrium value is in general indeterminate. Still, under certain conditions opportunity costs and market costs could be viewed, respectively, as upper and lower bounds on the value of time.⁸

Thus, in the absence of any clear cut preferences it could be argued that market costs ought to be used since it is better to add a smaller rather than a larger conjectural estimate to the GNP. Besides, the national income statistician or economic planner may still insist that market costs should be used not because

⁷For rigorous treatments of this view see Becker [1], Gronau [4], DeSerpa [2], Linder [10], and Pollack and Wachter [13].

⁸If for most people $W > W_d$, from (1) in the text, valuing time spent on home production at W implicitly assumes the individual gains product worth W_d plus net utility worth $(W - W_d)$. On the other hand, valuing such time at W_d ignores the value of net utility altogether. Clearly, therefore, to the extent that $(W - W_d)$ is a positive number, estimates based on market costs would tend to be downward biased relative to opportunity cost estimates.

it may be a downward biased estimate of the welfare value of home production but because it is the appropriate valuation *per se*. My own view is that since GNP is first and foremost a measure of output the more appropriate valuation is market costs. But perhaps too much is being made of the *a priori* biases attributed to the method of valuation. The debate over the use of opportunity costs versus market costs to estimate the value of home production has meaning only to the extent that the two sets of estimates differ substantially. The magnitude of this difference is an empirical question. Hence, the following section presents opportunity cost and market cost estimates of home production in the United States for the years 1960 and 1970.

III. HOME PRODUCTION: OPPORTUNITY COSTS VERSUS MARKET COSTS

In this section the methodology used to derive both sets of estimates is described briefly. The detailed data on which these estimates are based appear in Appendix Tables 1–6. The results of both methods of valuation are discussed and compared in section IV.

To obtain opportunity and market cost estimates of home production in 1960 and 1970 the civilian noninstitutional population 16 years old and over was divided into three basic groups: (1) Husband-wife families, (2) single women, and (3) single men. This classification scheme was selected due mainly to the fact that two separate time budget studies were used to derive estimates of household time use. The study by Walker [29] was used to estimate annual hours spent on home production by spouses in husband-wife families.⁹ However, since Walker's study covered only husband-wife families additional data were needed to estimate the time input of single women and single men. Consequently, the multinational time budget study done by Szalai [16] was used to estimate annual hours of home production by the latter groups.

Husband-wife families were further classified by employment status of the wife and number of children under 18 years of age. These characteristics along with the age of the youngest child were found by Walker to be significant determinants of the amount of time families allocate to home production. Single women were classified by employment status and single men simply as employed.

Home production was divided into five basic tasks: (1) food preparation, (2) house upkeep, (3) clothing maintenance, (4) family care, and (5) other.¹⁰ Annual hours spent on each task by all persons were obtained by summing across individuals by task.¹¹

⁹See [17] which contains a condensed version of Walker [29]. See also Walker [30].

¹⁰Other includes: (1) marketing, (2) bookkeeping, and (3) household management.

¹¹Total hours spent on each task by individuals in each population subgroup were assumed to be the same in 1960 and 1970. This assumption seems reasonable given the rate of sociological change and other factors affecting time allocation. Indeed, projections to 1985 based on 1965 time budget data show no dramatic changes in daily time budgets for a variety of societal groups. See Enzer [3]. Note, however, that changes in the total number of hours of home production for any population subgroup or for society as a whole may occur as demographic and labor force trends alter the distribution of individuals among groups.

TABLE 1
OCCUPATIONS AND WAGE RATES ASSIGNED TO VARIOUS HOUSEHOLD TASKS

Household Task	Occupations Assigned ^a	Average Hourly Wage Rates ^b (current dollars)			
		1960		1970	
		Women	Men	Women	Men
Food preparation	Cooks (not in private households)	1.02	1.69	1.83	3.05
House upkeep	Cleaning service workers	1.30	1.90	1.84	2.91
Clothing maintenance	Laundry and dry cleaning operatives	1.07	1.53	1.93	2.72
Family care	Private household workers living in ^c	0.99	1.22	1.33	1.78
Other	Housekeepers (not in private households) and accounting clerks class B	1.47	1.99	2.32	3.35

^aThese occupations were selected on the basis of availability and consistency of data for both 1960 and 1970.

^bFor details, see Appendix Table 6.

^cPerhaps workers in day care centers would be a more appropriate selection; however, data limitations precluded such a choice.

The opportunity cost estimates were derived by multiplying the total number of hours allocated to all five tasks by the relevant opportunity wage. For women this was the average hourly wage net of taxes of full-time year round female workers, and for men the average hourly wage net of taxes of full-time year round male workers.¹² To obtain market cost estimates, the hours spent on the various household tasks were valued at the average hourly wage rates of persons performing similar tasks in the market (see Table 1). The resulting estimates appear in Tables 2 and 3 below.

IV. COMPARISON OF RESULTS

The empirical estimates shown in Tables 2 and 3 serve two main purposes:

1. They indicate the extent to which the method of valuation biases measures of home production;
2. They indicate what may be happening over time to the relative magnitude of home production.

With respect to the first point, based on the discussion in section II, the market cost estimates will serve as the basis of comparison. In short, I am proceeding on the assumption that market costs place a lower bound on the value of home production. With respect to the second point, given that the

¹²Recall that marginal wage rates net of taxes should be used to value household time. Average wage rates, therefore, serve only as an approximation. Demographic, labor force, hours and earnings, and marginal tax rate data derived from various U.S. Government publications. For further details see the Appendix Tables.

exclusion of home production from the GNP biases measures of economic performance, it is surely of some interest to determine whether the ratio of home production to GNP tends to rise, fall, or remain constant over time. Hereafter this ratio is referred to as V/Q where V is the value of home production and Q is the GNP.

First, as regards point 1 above, the results in Tables 2 and 3 are not surprising. Indeed, from the discussion in section II one would expect opportunity cost estimates to exceed market cost estimates. However, the results do not support the view that opportunity cost estimates are strongly upward biased. For instance, in 1960 the opportunity cost valuation of home production exceeded the market cost valuation by only 4.2 billion dollars or 2.3 percent. By 1970 this difference had increased to 26.9 billion dollars or 8.0 percent over market costs. Still, even the 1970 figure is well below that found in the only other comparable study, that of Sirageldin. Sirageldin's opportunity cost estimates for 1964 exceeded his market cost estimates by about 15 percent.¹³ Viewed somewhat differently, the difference between the two sets of estimates was less than 1.0 percent of the GNP in 1960 and somewhat higher, 2.8 percent, in 1970. It is interesting to compare this with the results presented in Hawrylyshyn's review

TABLE 2
HOUSEHOLD PRODUCTION BY THE CIVILIAN NONINSTITUTIONAL POPULATION 16 YEARS
OLD AND OVER IN 1960
(Billions of Current Dollars Except Last Column)

Population Subgroup and Method of Valuation	Food Preparation	House Upkeep	Clothing Maintenance	Family Care	Other	Total Dollar Value	Dollar Value as a Percent of GNP
<i>Opportunity Costs</i>							
Housewives ^a	34.4	24.9	19.0	18.5	15.8	112.6	22.4
Married men ^b	2.6	12.9	0.0	2.6	10.3	28.4	5.6
Single women ^c	8.0	15.4	5.0	5.6	5.9	39.9	7.9
Single men	2.1	2.2	1.1	0.0	3.2	8.6	1.7
Total	47.1	55.4	25.1	26.7	35.2	189.5	37.6
<i>Market Costs</i>							
Housewives	29.3	27.2	17.0	15.3	19.4	108.2	21.5
Married men	2.4	13.7	0.0	1.8	11.5	29.4	5.8
Single women	6.7	16.4	4.4	4.5	7.1	39.1	7.8
Single men	2.0	2.2	0.9	0.0	3.5	8.6	1.7
Total	40.4	59.5	22.3	21.6	41.5	185.3	36.8

^aHousewives means wives in husband-wife families.

^bMarried men means husbands in husband-wife families.

^cSingle includes all those not classified as spouses in husband-wife families.

Source: Calculated from Appendix Tables 1-6.

¹³[15], pp. 55, 74.

TABLE 3
HOUSEHOLD PRODUCTION BY THE CIVILIAN NONINSTITUTIONAL POPULATION 16 YEARS
OLD AND OVER IN 1970
(Billions of Current Dollars Except Last Column)

Population Subgroup and Method of Valuation	Food Preparation	House Upkeep	Clothing Maintenance	Family Care	Other	Total Dollar Value	Dollar Value as a Percent of GNP
<i>Opportunity Costs</i>							
Housewives ^a	62.3	45.1	34.2	31.1	28.9	201.6	20.7
Married men ^b	4.9	24.6	0.0	4.9	19.6	54.0	5.5
Single women ^c	17.7	34.1	11.1	12.3	13.0	88.2	9.0
Single men	4.7	4.7	2.3	0.0	7.0	18.7	1.9
Total	89.6	108.5	47.6	48.3	68.5	362.5	37.1
<i>Market Costs</i>							
Housewives	57.1	41.6	33.1	20.7	33.6	186.1	19.0
Married men	4.9	23.3	0.0	2.9	21.5	52.6	5.4
Single women	15.6	30.3	10.3	7.9	14.6	78.7	8.0
Single men	4.5	4.3	2.0	0.0	7.4	18.2	1.9
Total	82.1	99.5	45.4	31.5	77.1	335.6	34.3

^{a,b,c}See footnotes to Table 2.

Source: Calculated from Appendix Tables 1-6.

article. In that article opportunity cost estimates exceeded market cost estimates by as much as 11 percent of the GNP and on average by 5.5 percent of the GNP.¹⁴ By comparison, the results in Tables 2 and 3 suggest that the opportunity cost method of valuing home production, relative to the market cost method, is biased mildly upward in the order of 1.0 to 3.0 percent of the GNP.

Second, the results are rather interesting in terms of the change between 1960 and 1970 in the ratio V/Q . The popular view is that V/Q will decline over time. The main impetus for this decline, according to Kuznets, is the transference of household tasks to the market in the process of economic development.¹⁵ One might also expect that the increased labor force participation rates of women, the increased availability of labor saving home appliances, and the trend towards smaller families would also contribute to a decline in V/Q . In that context it seems reasonable to ask if the ratio is declining in the United States. The answer to some extent depends on which estimates one accepts. Valued at opportunity costs, for example, V/Q was 37.6 percent in 1960 and slightly less, 37.1 percent, in 1970. By comparison, valued at market costs V/Q declined

¹⁴[6], p. 114. The author notes, however, that the variation in results was attributable to a variety of methodological, institutional, and conceptual differences among the studies reviewed and not exclusively to the method of valuation. By contrast, the results reported here might reasonably be attributed entirely to the method of valuation.

¹⁵See Kuznets [8], II, p. 432 and [9], pp. 3-4.

noticeably from 36.8 percent in 1960 to 34.3 percent in 1970. To the extent that the market cost estimates are more appropriate the results lend support to the view that V/Q declines over time. The opportunity cost estimates are less convincing. An absolute decline of only 0.5 percent over a ten year period is rather weak evidence of a decline. Still, taking both estimates together one could draw the tentative conclusion that home production probably declined somewhat in relative magnitude between 1960 and 1970. Whether this can be taken as evidence of the long term trend is another matter. Indeed, there is evidence to suggest relative long run stability in the ratio. For example, based on Nordhaus and Tobin's estimates, adjusted for marginal tax rates, V/Q was 36.3 percent in 1929 and actually slightly higher, 37.1 percent, in 1965¹⁶. These figures are remarkably similar to the ones presented here. But why, one might ask, should the ratio tend towards stability? In partial response to this question some of the factors affecting the long term movement in the ratio V/Q are examined briefly below. Several have already been mentioned, chief among them the transference of household tasks to the market.

At early stages of development one would expect home tasks to be transferred to the market due to the comparative efficiency of market technology and opportunities for specialization and division of labor. An obvious example is the destruction of cottage industry due to the rise of large scale mechanized factory production. It is not clear, however, that such a trend will continue indefinitely. It would appear, for example, that among other things, the decision by a household to transfer activities to the market depends upon the comparative efficiency of home versus market technology and the comparative efficiency of various family members in the production of home versus market goods.¹⁷ An additional factor of course is the household's preference for market versus nonmarket income. Thus, at higher stages of development, as production of services increases relative to the production of manufactures, the trend may be stabilized or even reversed. To cite one example, production of laundry services in a household owning a washer and dryer may be more efficient (from the household's point of view) than commercial production of these services once time costs are calculated. Clearly, time is saved by eliminating the trip back and forth plus waiting time at the commercial establishment. A further, and dramatic, example of transference of services from the market to the household is in the area of transportation. In the United States there has been a substantial shift from public to private (automobile) transportation.¹⁸ Under the above circumstances it is far from obvious that transference of tasks between households and market is unidirectional.

Moreover, in addition to the transference of tasks, the amount of time spent on each task affects V/Q . In that connection I have already indicated a number of factors which would tend to reduce time per task. Offsetting these, however, are (1) the increased amount of time being spent per child on child care, (2) the increasing amount of time being spent choosing goods as their variety and complexity increases, and (3) the increased amount of time being spent on

¹⁶See [12], p. 47. The marginal tax rate was assumed to be 0.21 in 1929 and 1965.

¹⁷See, for example, Gronau [5], pp. 634-635.

¹⁸Of course, this trend may be reversed due to the energy situation.

maintenance of the growing stock of household capital.¹⁹ On balance, then, what can be said about the probable long run movement in V/Q ? Neither the empirical evidence nor the brief analysis presented here lends much weight to the view that V/Q is destined to decline inexorably with the passage of time. Perhaps after a long period of decline the ratio stabilizes; it may even rise. We do not know. But this conclusion is in itself important. The conventional view is that the proportion of economic activity bypassing the market declines in importance over time. If this is true then presumably the distortions resulting from the omission of such activity from economic decision-making will decline also. The analysis and results presented here indicate such a conclusion is unwarranted.

V. SUMMARY AND CONCLUSIONS

This paper has argued that although the value of time is in general indeterminate, under certain conditions opportunity costs and market costs may be viewed, respectively, as setting upper and lower valuation boundaries. The problem with this result is that a range of values rather than a single appropriate value is generated. Moreover, if one's interest is primarily in the product generated by households, then market costs appear to be the more appropriate valuation. Thus the paper was unable to state conclusively what *the* appropriate valuation of time should be. Still, it highlighted the basic theoretical issues involved in selecting either market costs or opportunity costs.

In view of the range of possible values empirical estimates of home production in the United States were derived using both opportunity cost and market cost methods of valuation. The purpose of these estimates was (1) to determine whether the difference between the two methods was large enough to justify the continued debate over which is more appropriate, and (2) to examine the time trend of the ratio of home production to the GNP. In that connection the following results were obtained:

1. Opportunity cost estimates of home production exceed market cost estimates by 1.0 to 3.0 percent of the GNP.
2. The ratio of home production to the GNP appeared to decline slightly between 1960 and 1970 but in the long run may tend towards stability.

These findings do not support the widely held views that household production will continually decline in relative importance, and that relative to market cost estimates, opportunity cost estimates of such production are strongly upward biased. There is some bias to be sure but hardly enough to justify debilitating arguments against either method. I have already indicated my own preference; that is, that home production should be valued at market costs mainly because the GNP is itself an index of production. Those who favor a welfare oriented measure will perhaps disagree, but if, as has been argued here, opportunity costs set an upper limit on the welfare valuation of time, then the differences between welfare and output oriented measures of home production are even smaller than the present results indicate.

¹⁹Note, though, that as more day care centers become available and attitudes towards male-female roles change, there may be a tendency to transfer child care services from the home to the market.

APPENDIX TABLE 1
 AVERAGE DAILY HOURS OF HOUSEHOLD WORK, BY TASK, FOR MEN
 AND WOMEN BY EMPLOYMENT STATUS, MARITAL STATUS, AND
 NUMBER OF CHILDREN UNDER 18 YEARS OF AGE^a

Family and Employment Status	Number of Children Under 18 Years of Age	Average Daily Hours of Household Work				
		Food Preparation	House Upkeep	Clothing Maintenance	Family Care	Other
<i>Women</i>						
Housewives employed	None	1.3	0.9	0.6	0.1	0.8
	1	1.6	1.3	0.8	0.7	0.7
	2	1.8	1.1	0.9	1.1	0.9
	3	1.8	1.4	1.1	0.9	0.8
	4 or more	1.9	1.2	1.2	1.1	0.9
Housewives not employed	None	2.0	1.5	1.1	0.1	0.9
	1	2.1	1.5	1.1	1.8	1.0
	2	2.3	1.7	1.4	2.1	0.9
	3	2.3	1.7	1.3	1.8	1.1
	4 or more	2.4	1.6	1.4	2.3	1.0
Single employed	—	0.5	1.1	0.3	0.2	0.6
Single not employed	—	1.1	2.0	0.7	0.9	0.6
<i>Men</i>						
Married	—	0.1	0.5	0.0	0.1	0.4
Single	—	0.2	0.2	0.1	0.0	0.3

^aData on family size apply, in this particular instance, only to housewives (that is, wives in husband-wife families). Note also, annual hours of housework are simply 365 times daily hours.

Sources: Walker [30], pp. 10-11; Szalai [16], p. A/28.

APPENDIX TABLE 2
 NUMBER OF HUSBAND-WIFE FAMILIES BY EMPLOYMENT STATUS OF
 WIFE AND NUMBER OF CHILDREN UNDER 18 YEARS OLD. 1960 AND 1970
 (All Figures in Thousands)

Number of Children Under 18	1960		1970	
	Wife Employed ^a	Wife Not Employed ^b	Wife Employed	Wife Not Employed
None	5,025	11,134	6,954	12,419
1	2,225	5,155	2,863	4,989
2	1,798	5,730	2,406	5,323
3	865	3,686	1,334	3,392
4 or more	628	3,411	1,092	3,229

^aEmployed is defined to mean paid employment for 15 or more hours per week.

^bNot employed is defined as paid employment between 0 and 14 hours per week plus those not in the labor force.

Source: U.S. Department of Commerce [18], p. 70; [20], p. 121.

APPENDIX TABLE 3
NUMBER OF SINGLE MEN AND SINGLE WOMEN 16 YEARS OLD
AND OVER IN THE CIVILIAN NONINSTITUTIONAL POPULATION
BY EMPLOYMENT STATUS OF WOMEN: 1960 AND 1970
(All Figures in Thousands)

Year	Women Employed ^a	Women Not Employed ^b	Men
1960	10,318	11,608	16,005
1970	13,761	14,972	20,259

^aEmployed here means 1 or more hours of paid employment per week.

^bNot employed means those with zero hours of paid employment plus those not in the labor force. The differences in definitions here and in Appendix Table 2 above are due to differences in time budget data.

Sources: U.S. Department of Commerce [18], p. 70; [20], p. 121; [22] (1975), p. 343.

APPENDIX TABLE 4
AVERAGE HOURLY WAGES OF YEAR ROUND FULL-TIME CIVILIAN WORKERS
14 YEARS OLD AND OVER BY SEX, IN 1960 AND 1970

	Median Earnings (Dollars)		Average (Mean) Weekly Hours Worked		Average Hourly Wages: Cols. 1 or 2 ÷ (52 × Cols. 3 or 4)	
	Women	Men	Women	Men	Women	Men
	1	2	3	4	5	6
1960	3257	5368	41.0	45.0	1.53	2.29
1970	5323	8966	39.9	44.0	2.56	3.92

Sources: U.S. Department of Commerce [19], pp. 184, 194; [21], pp. 747, 761; [23], p. 48; U.S. Department of Labor [26], p. A/24.

APPENDIX TABLE 5
MARGINAL TAX RATES

Marital Status of Taxpayer	1960		1970	
	Average Tax Liability (Dollars)	Marginal Tax Rate	Average Tax Liability (Dollars)	Marginal Tax Rate
Joint returns ^a	810	0.22	1549	0.22
Non-joint returns ^b				
Men	361	0.20	588	0.19
Women	361	0.20	556	0.19

^aThese rates were applied to the population data in Appendix Table 2 (that is, spouses in husband-wife families) and the wage data in Appendix Table 4.

^bThese rates were applied to the population data in Appendix Table 3 and the wage data in Appendix Table 4.

Sources: U.S. Department of the Treasury [27], pp. 44, 146; [28], pp. 91, 337.

APPENDIX TABLE 6
AVERAGE HOURLY WAGES OF YEAR ROUND FULL-TIME CIVILIAN WORKERS BY SEX
IN 1960 AND 1970: SELECTED OCCUPATIONS

	Year	Median Annual Earnings (Dollars)		Average (Mean) Weekly Hours Worked		Average Hourly Wage Rates: ^a Cols. 2 or 3 ÷ (52 × Cols. 4 or 5) (Dollars)	
		Women	Men	Women	Men	Women	Men
Cooks (not in private households)	1960	1955	3911	38.3	46.4	1.02	1.69
	1970	3161	5853	35.3	39.1	1.83	3.05
Cleaning Service Workers	1960	1813	3433	28.0	36.1	1.30	1.90
	1970	3041	5583	31.8	36.9	1.84	2.91
Laundry and Dry Cleaning Operatives	1960	2017	3304	37.8	43.2	1.07	1.53
	1970	3380	5471	35.7	41.1	1.93	2.72
Private Household Workers—living in	1960	1486	2075	28.8	32.8	0.99	1.22
	1970	2001	2967	29.0	32.1	1.33	1.78
Housekeepers (not in private households)	1960	2633	4190	39.7	44.6	1.33	1.88
	1970	4052	7318	35.6	40.2	2.32	3.71
Accounting Clerk, Class B	1960	—	—	—	—	1.60	2.10
	1970	—	—	—	—	2.33	2.99

^aIn some cases where 1959 or 1969 data were used to calculate hourly wage rates the results were increased by 4.1 percent (1959-60) and 6.1 percent (1969-70). These increases are based on annual percent changes in compensation per employee man-hour. See, U.S. Department of Commerce [22] (1975), p. 234.

Sources: U.S. Department of Commerce [19], pp. 184-203, 232, 234, 356-375; [21], pp. 280-283, 368-395, 504-506, 747-774; U.S. Department of Labor [24], (25).

REFERENCES

- [1] Becker, Gary S., "A Theory of the Allocation of Time," *Economic Journal*, Vol. 75 (1965), September, pp. 493-517.
- [2] DeSerpa, Allen C., "A Theory of the Economics of Time," *Economic Journal*, Vol. 81 (1971), December, pp. 828-846.
- [3] Enzer, Selwyn, Dennis Little, and Frederick D. Lazar, *Some Prospects for Social Change by 1985 and Their Impact on Time/Money Budgets*, Report R-25, Middletown, Conn.: Institute for the Future, 1972.
- [4] Gronau, Reuben, *The Value of Time in Passenger Transportation: The Demand for Air Travel*, Occasional Paper No. 109, New York: National Bureau of Economic Research, 1970.
- [5] ———, "The Intra Family Allocation of Time: The Value of the Housewife's Time," *American Economic Review*, Vol. 63 (1973), September, pp. 634-651.
- [6] Hawrylyshyn, Oli, "The Value of Household Services: A Survey of Empirical Estimates," *Review of Income and Wealth* (1976), June, pp. 101-131.
- [7] Kendrick, John W., "Studies in the National Income Accounts," *Contributions to Economic Knowledge Through Research*, Forty Seventh Annual Report of the National Bureau of Economic Research, New York: National Bureau of Economic Research, Inc., 1967.
- [8] Kuznets, Simon, *National Income and Its Composition 1919-1938*, 2 Vols., New York: National Bureau of Economic Research, 1944.
- [9] ———, *Economic Growth of Nations*, Cambridge: Belknap Press of the Harvard University Press, 1971.
- [10] Linder, Staffan B., *The Harried Leisure Class*, New York: Columbia University Press, 1970.
- [11] Mitchell, Wesley C., Willford I. King, Fredric R. Macaulay, and Oswald W. Knauth, *Income in the United States: Its Amount and Distribution, 1909-1919*, 2 Vols., New York: Harcourt Brace and Company, 1921; National Bureau of Economic Research, 1922.

- [12] Nordhaus, William and James Tobin, "Is Growth Obsolete?" in *Economic Growth: Fiftieth Anniversary Colloquium V*, New York: National Bureau of Economic Research, 1972.
- [13] Pollack, Robert A. and Michael L. Wachter, "The Relevance of the Household Production Function and Its Implications for the Allocation of Time," *Journal of Political Economy*, Vol. 83 (1975), April, pp. 255-277.
- [14] Reid, Margaret G., "The Economic Contribution of Homemakers," *The Annals of the American Academy of Political and Social Science*, Vol. 251 (1947), May, pp. 61-69.
- [15] Sirageldin, Ismail A., *Non-Market Components of National Income*, Ann Arbor: Survey Research Center, Institute for Social Research, The University of Michigan, 1969.
- [16] Szalai, Alexander, S. Ferge, C. Goguel, V. Patrouchev, H. Raymond, E. Scheuch, and A. Schneider, "Multinational Comparative Social Research," *American Behavioral Scientist*, Vol. 10 (1966), December, pp. A/1-A/60.
- [17] "Time Used by Husbands for Household Work," *Family Economics Review* (1970), June, pp. 8-11.
- [18] U.S. Department of Commerce, Bureau of the Census, *U.S. Census of Population: 1960, Subject Reports. Final Report, PC(2)-4A, Families*.
- [19] ———, ———, *U.S. Census of Population: 1960, Subject Reports. Final Report, PC(2)-7A, Occupational Characteristics*.
- [20] ———, ———, *U.S. Census of Population: 1970, Subject Reports. Final Report, PC(2)-4A, Family Composition*.
- [21] ———, ———, *U.S. Census of Population: 1970, Subject Reports. Final Report, PC(2)-7A, Occupational Characteristics*.
- [22] ———, ———, *Statistical Abstract of the United States: 1972, 1975*.
- [23] ———, ———, "Statistical Portrait of Women in the U.S.," *Current Population Reports*, Series p. 23, No. 58 (April 1976).
- [24] U.S. Department of Labor, Bureau of Labor Statistics, "Wages and Related Benefits, 60 Labor Markets, 1959-60," *Bulletin 1265-62* (1961).
- [25] ———, ———, "Area Wage Surveys, Selected Metropolitan Areas, 1969-70," *Bulletin 1660-91* (1971).
- [26] U.S. Department of Labor, Bureau of Labor Statistics, "Employment and Unemployment in 1970," *Special Labor Force Report No. 129* (1971).
- [27] U.S. Department of the Treasury, Internal Revenue Service, *Statistics of Income—1960, Individual Income Tax Returns*.
- [28] ———, ———, *Statistics of Income—1970, Individual Income Tax Returns*.
- [29] Walker, Kathryn E., "Time-use Patterns for Household Work Related to Homemakers' Employment," paper presented at the National Agricultural Outlook Conference, Washington, D.C., February 1970. See also (17).
- [30] ———, "Household Work Time: Its Implications for Family Decisions," *Journal of Home Economics* (1973), October, pp. 7-11.
- [31] Weinrobe, Maurice, "Household Production and National Production: An improvement of the Record," *Review of Income and Wealth* (1974), March, pp. 89-102.