THE VALUE OF HOUSEHOLD SERVICES:
A SURVEY OF EMPIRICAL ESTIMATES*

BY OLI HAWRYLYSHYN

Queen's University, Kingston, Ontario

This paper surveys the various estimates that have been made of the value of household services, summarizing the methods used and comparing the statistical results. It concludes that there is wide variability in the results obtained, much of which can be attributed to the differing methods. The highest values are obtained with methods based upon the opportunity cost of women in paid employment, lower with methods based upon the cost of a single housekeeper, and lowest with methods based upon pricing individual services performed. On the basis of time use studies, three factors are found to affect very strongly the value of services performed: family size, wife's market-work status, and age of youngest child. The value of total household services should include not only the wife's contribution, but also that of the husband and children, which may amount to as much as a third of the total. The increasing burden of more children, however, appears to fall mainly on the wife, with some relief from older children; the amount of time spent by husbands appears relatively invariant to number of children or work status of the wife.

I. INTRODUCTION

As is often the case with newly fashionable topics, closer investigation of household service valuation gainsays the newness of the issue. It has long been recognized that household work yields value, but what is probably less well known is that attempts have been made even before Nordhaus–Tobin's "MEW" to evaluate this contribution. One of the earliest was that of Simon Kuznets for the United States for 1929; pre-World War II estimates were also made for Sweden, Denmark and Norway. The methodology for these was very crude and this perhaps led the authors to recommend against inclusion in the accounts. Though he did not attempt any empirical estimates, Benjamin Andrews [1] did go far beyond the work of others in outlining different possible methodological approaches for such an estimation. After World War II, a number of estimates were made, besides the well-publicized one of Nordhaus–Tobin: that of Sirageldin at Michigan [32] and Walker–Gauger of Cornell [41] are the most thorough. Other, non-academic, estimates have been made, such as those of The Ottawa Journal, The Chase-Manhattan Bank, and The West German Savings Bank Group. The Chase-Manhattan study has fed a large number of popular magazine articles on the value of a housewife.

In this paper I wish to outline the different attempts, make a number of adjustments to achieve some degree of comparability, and discuss these comparisons in an attempt to derive some lessons for the task of estimation of household services. A few prior remarks are in order. The methodology, coverage, and time periods differ among the estimates, and on the basis of certain assumptions, I have

done some numerical manipulation to render them as nearly comparable as possible. These are documented in the text, as are additional remarks on the different procedures used which clarify the comparison. At least one of the estimates was judged to contain an important error in method, which was corrected. A group of estimates, subjectively judged to be of a generally inferior quality, have been labelled "Casual Estimates" and have been left out of the comparisons.

Although it would seem appropriate to begin by defining household work (HW), this is perhaps best left to the Conclusions part of the survey, because, as shall become clear, not all students of the question have taken the same view, nor indeed have they all clearly understood their own implicit definition. There are both mechanical and conceptual differences in definitions used. Mechanically, some pertain to work done by all members of households, others only to wife's contribution. Conceptually, some (invariably *implicitly*) consider the economic value of a housewife-mother, others only the value of that portion of her activity which may be called economic services.[1] We shall return to this question and attempt a clarification of definitions at the end of this survey.

In the remainder of the paper, Section II describes briefly the three basic methodologies of estimation, Section III outlines the specific procedures and assumptions underlying each study and indicates any adjustments I have made for overall comparability; Section IV discusses the results in a comparative fashion, and finally Section V attempts to draw some conclusions and lessons from the survey.

II. METHODOLOGIES OF ESTIMATION

There are three basic methods used in the studies outlined, and here I present in simplified form the basic formulas for each to serve as a general framework.[2] In the next section, more detailed explanations are given and modifications of the basic approaches applied by each study are discussed.

Method (1): WOCT—Wage Equals Opportunity Cost of Time

This method assumes, à la Becker, that the rational individual has allocated time to household work so that at the margin its value equals the opportunity cost market wage. This gives:

$$H = (QT \times W) \times 52 \times P$$

---

[1]The former are those who use a method (WOCT) arising from the opportunity cost valuation of time developed in G. Becker, "A Theory of the Allocation of Time", *Economic Journal*, September 1965. The latter are those who use a replacement cost of a hired housekeeper method (MAHC), or replacement cost of individual functions (MAIFC).

[2]A fuller discussion of the theoretical foundations, the alternative methodologies of estimation, and various problems involved in each, is to be found in O. Hawrylyshyn, "Estimating the Value of Household Work: Theoretical and Methodological Approaches", Working Paper # 2, *Non-Market Activity Project*, Statistics Canada, May 1975, [17].

where:

> H = annual \$ value of housework

> QT = hours devoted to housework weekly

> W = opportunity cost wage of relevant individuals
> (i.e. what the individual could earn on market)

> P = number of household workers

In the studies using this approach, some disaggregation was done by groups such as male-female-children; market participation. The importance of disaggregation lies in the differences among groups both for opportunity-cost wages (W) and for the hours of housework (QT).

Method (2): MAHC – Market Alternative = Housekeeper Cost

This method assumes the hiring of a *single* individual to do all the housework. The estimated average cost of a housekeeper with full responsibility for housekeeping is said to reflect exactly the value of the services now performed outside the market. Thus:

> $H = D \times N$

where:

> D = Annual average \$ salary of a domestic

> N = Number of households

Again, disaggregation is possible, on the basis of different types of households (house-size, number of children, income groups, geographic regions, rural-urban, etc.).

Method (3): MAIFC – Market Alternative = Individual Function Costs

This method assumes hiring a market replacement for each *separate* function in housework. The time spent by householders on each of such activities as cooking, washing, child-care, is valued at the market wage for each of these services. Thus, the formula is:

$$H = P \times 52 \sum_{i=1}^{n} (QT_i \cdot W_i)$$

where:

> QT_i = hours per week devoted to housework function i

> W_i = hourly rate in market for occupation corresponding to function i

> n = number of functions in disaggregation

III. SELECTED ESTIMATES

This section outlines in some detail the procedures used by the studies in the order given in Table 1; the results are discussed in Section IV. The survey is

admittedly not comprehensive, even for English-language works, omissions being explained by access to material and the opportunity cost of time.

1. Mitchell; NBER, 1919, U.S.A. [19]

This appears to be the first known valuation of household services and is based on the simplest methodology described in Section II, that is the multiplication of an average annual cost for a hired domestic by the number of households in the nation (MAHC). The only allowance for variation among households is the disaggregation into two categories—rural and urban—with a lower cost in the former. The actual annual values are based on the 1905 cost inflated to 1919 by a general wage index of paid domestic service. There is no attempt to evaluate the contributions of other members of the household, nor is there a subtraction from the conjectural aggregate of the value of services in *fact* performed by hired help already captured in market-based GNP.

2. Kuznets; NBER, 1929, U.S.A. [19]

Kuznets also uses the MAHC method to estimate the value of housewives' services, applying the actual annual costs of domestics for that year to the number of families with two or more members. A distinction is made between rural and urban families, but no attempt is made to include the services of other members of the household. As in the previous study, the author strongly qualifies the estimation as being very crude and merely indicative, and not to be considered in the same group of data as the market-sector estimates for GNP.

3. Morgan, et al., 1959, U.S.A. [23]

This study evaluates only a very limited portion of household activities, specifically the value of home-grown food and home improvements. It is included in this survey as indicative of the magnitude for such elements in the total value of household work. The method used for estimation is quite different from the others. Values are based on the survey answer to the question "how much money did you save by doing these things yourself", which in principle is the equivalent of the market-cost-function approach, but of course depends on the respondents' knowledge of such costs.

4. Sirageldin; 1964, U.S.A. [32]

This study, done at the Institute for Social Research at the University of Michigan, is undoubtedly the most thorough attempt of those reviewed here. Sirageldin used both the opportunity-cost of time and the market-cost-of-functions methods, with several refinements not utilized by any others. One of these—netting out the income-tax from wages used in the opportunity-cost approach—must be done for consistency with the Opportunity-Cost principle, and this oversight in other WOCT studies renders their values incorrect, more specifically imparting an upward bias to them. The other adjustments he makes are for unemployment and sickness, disequilibrium in the work-leisure choice, travel-time differences and income-from-capital effects.

Adjustment for tax simply involves calculating the effective marginal tax rate for different income categories and using hourly wages net of taxes. Disequilibrium adjustment is a two-step process. First, survey responses to questions such as "how much more (less) would you like to work", plus information on sickness and unemployment, enable the construction of a quantitative index of the extent of disequilibrium, and this is then applied to the hourly wage. Second, wages are reduced for those who work below their desired equilibrium and increased in the opposite case. Travel time is assumed to be part of work hours, hence "wage" is estimated by dividing total income by the hours inclusive of travel. Finally, income from self-employment is netted by an estimated capital-return component.

Having made these adjustments, the study arrives at a "true opportunity-cost wage" for different income groups and members of the family. The value of household services is the result of multiplying this by the respective number of hours spent on household work, as given in survey results.

The other approach used is to subdivide the time spent on housework into different functions—housekeeping, painting and repairs, sewing, etc.—and to apply to this time the market wage by region for such work. Though I comment more fully on the different results in Section IV, it is noteworthy that the two approaches yield very similar results, the average annual value of HW per household being $3523 using WOCT and $3064 using MAIFC.

5. Nordhaus-Tobin; 1929 to 1965, U.S.A. [26]

In a recent attempt to modify the traditional GNP measure so as to derive a better "Measure of Economic Welfare", an NBER study by Nordhaus and Tobin included an evaluation of the value of services produced in the household using the WOCT method. The total population 14 and over was first divided into five groups: employed, unemployed, housekeepers, schoolgoers, and other. For each of these different time-use and market wage figures were applied.

Several assumptions were made in the process. The opportunity-cost for unemployed was set at zero; for males, wages for manufacturing were used and for females, students, and others, wages were determined as a proportion of the value for males, the ratio based on incomes of full-time workers. Hours spent were from a 1954 study cited in Sebastian DeGrazia [7], except for students and others, which were set arbitrarily at 13 and 10 hours per week respectively. These values were assumed to hold over the period 1929–65, as was the ratio of female to male wages.

Though some of their treatment is a little unclear (i.e. the valuation of school vs. non-market time of students), I have reconstructed an approximation of the value of household work, as given in Table 1, by leaving out students and further subdividing employed into male and female. The resulting figure is somewhat lower than what appears in Nordhaus-Tobin because of the exclusion of students.[3]

6. Walker–Gauger, 1967, U.S.A. [41]

Kathryn Walker and William Gauger, of the N.Y. State College of Human Ecology at Cornell University, have recently applied the results of their extensive

[3]The figures used are those for Variant B (p. 48 in [26]) which assumes that productivity has increased in household work as much as in market sectors, [16].

Time-Use Surveys of the Syracuse area to an estimation of the dollar value of household work in the U.S. using the MAIFC method. The sample was disaggregated by work-status of wife, number of children in the family and age of youngest child. For each such category, estimates of time-use in different household tasks were available from the survey. Market wages for the Syracuse area in 1971 were then applied to each task and aggregated for a total annual value by household. This gave a value per family unit for the Syracuse sample. Finally, the estimate was expanded to the national level on the basis of the national distribution of the population by the given categories.[4] As is recognized by the authors, the aggregate thus arrived at covers only 31 of a total of 59 million families because the base sample covers only certain two-parent households.

I have made two adjustments to their estimate. First, since their wage data were for 1971, they erred in multiplying this by the 1967 population data to arrive at a 1967 contribution to GNP. I have deflated their aggregate dollar value to 1967 cost levels by application of an index of weekly earnings in non-manufacturing activities, $(1971:1967 = 131:100)$.[5] Secondly, I have added an estimate for the remaining 28 million households by assuming that the value per unit was 60% of the average for the 31 million covered. Thus, the average base sample unit had an annual value of $5,220, and the remainder for which I have made the adjustment had a value of $3,132. The men-women share I computed by assuming that for the 31 million group, they were proportional to the Syracuse base-sample shares,[6] and for the others I arbitrarily assumed that 60 percent of the total was contributed by women and 40 percent by men.

7. Weinrobe, U.S.A., 1970 [42]

Maurice Weinrobe, of Michigan State University, has recently attempted to rectify the GNP-growth record by showing that output inclusive of housework has grown less than market-GNP. For the present paper, our interest is in the value he estimates for the household services. The method used is WOCT but covers only the services of women. He makes two estimates for each year in the period 1960–70. He first assumes that there is a one-to-one substitution between market-work and housework hours; i.e. that full-time female employees do no housework. This is contrary to facts cited by the author himself, hence Table 1 values are for his second estimate, which uses the Walker–Gauger time-use data. The time values are then simply multiplied by the market wage for women. The per unit values in Table 1, shown for comparison with other studies, are calculated on the basis of 64.2 million families in 1970.[7]

8. Colin Clark, 1956, U.K. [6]

Colin Clark's estimate of the value of household services for the U.K. uses a very different and novel approach; he suggests that with the large scale develop-

---

[4] As described in [41], the basis for expansion was the OEO survey for the U.S. in 1966 and 1967.
[5] A further refinement might be considered, namely the use of regional variation in wages. The index values were taken from The Economic Report of the President, 1970.
[6] As given in [11], p. 18, Table 5.
[7] As given in U.S. Office of the President, Statistical Policy Division, Social Indicators 1973 and used for all the U.S. studies, 1-7. GNP values are obtained from U.S. Department of Commerce, Historical Statistics of the United States.

ment of welfare services, we have "accurate statistics of what it does cost to provide for the complete upkeep of adults and children, in homes and institutions." Clark obtains statistics for the cost of upkeep for children and adults in institutional homes, deducts from this an estimate of purchased goods and services, to obtain the value of household services *per capita*. This assumes that the services provided—and their costs—are the same in private households as they are in institutions. There may be a downward bias in this as a result of scale economies and also because children in institutions or people in old age homes obtain less services than those in private homes. However, institutional inefficiencies may impart some upward bias.

For presentation in Table I, I have taken as the aggregate value of unpaid housework the difference between Clark's figure for national income including all housework and national income traditionally defined; the latter of course includes paid domestic services. The annual value per household unit is calculated as the simple average for the approximately 14.8 million households in 1956 (the 1951 census value raised in proportion to the population increment over the period). Finally, GNP from the U.K. *Statistical Abstract* for 1956 is used to compute the percentage in the last column.

9. Lindahl et al., 1929, Sweden [21]

Lindahl and his co-workers, in a comprehensive 1930's study of Swedish national income, attempted to evaluate the magnitude of household services outside the market. They used the same methodology as Kuznets, multiplying the number of households in rural and urban areas by a corresponding annual cost of hiring a domestic servant. As the published volume does not give the separate rural-urban costs, I have in Table I calculated the annual average for the country. The same source was used to obtain GNP data for the share calculation.

10. Casual-Journalistic Estimates [4], [5], [8], [13], [27]

The remaining estimates in this survey I judge to be strongly biased upward, simply as a result of a careless definition of time spent on different household activities. The method used for all these studies is MAIFC, but unlike the Sirageldin and Walker-Gauger studies, care was *not* taken to avoid double-counting of time in cases where tasks were "simultaneously" performed. In particular, extremely high values were attributed to child-care time, as this was equated to presence of the person. These estimates are included in the survey because of their potentially broader public impact and because they show clearly "how not to do it".

IV. Value of Household Work: A Comparison of Selected Estimates

All of the estimates outlined are summarized in Table I. The table indicates which of the three methods described in II was used (col. 1), the range of hourly wages used, if any, (2), weekly hours of housework, (3), the weekly value of these services, (4), the annual value, (5), and the economy-wide aggregate in billions, HW (6). GNP *exclusive* of the household service value (7) is then used as base to

TABLE 1
SELECTED ESTIMATES OF HOUSEHOLD WORK (HW)

(all values are in current prices)

No.	Date	Name	Method	Hourly Wages (1)	Hours per Week (2)	Value per Unit — Week (3)	Value per Unit — Year (4)	H.W.[1] ($ Bil.) (5)	G.N.P ($ Bil.) (6)	Unadjusted (7)	(HW/GNP)×100%[2] US GNP Base Adjustment (8)	Full Household Adjustment (9)	Net of Tax Full Household Adjustment (10)
UNITED STATES													
1	1919	*Mitchell* (N.B.E.R.)	MAHC	[3]	—	—	900	18.5	78.9 (64.2)[4]	23	29	36	36
2	1929	*Kuznets* (N.B.E.R.)	MAHC				—						
		Rural					600	3.6					
		Urban					900	18.9					
		Housewives Total		—	—	—	833	22.5	104.4 (87.2)	22	26	35	35
3	1959	*Morgan et al.*	See text										
		Home Grown Food		—	—	—	40	2.1	483.7	0.4	—		
		Home Improvements		—	—	—	140	7.9	483.7	1.5	—		
4	1964	*Sirageldin*											
		(a)	WOCT		—	68	3,523	204.5	632.4	32	—	32	32
		(b)	MAIFC	1.68–2.24	[5]	59	3,064	177.7	632.4	28	—	28	28
5		*Nordhaus–Tobin*	WOCT										
	1929	Non-Employed Women		0.34	46.9	16	829	26.2		25	30		
		Employed Women		0.34	15.4	5	272	2.9		3	3		
		Men		0.56	15.4	9	448	16.6		16	19		
		Over 65		0.49	10.0	5	255	1.1		1	1		
		Average Household Total				19	965	46.8	104.4	45	53	45	36
	1965	Non-Employed Women	WOCT	1.57	46.9	74	3,829	136.3		20			
		Employed Women		1.57	15.4	34	1,257	33.9		5			
		Men		2.61	15.4	40	2,090	99.5		15			
		Over 65		2.28	10.0	16	1,185	15.2		2			
		Average Household Total				94	4,870	284.9	684.9	42		42	34

No.	Year	Study	Method					H.W.	GNP	%(8)	%(9)	%(10)	%(11)
6	1967	*Walker–Gauger Modified*	MAIFC										
		Non-Employed Women		—	40–55	—	—	136.7		17			
		Employed Women		—	25–40	—	—	34.2		4			
		Men		—	14–15	—	—	64.9		8			
		Children		—	7–10	—	—	13.7		2			
		Average Household Total		1.65–2.50	—	83	4,302	249.5	793.9	31		31	31
7	1973	*Weinrobe*											
		Woman Total	WOCT		as in 6	91	4,732	303.8	976.4	31		49	39
UNITED KINGDOM													
8	1956	*Colin Clark*	MAHC[6]	—	—	—		462	6.84	18.5	37		37	37
SWEDEN													
9	1929	*Lindahl et al.*	MAHC				Kr.880	1.65	7.9	20		32	32
Casual–Journalistic													
CANADA													
10	1967	Ottawa—Journal	MAIFC			144	7,488	38.9	62.7	62	—	—	—
U.S.A.													
11	1966	Chase–Manhattan	MAIFC			159	8,268	497.2	750	66	—	—	—
12	1972	Chase–Manhattan	MAIFC			235	12,220	794.3	1,155	69	—	—	—
WEST GERMANY													
13	1973	West German Savings Bank	MAIFC			DM.450	23,400	514.8	730.0	71	—	—	—

Notes:

(1) H.W. = Household Services–Aggregate Value

(2) The percentage of Household Services to Current-Definition GNP is given in 4 columns. Col. 8 simply takes the aggregate value of each study *as is* (col. 6) over GNP (col. 7); col. 9 uses the GNP values in brackets for 1919 and 1929 (see (4)) to calculate the shares for these years so as to facilitate comparison of studies 1., 2., and 5. Col. 10 adjusts the studies' results so that the entire household, not only the wife, is conceptually included. Col. 11 nets out the effect of income taxes for the WOCT studies. This last is the most fully comparable set of figures.

(3) A dash (–) signifies that the information was unavailable, inapplicable, or difficult to ascertain.

(4) The GNP values for 1919 and 1929 in brackets are as given in the original Mitchell and Kuznets study, while others are as currently given in U.S. Dept. of Commerce *Historical Statistics of The United States.*

(5) Sirageldin uses the following hours per week data: men 7–9; women 16–54. The latter range covers women with no children who are employed on the market.

(6) Colin Clark, in fact, uses an unusual variant of the MAHC method; he estimates the cost of maintaining an adult and a child in institutional settings from welfare and other data, then applies this to the rest of the population.

compute the percentage HW/GNP (8). As the studies cover different years, the percent figure is the one that permits an overall comparison; this must be qualified by some differences in the extent of coverage, as for example the exclusion of work done by males in the Kuznets study.

Thus, col. 8 gives the studies' unmodified results as a percent of GNP, col. 9 uses as the numerator the GNP values given by Mitchell and Kuznets in the original sources from which HW values are taken. This is done to allow for easier comparability between the estimates; the modification is not applied to any of the other studies. Col. 10 shows the same percentage figure after adjustment for exclusion of work done by household members other than the wife. Finally, col. 11 nets for the effect of taxes in WOCT estimates. This last column is to be considered as giving the most fully comparable set of figures.

The information on differences in procedure and coverage, given in the Table and described in Section II, is intended as a further qualitative input to aid the comparability of the estimates, and should be kept in mind as qualification to the discussion.

There are a large number of interesting and as yet unanswered questions concerning the value of production in the household, but given the limitations of the information in these studies, only certain issues are elucidated by a comparison of their results. Here I will deal with the following six questions which can be meaningfully discussed in this context.

1. What is the magnitude of these services relative to GNP?
2. How sensitive is the estimate to the method used?
3. What are the main determinants of variations in value by household?
4. What is the contribution of different members of the household?
5. What are the shares of the functional components in the total?
6. What are the trends over time in this value?

IV.1. The Magnitude of Household Services

In general, it is found that the value of household work is about one third the size of GNP which, to say the least, is a very substantial amount; in size, this sector ranks with the three broad divisions of the economy first indicated by Colin Clark: agriculture, industry, and services. To the present time, concern with the value of household activities has been largely in reference to the welfare-objective of measurement.[8] Thus, Nordhaus–Tobin include it in their study because they wish to arrive at a Measure of Economic Welfare which better indicates changes in our well-being; Weinrobe specifically attempts to determine what effect exclusion has had on growth measurement.

However, its significance goes beyond welfare-evaluation, for it influences market phenomena in ways generally ignored by economic theory. Factor supply to the market (participation rates) is affected not only by preferences for leisure consumption, but also by the value of potential HW. The pattern of household purchases on the market is affected not merely by preferences for "pure"

[8]For a discussion of the two purposes of measuring economic performance, market activity vs. economic welfare, see O. Hawrylyshyn, *A Review of Recent Proposals for Modifying and Extending the Measure of GNP*, [16].

110

consumption, but also by the inputs needed to HW-production. The large value of HW makes it the more important to analyze in order to clarify some of these relationships with the market sectors.

But is it justifiable to speak with confidence of the one-third magnitude, for this is but the average of a wide-ranging set of crude approximations? At first sight, the range of this percentage figure—even excluding the casual estimates—is indeed considerable (col. 8). The highest number, 45, is more than twice the lowest, 20; this degree of variation in different measures of an identical item is unusual in the practice of national accounting. However, we should not summarily dismiss these attempts as shots-in-the-dark not worthy of further consideration, for there are good logical reasons for the differences. Two important ones are the exclusion of the husband and other members of the household in some of the valuations; and the use of hourly wages gross of taxes in two of the WOCT estimates.

The first is the "mechanical definition" problem mentioned in Section I; of the studies cited, only Nordhaus–Tobin, Sirageldin, and Walker–Gauger explicitly include work done by other members of the household besides the wife. For comparability I adjusted the other studies by the average ratio of total household services to services produced by women, calculated as 1.59, from the Nordhaus–Tobin and Walker–Gauger estimates. This modification results in the figures in col. 10, and raises the average from 31.1 to 36.7, but reduces the dispersion somewhat.

The second reason pertains only to the WOCT estimates: an equalization of value in market and household by a housewife must surely be in terms of potential *net* earnings, not gross. Thus, the opportunity cost wage should be net of taxes. Note that neither of the other methods requires such an adjustment, for the replacement cost in question is the gross market wage.

Only Sirageldin correctly took into consideration the netting for income tax in the WOCT approach. I have adjusted the other WOCT studies very approximately, by reducing the gross wage by 20 percent. The resulting percentage figures are shown in col. 11. The mean value is reduced to 34, but more importantly, the dispersion is considerably narrowed, with the range now being 28 to 39, a variation about the mean of less than 20 percent in either direction.

The two adjustments described render the various results far more similar (col. 11) than they appear at first sight (col. 8). It is a matter of individual judgment whether this dispersion is very large, or surprisingly small given the disparities in method, time periods, data base, and country coverage. However, the margin of error implied still seems rather large for official national accounts inclusion, and in searching to reduce this margin, it may be instructive to ask how much of the difference is due to method differences.

Before I discuss this, however, let me note the problem resulting from differences in time period, ranging from 1919 to 1970. Institutional changes over time may affect this ratio: tax rates vary, the work-hours of a housekeeper have changed, and perhaps most important, labour force participation of women has increased considerably. I deal with the first two effects in IV.2, and with the latter in IV.6; here it suffices to report that the conclusion "HW is about a third of GNP" is little affected by calculating averages for pre-war and post-war separately. In

111

the earlier period, the figure is 34.8 for all, 35.7 for U.S. only; in the later one it is 33.5 for all, 32.8 for U.S. only, and 35.0 for WOCT only.

IV.2. Sensitivity of Estimate to Method

In Section I, I indicated that the differences in methodology imply some differences in the conceptual definition of housework. To the extent this is so, we should expect some differences in measured results to remain if we are comparing a sample using various approaches. The distinctions in concept, which I shall attempt to clarify further here, are however enmeshed with other methodological factors explaining differences in result; hence I shall discuss these together, by outlining the advantages and disadvantages of the three different methods, and indicating any a priori expectations of directional bias inherent in each procedure.

WOCT. The opportunity cost of time approach has undoubtedly the most sophisticated and fully considered theoretical-analytical support. It has been easier to use than MAIFC, as only the total time spent on housework and the average wage was needed for each group in the population. The disadvantage relates to determination of the opportunity cost of a housewife. Is it in fact the wage? The problem is manifest in the following paradox: consider two housewives with equivalent family size and homes, and suppose that they are both equally good at the work, doing the same amount in the same number of hours. This suggests the output value in both cases is the same. Yet, if one of them has an M.A. in micro-biology with a potential wage of $10/hour and the other is a former stenographer potentially employable at $4/hour, this method tells us the value of one's housework is $2\frac{1}{2}$ times that of the other!

Such *reductio ad absurdum* tells us something is not quite right with a simple application of the WOCT concept. This problem is in fact what lies at the heart of the difficulty with WOCT on a microlevel. That is, the biologist worth $10 on the market has chosen to be at home not simply because she values housework at $10 per hour, but because her presence and mother's care for children and family in total is equated to her earning potential on the market.[9] If we view the housewife's marginal equating of opportunities as above, then clearly the WOCT method implies the following:

Value of "Being at Home" = Value of Potential Market Earnings

This further implies that what is being valued is not simply a narrower concept of household services of an essentially physical nature (cooking, cleaning, etc.) but the total *value of a housewife.*

Contrast this with the MAHC method which purports to replace *not* the mother-homemaker, but merely a portion of her services, "household work". Thus in comparison with the MAHC approach, which implicitly postulates an "as if" situation wherein only housework narrowly defined is done by market-professional-housekeepers, WOCT would tend to be upward-biased. This bias is strengthened because wages for "professional" housekeepers are lower than the

[9]For a fuller analysis of this effect and its implications for the Becker theory of value of time as a basis for HW evaluation, see O. Hawrylyshyn, [17].

economy-wide average for women which one would use for an aggregate estimation.[10]

MAHC. The appeal of this procedure lies in its realism at the micro-level as the most likely mode of resorting to the market for the provision of the services in question, and its implicit economic rationale of allocating labour so that house-work is done by those whose comparative advantage lies therein. This method—perhaps rightfully so—leaves aside the difficult question of valuing a mother's overall contribution to the upbringing of children as opposed to "chores" narrowly defined, and in effect suggests the following narrower defini-tion of household work: *those services of an "economic" nature which may in concept be purchased in as much as forms thereof are in fact available on the market,* (or at the least one can conceive of an institutional arrangement wherein such services might be provided by the market).[11]

This method entails two potential opposing biases. Simple multiplication of average household costs by numbers overstates the value if—as seems the case—the costs are for full-family households and the average excludes single person and unmarried households. A downward bias results because housekeep-ers rarely take over household tasks completely, and much is still done by the household members. It is not clear which bias dominates.

MAIFC. This approach too appeals to the easily understood notion of hiring services on the market, but it is somewhat less realistic than MAHC. One would rarely consider hiring separately a cook, a nursemaid, a governess, a launderer, a chauffeur, an accountant, etc. Yet this method has been the one most frequently applied in the popularly disseminated magazine articles on the matter, perhaps because it conveys the notion of a multi-talented housewife, a prideful vision imbuing the housewife status with a justly sought-after dignity and self-respect.

Unfortunately, this appeal leads to a serious danger of overestimation, on two grounds. First, the total time attributed can easily be exaggerated as neither is doubling up of tasks netted, nor is a distinction made between mere physical presence emanating from responsibility (as for child care) and actual task execution.[12] Secondly, at least some of the wages used in the estimate will tend to be overestimates of the actual worth of the tasks; for example, accounting and household management tasks *do not* require the full complement of skills of an accountant, nor even a competent bookkeeper. Nevertheless, if very carefully done, this approach may avoid the upward biases of both the other estimates, and the downward bias of the MAHC method as it can easily include the functions not normally fulfilled by a single hired domestic.

In conclusion, the most reasonable definition of HW might be: *The dollar value of economic services produced in a household.* Relative to this, WOCT is

---

[10]Thus for example in Canada, the average for all females working full-time was $2.66 per hour in 1971 (1971 Census of Canada) while the comparable figure for housekeepers was about $2.00 per hour (Manpower Canada—Placement Services, Ottawa).

[11]See D. Usher, *The Measurement of Economic Growth,* 1973, IV, p. 13, for a discussion of the market-criterion and imputations.

[12]This problem pertains to the question of "jointness" of activities in the household. The time-use literature refers to this problem in its concept of secondary-time, as noted for example in A. Szalai, ed., *The Use of Time;* [34]. In the economic literature the problem—one of joint production—has only recently been discussed by Pollak and Wachter in [28]. This author has discussed the matter in [16], p. 19, by distinguishing between direct and indirect utility yielded by activities.

strongly biased upward, whilst MAHC and MAIFC come closest in concept. MAIFC if carelessly done is also upward biased, but suffers no biases if well done. MAHC is subject to opposing biases of indeterminate net effect. Indeed, the empirical results may suggest which of the two biases in MAHC is stronger.

Table 2 shows the values, averages, and dispersion of the different estimates by method. I have excluded from this analysis the *sui generis* estimates referred to as "casual", though they too yield some useful lessons which are discussed below.

TABLE 2

HOUSEWORK AS A PERCENT OF GNP
BY METHOD OF ESTIMATION

	MAIFC	MAHC	WOCT Gross of Tax	WOCT Net of Tax
		32	40*	32
		35	42	34
	28	36	45	36
	31	37	49	39
Average.	29.5	35	44	35

*Sirageldin estimate increased to correspond to a 0.20 tax-rate.

If one disregards for the moment the values for WOCT after netting for income tax, there are two key observations to be made concerning the effect of method on the estimates. First, the estimates when grouped by method are clearly situated in distinct intervals and, secondly, the ordering of average values by group reflects the upward bias of WOCT, and suggests that in MAHC the upward bias (costs apply to large households) far outweighs the downward bias (excludes work still done by householders). However, this should not be taken to mean that there is no need to worry about the downward bias.

The downward bias may occur because hired housekeepers rarely perform all the necessary housework, and their cost thus underestimates the total. This is probably more true today than it was in 1929, when three of the MAHC estimates were done, hence the positive bias would strongly outweigh the negative one for the 1929 estimates but not necessarily for current ones. The Colin Clark study for 1956 is unfortunately not comparable as explained. It would be necessary, for current estimates, to investigate more fully how much work is done in homes which hire full-time housekeepers.[13]

Let me turn now to the WOCT cases. Gross of taxes the upward bias appears very strong: but once netted for tax it is considerably diminished. Though the values are much the same as for MAHC, these latter, I have argued, are high because of period of estimation. As the 0.20 value is clearly an upper bound for the tax adjustment, more careful adjustment would probably give even higher WOCT values.

The positive bias in WOCT is consistent with *one* of the results on housewives' opportunity-cost of time in Reuben Gronau [14]. He finds that if one

[13]Such information is apparently available, though sample size problems exist, in both the Syracuse survey of K. Walker *et al.,* and a Halifax study [10].

114

assumes women's potential wages are not the same for all women in a given age-education group, the value of time is lower than the wage rate.[14]

Finally, it may be instructive to compare the two MAIFC estimates considered so far with others using the same method but set aside as inferior. In Table 1 it can be seen that the latter result in far higher values than the former. Reasons for this have already been suggested, and a close analysis of the individual studies shows that they do indeed overestimate both time-use and wages. Thus, whereas the weekly hours of housework for non-employed women in the Sirageldin and Walker–Gauger study are given in ranges of 35–55 and 40–55 respectively, the values in the Chase–Manhattan study are nearly 100 per week, 45 of which for being a nursemaid alone! Clearly, the latter confuses time-elapsed in which presence involves a contingency of task execution, with the actual execution of tasks. Other comprehensive and thorough studies of time-use corroborate the correctness of the Sirageldin and Walker–Gauger values of about 40 to 50 hours per week. For example, in Canada a survey in Halifax directed by Andrew Harvey et al. [10] finds a value of 46 hours, another in Vancouver by Meis and Scheu [22] finds about 40 hours is spent on this work, and a third in Metropolitan Toronto, done by Michelson [25], obtains a total of 50 hours for a suburban housewife.[15]

A similar overestimate prevails with regard to the wage levels used by these "casual" estimates. Sirageldin and Walker–Gauger used a range of hourly wages (inflated here to 1972 levels by the implicit price deflator of the U.S.) of $1.44–$3.25 and $1.74–$2.63 respectively. The Chase Manhattan study applied wages ranging from $2.50 to $3.50 and even one category (dietician) at $6.00 per hour.

The use of such large values for both hours and wages is not at all justified and clearly explains the extremely high values obtained by the "casual" studies. Were it true that the average American housewife performed $12,000 worth of services, and given a reasonable $6,000 a year[16] for a full-time housekeeper, it is surprising that the labour force participation of women is not far higher than one finds it to be.

IV.3. Principal Factors Determining Value of Services by Household

"Man may work from sun to sun, but woman's work is never done". Thus spake Anon., implying among other things, two points of present interest: (i) time-consuming housework is done largely by women; (ii) women may work outside the home, may have increasing burdens with larger families, but the housework is still largely done by them. The evidence in the studies analyzed here suggests that the former is not entirely true but the latter is almost entirely true. That is, husbands and children contribute somewhat to the housework, but do not

[14]He finds the opposite upon assuming wages to be the same for all women in such a group. I would judge the first assumption to be more reasonable, as differences in inherent abilities will ceteris paribus lead to differences in wages.
[15]A comprehensive overview of time-budgets internationally is to be found in Alexander Szalai, (ed.), The Use of Time, The Mouton Press 1973 [34].
[16]This may not be generous for New York, but it is ample for most North American urban centers. Figures given at the Canada Manpower offices for Ottawa (the official government placement agency) in mid-1974 indicate $5,000 as adequate and the diplomatic community's demands make this the highest in Canada.

115

relieve the wife's burden to any great degree when she participates in market activities. Thus, if one looks at the shares of the total value in those studies where the distinction is made (Nordhaus–Tobin and Walker–Gauger),[17] we see that the share of women, on the average, accounts for about 64% of the total. This, though not insubstantial, still leaves over a third of the total work done by other members of the family, modifying somewhat the first implication of the homily. Section IV.4 considers in detail contributions by other members of the household; here, I shall look briefly at the main characteristics of the family as they affect the total value of HW.

The effect of the wife's participation on market appears to be paramount. This is very strongly borne out by investigation of the details underlying the numbers in Table 1, and is particularly manifest in the data of Walker–Gauger [41], relevant elements of which have been used to construct Figures 1 to 3. Figure 1 paints the overall picture, showing that the amount of housework done by all members of the family increases with the number of children but is somewhat lower when the wife is employed.

The latter fact may reflect some combination of two effects: less work is done, or the same amount of work is "compressed" into a shorter time span.[18] Less work may be done because employed-wife families are more likely to occur in the sub-set of the sample with older children where the domestic work-load is lighter. Thus, Walker ([39] p. 6 and Table 4) finds that the wife's labour-force participation is a strongly positive function of the age of the youngest child. However, among lower income families female labour-force participation may be less affected by the number and ages of children, and in such cases less domestic work may be done perforce, i.e. less actual services are performed.[19]

Increased efficiency or Parkinson's Law effects are sometimes pointed to in relation to the services performed when a housewife is or is not working (Walker [37], Vanek [35]). This problem of efficiency, of having all day hence filling it up with housework, may in fact be at the heart of the difference between the high time-use values in the casual estimates and the others. Whether the more conservatively estimated hours for "non-employed" wives *still* include an inefficiency or Parkinson's Law effect as compared to the lower figures for "employed" wives[20] remains an important unanswered question. For the present however, we see no compelling reason to suppose that women who, in careful surveys, reveal their domestic work week as being one of 45–55 hours, are in fact producing only as much as those who are market-employed and indicate a shorter (20–30 hours) domestic workweek. We assume then, that the law of large numbers countervails that of Professor Parkinson and concur with K. Walker [40] that the average number of hours devoted to housework are the best single indication of the value of services performed.

[17]Sirageldin also makes the distinction, but the available published work unfortunately does not allow one to separate the contributions.

[18]The notion of compressibility was introduced by A. Szalai; economists might speak of this more simply as increased efficiency. For a sociological hypothesis on the reasons "Parkinson's Law" applies in household work time see Joan Vanek, "Time Spent in Housework", *Scientific American,* November 1974.

[19]See A. Leibowitz [20].

[20]Thus for example the Syracuse data for daily hours of housework are for "employed" and "non-employed" respectively, 5 and 8, Table 3, p. 8 [37].
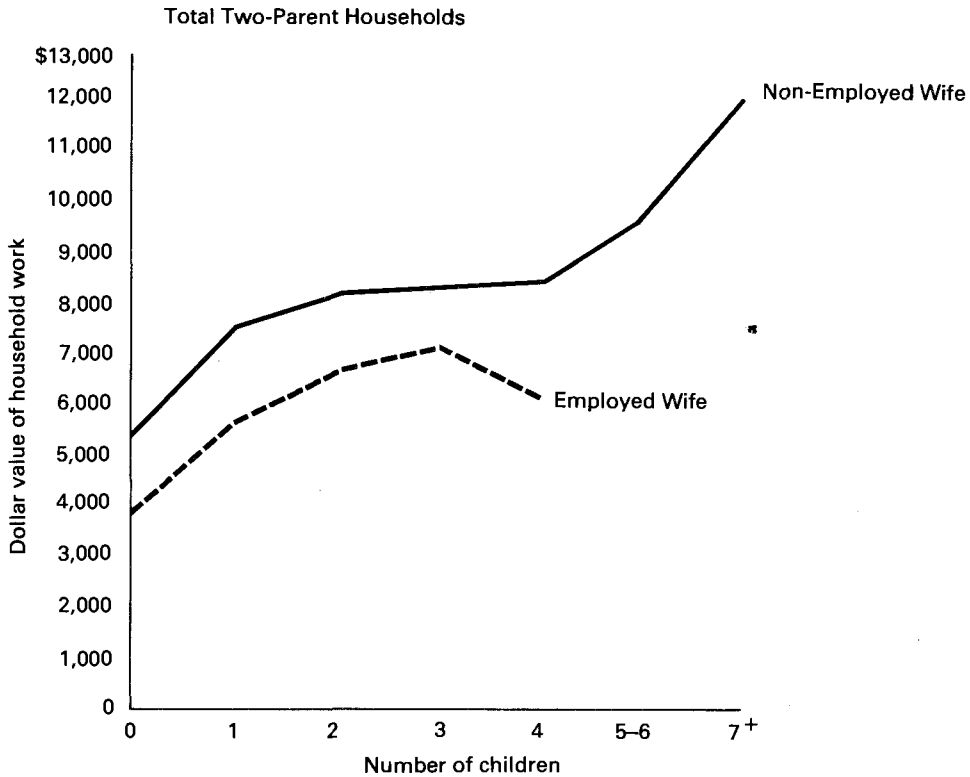
Total Two-Parent Households

Figure 1. U.S.—Value of Household Work, 1971

Source: [41], Table 2. Numbers were given here by three categories: wife's work status; number of children; and age of youngest child. For our presentation, we have taken the mean value of the range for the last, age of youngest child, to arrive at rough estimates in a two-category grouping. Children's contribution was estimated from this data making the assumption that $\frac{1}{3}$ of the children in the population were in the "contributing" ages of 12–17.

TABLE 3

EFFECT OF AGE OF YOUNGEST CHILD ON VALUE
OF HOUSEHOLD SERVICES OF WIFE
(non-employed-wife households)

	No. of Children			
Age of Youngest Child	1	2	3	4
12–17	5,300	5,600	5,000	4,700
6–11	5,200	5,600	5,600	6,100
2– 5	5,200	6,400	6,200	7,000
1	5,900	6,900	6,900	6,800
Under 1	6,600	7,600	8,000	8,400

Source: Table 5 in W. H. Gauger "The Potential Contribution to the GNP of Valuing Household Work", [11].

117

A third important factor not evidenced by Figure 1 is the variation of the time, hence of services, with the age of the youngest child. Table 3 shows clearly the increase in the value as the age of the youngest child decreases, with the difference being particularly marked in the lower ages. The age of youngest child is undoubtedly a proxy for the stage of the family-formation cycle. The principal conclusion, that babies and pre-school children require far more attention than school-age children and teenagers, is by no means startling, but it is neverthless of import that quantitative evidence supports such a hypothesis.

In summary, we find three characteristics of a family that very strongly affect the value of services performed, hence it is imperative in any study that purports to evaluate these services to undertake some disaggregation by these factors: family size, wife's market-work status, and age of youngest child.

IV.4. The Relative Contribution of Family Members

Though women bear the larger part of the burden of housework, any macro-estimate of HW must include all such work done.[21] It is therefore instructive to analyze the contribution of all household members, and how the relative share varies according to the factors indicated above.

First, let us look at the effect of family size. In Figure 2 I have computed from the Walker-Gauger study the percentage shares in the total of the wife, husband and children over 12. In the first panel, we see that as the number of children increases, the wife's share is somewhat reduced, but so too is the husband's; for the children bear the burden of easing the mother's tasks. This finding is replicated in many time-budget studies; elsewhere, Walker ([37], p. 4) states that "the husband's time remained the same, on average, whether the homemaker worked full-time as a homemaker . . . or was employed". Similarly, Meis and Scheu ([22], p. 6) point to the "negligible effect the presence of children in the home has on the man's work-day budget".

This suggests that the reason for women's far larger role in housework is not a simple matter of male-dominance in each household, resulting in an unequal sharing of tasks; rather, one suspects that there is a much more fundamentally ingrained role-assignment in society and that the male tasks are those that by nature do not increase significantly with the number of children, while female roles are those that do entail more work with more children. Such an implication is evident in the detailed time-use data by function, where one sees that it is "in the house maintenance and yard care areas that husbands have traditionally made a significant contribution." (Walker, [37], p. 5).

Secondly a very similar situation is encountered for the variation in shares as affected by the wife's employment status. Figure 3 suggests that the husband's *absolute* contribution is very much the same whether the wife is employed or not. There is no indication of the husband easing the wife's burden when she is employed. Again, other time-budget studies reflect exactly the same phenomenon; Meis and Scheu ([22], p. 7) flatly assert that "in taking on a job, these women shoulder the responsibility for the dual roles of employee and housewife with very

---

[21] As correctly noted by Ferber in "Note on Maurice Weinrobe's 'Household Production'", *Review of Income and Wealth*, June 1973, p. 251.

I. NON-EMPLOYED WIFE
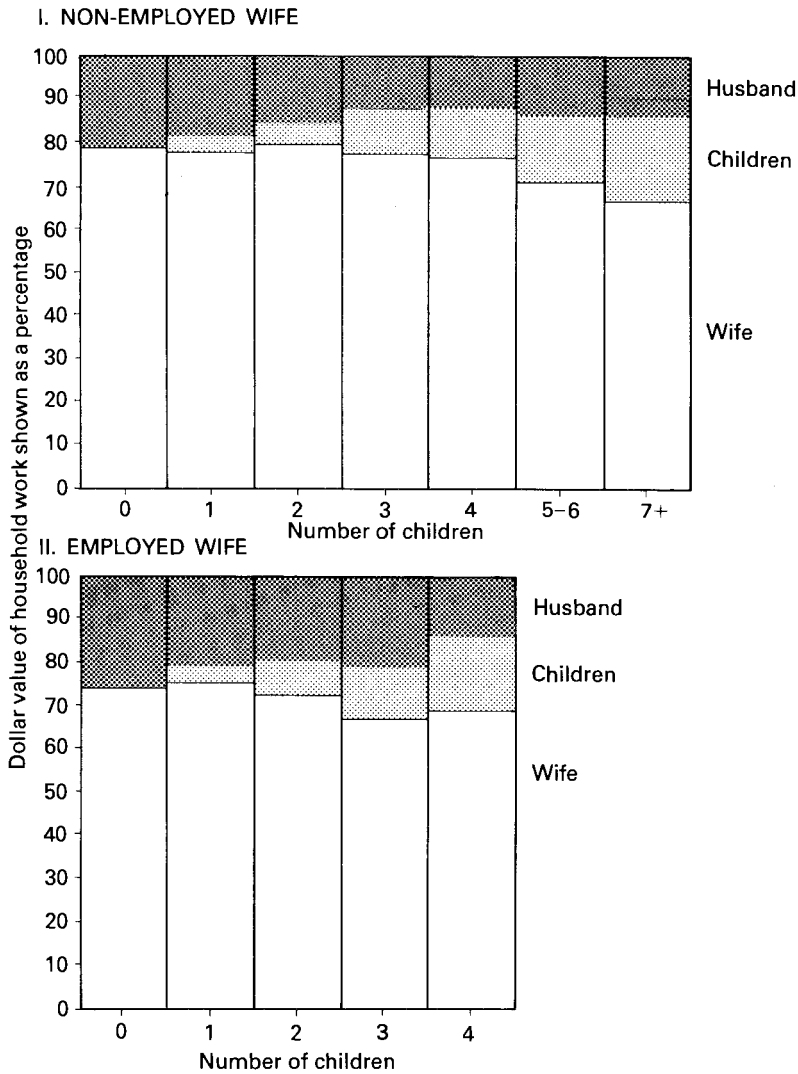

II. EMPLOYED WIFE

Figure 2. HW Value—Two-parent Household—U.S., 1971

little aid from their husbands." This behaviour is very much consistent with the view that roles are assigned by sex and that traditionally-male tasks (outdoor and assimilated work) do not increase with employment of the wife, while traditionally-female tasks decrease but little with employment. Again, as is shown in the second block in Figure 1, the wife can depend only on the children to ease somewhat her double burden.

119

Figure 3. Household Work Done by Husband
U.S. Syracuse Area Study, 1967

Source: As for Figure 1.

Thirdly, we see the same phenomenon when we look at the effect of family-formation cycle stages. The proxy age of youngest child is used again, and as indicated in Table 4, the husband's share is *lower* the lower is the age of the youngest child; thus whereas the total workload is higher in the household with

TABLE 4

HUSBAND'S SERVICES IN HOUSEHOLD AND AGE OF YOUNGEST CHILD:

RATIO TO WIFE'S SERVICES AND ABSOLUTE VALUE

(Numbers in brackets are dollar values of husband's services)

Age of Youngest Child	Number of Children		
	1	2	3
12–17	0.30 (1600)	0.23 (1300)	0.20 (1000)
6–11	0.23 (1200)	0.23 (1300)	0.23 (1300)
2–5	0.27 (1400)	0.20 (1300)	0.17 (1100)
1	0.23 (1400)	0.18 (1300)	0.18 (1300)
Under 1	0.20 (1300)	0.16 (1200)	0.15 (1200)

Source: Computed from Table 5, in W. H. Gauger [11].

120

younger children, the husband's share is lower. That husbands perform services of a nature little affected by the age of children is further evidenced by the small variation in the absolute dollar value of husbands' work as age of youngest child varies, the numbers shown in brackets in Table 4.

In conclusion then, any attempt to evaluate aggregates for household services must take care to include meticulous disaggregation along the lines indicated, and to analyze clearly such phenomena as the changes in household task responsibility and performance in the case of employed-wife families. It is clearly quite unjustified to make simplistic assumptions, such as that made by Weinrobe, [42], that women who switch from housework to the market simply reallocate 8 hours of their time-budget from housework to market-work.

IV.5 The Functional Components of Household Work

It is undoubtedly of general interest to have some knowledge of the relative importance of the different functions a household worker performs. However, even more to the point of this paper, in using the MAIFC method, one *must* know the time-spent values by separate function, and one ought additionally to ask how reliable such detailed information is. It is not my purpose here to evaluate reliability of this information by a critical analysis of the survey methods but rather to attempt a first approximation test of reliability, namely consistency: the results are "reasonable" in as much as the various studies that are available give quite similar percentage shares of time spent on the different components of household activities.

To demonstrate this, information from eighteen international time-budgets [34] has been reclassified into the five functions shown in Table 5, and has been presented in both absolute-time-elapsed and percentage terms for the purposes of comparison. The results of the multi-national project (MNP)—fifteen surveys in twelve countries—are summarized here by giving the range and average time in minutes. An averaging of the two MNP surveys for the U.S.A. is also shown in Table 5, as are results of a survey for the Syracuse area independent of the MNP, and two others done in Canadian cities.

This information provides several insights of pertinence. First, it suggests that about two-thirds or more (from 62% to 76%) of the total time for housework is devoted to the basic chores of cooking and cleaning, generally less than 10 percent of the time is used for shopping and related chores, again less than 10 percent for other tasks such as repairs, maintenance, sewing, gardening, etc. The remainder of the time, about 15 percent to 20 percent, is devoted to child care, apparently the larger proportion of this for physical care as distinct from the tutoring or more broadly "bringing up the kids". The child care shares of one-fifth or less appear surprisingly low, and warrant further attention; I return to this matter later.

How consistent are these shares across the different samples? The range of values for the MNP is very large; however, much of this is to be explained by the economic, demographic and institutional differences in the international samples comprehending the project. Thus, for example, "other chores" ranges from 15 minutes per day, to several cases near or above 100 minutes. This is so because the

121

TABLE 5

HOUSEWIVES' TIME BUDGET FOR A WEEKDAY BY FUNCTION, SELECTED SURVEYS

(in minutes)

Function	Multi-National-Project—15 Surveys		Average of U.S. Samples	Walker, Syracuse N.Y. 1964	Elliot–Harvey, Halifax N.S. 1973	Meis and Scheu, Vancouver B.C. 1973
	Range	Average(%)				
Basic housekeeping chores	302–403	352 (67)	306 (66)	300 (72)*	246 (62)	210 (76)
Marketing, shopping	35–71	48 (9)	42 (9)	42 (10)	24 (6)	6 (2)
Maintenance and other chores	15–158	53 (10)	32 (7)	—	36 (9)	30 (11)
Child care—physical	27–85	49 (10)	65 (14)	72 (18)†	54 (13)	30 (11)†
Child care—other	7–39	20 (4)	17 (4)		42 (10)	
Total minutes	—	522 (100)	462 (100)	414 (100)	402 (100)	276 (100)
Total hours	—	8.7	7.7	6.9	6.7	4.6

Sources: Multi-National Project: A Szalai (ed.) *The Use of Time* [34].

Syracuse—K. Walker, "Time Spent in Household Work by Homemakers" [39].

Halifax—Elliot, Harvey & Procos [10].

Vancouver—Meis & Scheu [22].

Notes: *Includes the items categorized under "Maintenance and other chores" for the other studies.

†Total child care.

category includes "garden and animal care" which, in Yugoslavia, Bulgaria, Hungary, and the U.S.S.R. in itself accounts for 47 to 126 minutes,[22] undoubtedly reflecting the widespread resort to home gardens as a means of supplementing lower living standards. Similarly, the values for "child care" are lower in Eastern Europe, reflecting perhaps smaller families (Hungary) or an institutional fact of earlier and more widespread preschool attendance (Yugoslavia).[23] Thus, the large dispersion of values in the MNP samples is not of itself damaging to the consistency of the share values, for much of the difference is a reflection of various differences in the national social environments.

If one considers only the North American data sets, one finds much more consistency in the results. The Vancouver study stands out somewhat as being extremely conservative in the estimate of time spent on all household work, so much so that one might be skeptical of its low values. The reason for such low values may be definitional, the study perhaps imposing a very strict definition of time "actually" spent on the activities as distinct from time elapsed in dual activities containing elements of leisure, or it may be a result of intentionally choosing a high income sample.[24]

This point raises a most important question, particularly pertinent to the "child care" function. How does one tally time allocation in the common circumstances of simultaneous performance of two or more duties? If over a period of two hours, one prepares and watches over the roast, loads, unloads and folds the wash, changes diapers, cleans Junior's shoes, and tries to explain to a nine-year-old child what an election is and what a Prime Minister does—how is all this time to be allocated among the separate functions? This difficulty is, in the first instance, a theoretical one; but even once that is approximately resolved—perhaps by using very strict physical definitions of activity—there remains the very important practical problem of the respondent's ability to make correct diary entries in the survey questionnaire.[25]

This problem has been mentioned before, in pointing to the very high values of the "casual estimates"; much of the additional value there is accounted for by the very large blocks of time these studies assign to child care functions. Thus, as Table 6 shows, these estimates attribute the major part of household work to child care and not to the basic housekeeping chores, as do the other studies. The latter have recognized this problem (see, for example, Walker [36], p. 627) and have tried to deal with it, apparently by using strict definitions of time actually spent through distinguishing primary time and secondary time. Consequently, they show considerably lower values for the child care function. When measuring primary time, much of child care is done "secondarily" in the sense that the mother's attention to children is "in the background" while she attends to other chores.

---

[22]A. Szalai, [39], p. 591, item 9.

[23]Table 1, Phillip Stone, "Child Care in Twelve Countries"; Chapter 4 in Szalai, [34], shows an average of 78 minutes per day for Eastern Europe as compared to 105 in the other countries.

[24]Meis and Scheu [22], p. 3.

[25]The "mechanical monitoring" method currently being tested at Michigan's Survey Research Center avoids this problem to some extent, by asking the respondents, upon the randomly activated sound of a mechanical monitor, to specify the activity in which they are currently engaged.

TABLE 6

HOUSEHOLD WORK TIME

PERCENT SHARE OF DIFFERENT FUNCTIONS

(Two "casual" estimates)

Function	Ottawa: Ottawa Journal 1966	New York: Chase–Manhattan 1966
Child care and related activities	61	36
Cooking and related activities	18	26
Washing and cleaning	15	29
Other services	6	9
	100	100

Sources: The Ottawa Journal, January 25, 1966; "What's a Housewife Worth?", Changing Times; The Kiplinger Magazine, April 1973.

Perhaps these "careful" (read "conservative") researchers have been overly zealous in their attempt to net out the time spent, yielding very low estimates, as in the Vancouver study. But at least in the case of the MNP studies and the Walker study, additional information is provided on so-called "secondary" activities, indicating just how much simultaneous work is done. Thus, for example, for one of the U.S. surveys in the MNP, whereas housewives are found to spend 74 minutes per day in total child care by the strict definition, the broader definition, including secondary time, gives a value of 113 minutes per day.[26] Because the time-budget day can only have 24 hours, as the solar day, one cannot double-count this time and, therefore, the pragmatic solution appears to be the use of the strict definitions. Yet this is not fully satisfactory for the purpose of estimating the value of the work done in the household, for there *is* value in the spelling lesson verification mother undertakes while stirring the stew. This is not the place to discuss what is essentially a joint production problem; suffice it to say that the empirical results surveyed manifest this issue in the strongest terms, and the implicit assumptions used to assign time for child care have a very significant effect on the resulting dollar value estimates. For this reason, the matter deserves much closer attention at both the conceptual and the practical level.

IV.6. Trends Over Time

Inasmuch as modifications to GNP have been suggested to re-evaluate growth performance ([16], [26], [42]), an early cursory investigation of the change over time in the ratio of a "new" measure to conventional GNP is most helpful, as it may suggest whether or not inclusion in the accounts will have perceptible effects on growth rates. The empirical estimates reviewed here are insufficient to permit definite conclusions, but probably adequate to allow a first approximation of the time trend.

The first piece of evidence comes from a simple perusal of the small sample on a time axis; the adjusted, comparable values from all the U.S. studies (col. 11,

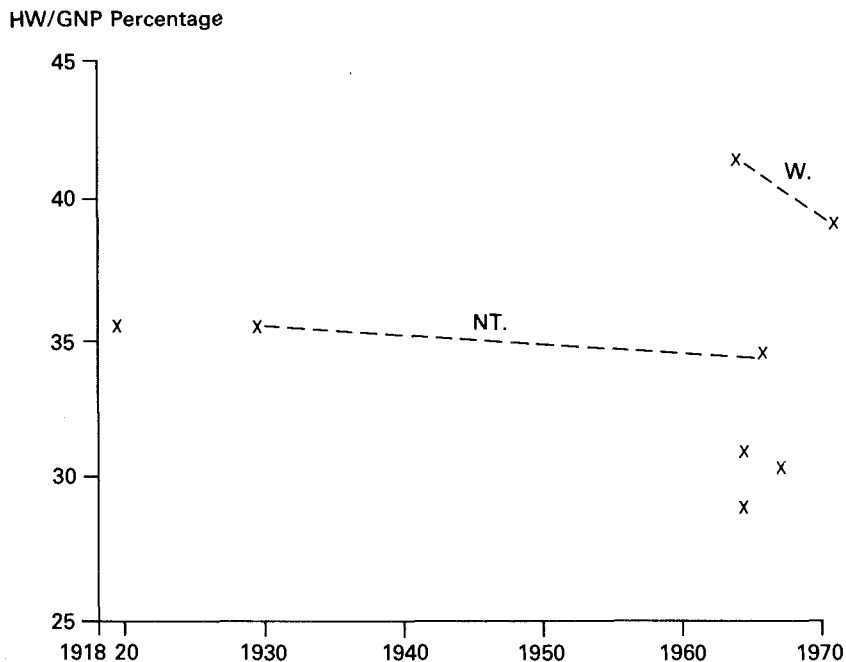[26]Table 4-2. 11, p. 691 in Szalai, [34].

HW/GNP Percentage

Figure 4. *Value* of Household Work as Percent of GNP: Time Trend

Source: Table 1, Col. 11.

Table 1) are plotted on Figure 4 (x; disregard for the moment the dashed lines); a simple average of pre-war and post-war values shows a mild downward trend from 35.7 to 32.8, visually evident in the graph. This is even more marked if the considerably larger Weinrobe value is excluded as an outlier, though no apparent reason for so doing is evident.

Secondly, the evidence from the two studies which give time-series data (Nordhaus–Tobin and Weinrobe, dashed lines on Figure 5), also suggest a downward trend. It is particularly strong in the Weinrobe study (HW/GNP falling from 43 in 1960 to 39 in 1970), so much so that one may be skeptical of its longer-term applicability.

Is this downward trend a manifestation of the common sense notion that with the advent of small appliances and other household capital, housework has become less of a drudgery? If household work takes less time, then the labour component of its value (which HW measures) must have decreased relative to total GNP. A third set of information pertaining to time trends in household work, time-use data, at first sight appear to contradict this view.

Table 7 shows that the total time spent by urban homemakers per day has not declined significantly over time; seven or more hours per day is still the norm. Even if one includes the Vancouver study with its very low values (Table 5), the simple average of five North American studies is 6.8.

125

TABLE 7

TRENDS IN HOUSEHOLD WORK TIME

(Time spent per day—urban homemakers)

	1917 Midwest Town	1926–27 Oregon Town	1952 Auburn, N.Y.	1967–68 Syracuse, N.Y.	1973 Halifax
All food activities	3.3	2.8	2.6	2.3	2.3
Care of house	3.2	1.3	1.6	1.6	1.5
Care of clothes	0.7	1.6	1.6	1.3	0.7
Care of family members	—*	1.2	1.1	1.8	1.6
Marketing and record keeping	—	0.4	0.5	1.0	0.6
Total	7.2	7.3	7.4	8.0	6.7

Sources; *1917*, Mary Rowe, "The Length of a Housewife's Day", *Journal of Home Economics*, Dec. 1917 (reprinted in Oct. 1973 issue of *JHE*). *Others*: Table 1, K. Walker, "Homemaking Still Takes Time", *Journal of Home Economics*, Oct. 1969.

*Apparently incorporated into the first two items.

However, the stability of the total time use for housework is not in fact inconsistent with a downward trend in HW/GNP, because these times are for "full-time" homemakers and their proportion in the total has decreased with greater market participation by women. Let h = female participation rate, TE = housework time for employed women, TH = time for non-employed women, and TJ = hours on market jobs for women. Assume further that labour productivity increases in household production as much as in the market. Then, it is algebraically evident that increased participation rates result *ceteris paribus* in a decline of HW/GNP, as long as $TE < TH$, which was demonstrated to be true in IV.3. Thus:

$$HW = 52 \times P \cdot W(h \cdot TE + (1-h)TH)$$

$$GNP = Z + YM + 50 \times h \cdot P \cdot W \cdot TJ$$

(where Z = value added by non-labour factors

YM = value added by male labour

and $\dfrac{\partial Z}{\partial h} = \dfrac{\partial YM}{\partial h} = 0 \Big)$.

$$\frac{\partial HW}{\partial h} = 52 \cdot P \cdot W \cdot (TE - TH).$$

But $\qquad\qquad\qquad\qquad (TE - TH) < 0.$

Therefore $\qquad\qquad\qquad\qquad \dfrac{\partial HW}{\partial h} < 0$

$$\frac{\partial GNP}{\partial h} = 52 \cdot P \cdot W \cdot TE > 0$$

hence $\qquad\qquad\qquad\qquad \dfrac{\partial HW}{\partial h} < \dfrac{\partial GNP}{\partial h}.$

Given the substantial increases in female labour force participation,[27] the "average" female is probably devoting less time to household work given the lower value of this time for participants (QT falls as h falls because $QT = hTE + (1-h) \cdot TH$).

However, one might counter this argument by suggesting that WOCT estimates hide a potential source of productivity increase in household produc-

[27]From 20 percent in 1931 to 24 in 1951 and 36 in 1970 for Canada; N. Skoulas, *Determinants of the Participation Rate of Married Women in the Labour Force*, Statistics Canada, Cat. 71–002, 1974.

tion, namely reallocation has in fact taken place as evidenced in Table 7. To explain the constancy of the total-time figure, Kathryn Walker [38] has suggested that any time saved by the use of modern conveniences is now used elsewhere. Additional time is needed for the acquisition of convenience foods; the extra time is used in the logistics of taking and sending children to piano, ballet, theatre, skating, riding, scouts, etc.[28] One might on the other hand argue that there occurs some application of Parkinson's law in this situation, the modern housewife taking the benefits of her new-found productivity not in the form of a larger single lump of leisure hours, but in the form of a more leisurely execution of her tasks in the same amount of total elapsed time. Whether modern conditions of life have changed the optimal mix of tasks is not determinable by WOCT: rather it is necessary to use the MAIFC method, for which we do not unfortunately have time series. However, it should clearly be possible to compute HW for at least the post-war period in order to establish the importance of this effect. Its significance clearly goes beyond the question of HW/GNP trends, for it may be that the nature of the new optimal mix partly underlies the trend to increased participation rates.

To conclude the analysis of time trends, it appears that there is a mild decrease in the ratio HW/GNP, apparently caused not by decreases in time use in a given household, but by the increased labour force participation of women which re-classifies a household to one devoting less time to HW.[29] Though it has not been possible to test empirically, it may be that this effect is offset somewhat by reallocation of time within the household from less productive tasks (cleaning) to more productive ones (child care). Verification of this requires more detailed time-series estimates using the MAIFC method.

V. SUMMARY AND CONCLUSIONS

As this is written, in the climate of International Women's Year, many voices are heard expressing the need and importance of recognizing explicitly that there is some equivalent dollar value to be placed on the household services provided by the vast number of homemakers, but not reflected on the market. Thus, the National Council of Women in Canada has recently presented a brief to the Cabinet in which it is requested that the Government undertake an evaluation of the services provided by housewives.[30] On the legislative front, perhaps not coincidentally in a "frontier" area of this continent, the Council of the Northwest Territories has given second reading—approval in principle—to a bill which includes the following: "In considering a divorce settlement the judge shall take into consideration the respective contributions of the husband and wife whether in the form of money, service, prudent management *caring for the home and family* or any form whatsoever (our italics).[31] Given society's demands for a dollar

[28]This is not unlike the argument of Galbraith who speaks of the modern housewife as manager of a consumer-oriented household, being a slave to, more harried than relaxed from, the advantages of modern household. See J. K. Galbraith, *Economics and the Public Purpose.* Recently Joan Vanek, *op. cit.,* has also investigated the time trend and has come to similar conclusions to these of K. Walker.

[29]This corresponds to the findings of Weinrobe [42].

[30]*Toronto Globe and Mail,* Tuesday, November 19, 1974, p. 20, "Ottawa Urged to Find Value of Housework".

[31] *Toronto Daily Star,* Wednesday, June 26, 1974, p. 8, "North Bill Protects Worth of a Wife".

price-tag on this form of activity, one might argue that economists' reaction should be something other than a long footnote in the national income chapter of a macroeconomics text explaining that of course there is a value, but imputation is a very uncertain procedure. For if the economist does not respond, then others will—perhaps less well, as estimates 10–13 indicate.

Whatever the merits of the argument that economists ought to undertake some amount of research into this question, one can safely predict that more such estimations will be done in the future. Thus, it is of no small import to look back upon the miniscule record and to draw therefrom some conclusions and lessons.

(1) It is first necessary to delimit our consideration of the value of house-wives or housework by defining Housework (HW) as follows:

the value of economic services produced by household members

(i.e. conceptually market-replaceable services).

(2) Generally, empirical estimates have indicated that HW is equal to about *one-third of GNP*.

(3) There are three commonly used methods of estimation: opportunity cost (WOCT), replacement cost of a single housekeeper (MAHC), and conceptual replacement cost by function (MAIFC). The values obtained in estimates are dependent to some extent on the method used, the values being roughly highest for the first, lower for the second and lowest for the third mentioned. WOCT gives the highest value because it implicitly defines HW as *the economic value of a housewife* which goes beyond the definition stated in (1) above. The upward bias of MAHC may be simply related to time-period differences, though current studies are unavailable to verify this.

(4) Time-use data, if carefully prepared and interpreted, appear to be reliable sources of basic information for estimation of HW. However, analysis of these data for the understanding of the nature of the "household production function" is very limited, and both theoretical and empirical research is needed to improve our understanding of this sector.

(5) What work has been done suggests the three most important factors underlying variation in the amount of HW services produced by a household are: market-work-status of wife, number of children, and age of youngest child. A comprehensive and thorough estimation should at least disaggregate components according to these factors.

(6) Total HW must include the contributions of husband and children, for though the wife's contribution is paramount, that of others may account for as much as one-third of the total.

(7) The role of the husband appears to be that of performing "male" tasks, which vary but little with the factors mentioned in (5). The increasing burden of more children, etc., usually falls on the wife with some relief by the older children. However, the sources of our knowledge in this regard are limited and further research would prove very helpful inputs to estimation of HW.

(8) There is evidence of a mild downward trend in the ratio HW/GNP, particularly in the post-war period. This appears to stem from the increased market-participation of women. Some unanswered questions remain concerning the reallocation of time among tasks which may have increased the total value of services provided in a given time; further study using MAIFC method needs to be done to verify this.

REFERENCES

[1] Andrews, Benjamin R., *Economics of the Household,* New York: The MacMillan Company, 1925.
[2] Becker, Gary S., "A Theory of the Allocation of Time", *Economic Journal,* September 1965.
[3] Bender, Marilyn, "How Much is a Housewife Worth?", *McCall's,* May 1974, p. 56.
[4] Changing Times, "What's a Housewife Worth?", April 1973, p. 11.
[5] Chase Manhattan Bank, *What's a Wife Worth?,* New York, 1965.
[6] Clark, Colin, "The Economics of Housework", *Bulletin of the Oxford Institute of Statistics,* May 1958, pp. 205–211.
[7] De Grazia, Sebastian, *Of Time, Work and Leisure.*
[8] Der Stern, "Soviel ist die Hausfrau wert", August 16, 1973, p. 34.
[9] Dutch Family Council, "The Economic Value of Work in a Family Household: An Exploratory Study", The Hague, 1972, Mimeo.
[10] Elliot, D. H., Harvey, A. S., and Procos, D., "An Overview of the Halifax Time-Budget Study", prepared for the 2nd Annual Colloquium of the Working Group on Time-Budgets and Social Activities, Berlin, DDR. Published by: Regional and Urban Studies Centre Institute of Public Affairs, Dalhousie University, Halifax, Nova Scotia.
[11] Gauger, William H., "The Potential Contribution to the GNP of Valuing Household Work", paper delivered to the American Home Economics Association, June 1973, Atlantic City, New Jersey.
[12] Gelber, Sylva M., "Housework Services: The Orphan in Economic Reckoning", *Women's Bureau 1969,* Canadian Department of Labour, 1970, pp. 22–26.
[13] *Globe and Mail,* "German Bank Estimates Housewife Worth $700 A Month", August 17, 1973, p. 3.
[14] Gronau, Reuben, "The Intrafamily Allocation of Time: The value of the Housewives' Time", *American Economic Review,* September 1973.
[15] Gronau, Reuben, "The Measurement of Output of the Non-Market Sector: The Evaluation of Housewives' Time", pp. 163–190 in M. Moss, ed., *The Measurement of Economic and Social Performance, Studies in Income and Wealth,* No. 38, NBER, 1973.
[16] Hawrylyshyn, O., *A Review of Recent Proposals for Modifying and Extending the Measure of GNP,* Statistics Canada, Occasional Paper, Cat. # 13–558, Ottawa, 1974.
[17] ———, "Estimating the Value of Household Work: Theoretical Basis and Practicable Methodologies", Working Paper # 2, Non-Market Activity Project, Statistics Canada, December 1974.
[18] Hershlag, Z. Y., "The Case of Unpaid Domestic Service", *Economia Internazionale,* February 1960.
[19] Kuznets, S., *National Income and its Composition,* Vol. II, pp. 431–433, NBER, 1944.
[20] Leibowitz, A. S., *Women's Allocation of Time to Market and Non-Market Activities,* 1972, Columbia University Ph.D. Thesis.
[21] Lindahl, E., Dahlgren, E., and Korb, K., *The National Income of Sweden, 1861–1930,* Part One and Part Two.
[22] Meis and Scheu, "All in a Day's Work: A Time-Budget Analysis of the Daily Activities of Men and Women", VUSP Report No. 4, Department of Anthropology and Sociology, University of British Columbia, May 1973.
[23] Morgan, J. N., David, M. H., Cohen, W. J., and Brazer, H. E., *Income and Welfare in the United States,* 1962, Chapter 8, pp. 95–105.
[24] Michelson, W. and Reed, P., "The Time Budget", Chapter V in W. Michelson, (ed.), *Social Research Methods in Environmental Design,* Dowden, Hutchison and Ross, 1974.
[25] ———, "Discretionary and Nondiscretionary Aspects of Activity and Social Contact in Residential Selection", Discussion Paper B.72.6, Ministry of State for Urban Affairs and University of Toronto, May 1972.

[26] Nordhaus, W., and Tobin, J., "Is Growth Obsolete", in *Economic Growth, Fiftieth Anniversary Colloquium V*, NBER, New York, 1972.

[27] *The Ottawa Journal*, January 25, 1966, p. 7, "The Value of a Housewife".

[28] Pollak, R. A. and Wachter, Michael, "The Relevance of the Household Production Function and its Implications for the Allocation of Time", Working Paper, University of Pennsylvania, May 1974, forthcoming in *Journal of Political Economy*.

[29] Pyun, Chong Soo, "The Monetary Value of a Housewife", *The American Journal of Economics and Sociology*, July 1969.

[30] Rosen, H. F., "Monetary Value of a Housewife: A Replacement Cost Approach", *American Journal of Economics and Sociology*, January 1974, pp. 65–72.

[31] Rowse, Mary, "The Length of a Housewife's Day in 1917", *Journal of Home Economics*, October 1973 (from the December 1917 *Journal of Home Economics*).

[32] Sirageldin, I. A. H., *Non-Market Components of National Income*, Survey Research Centre, Institute for Social Research, University of Michigan, 1973.

[33] Szalai, Alexander, "Trends in Comparative Time-Budget Research", *The American Behavioural Scientist*, May 1966, pp. 3–8.

[34] ————, (ed.), *The Use of Time*, The Hague and Paris, Mouton Press, 1972.

[35] Vanek, Joan, "Time Spent in Housework", *Scientific American*, November 1974, pp. 116–120.

[36] Walker, Kathryn E., "Homemaking Still Takes Time", *Journal of Home Economics*, Vol. 61, #8, October 1969, pp. 621–29.

[37] ————, "Effect of Family Characteristics on Time Contributed for Household Work by Various Members", paper delivered to American Home Economics Association, 64th Annual Meeting, June 1973.

[38] ————, "How Much Help for Working Mothers? The Children's Role", *Human Ecology—Forum*, Vol. 1, #2, Autumn 1970.

[39] ————, "Time Spent in Household Work by Homemakers", *Family Economics Review*, 1969.

[40] ————, *Homemaking Work Units for New York State Households*, Memoir 353, Cornell University Agricultural Experiment Station, 1957.

[41] ————, and Gauger, W. H., "Time and Its Dollar Value in Household Work", *Family Economics Review*, Fall 1973, pp. 8–13.

[42] Weinrobe, Maurice, "Household Production and National Production: An Improvement of the Record", *Review of Income and Wealth*, March 1974, pp. 89–102.