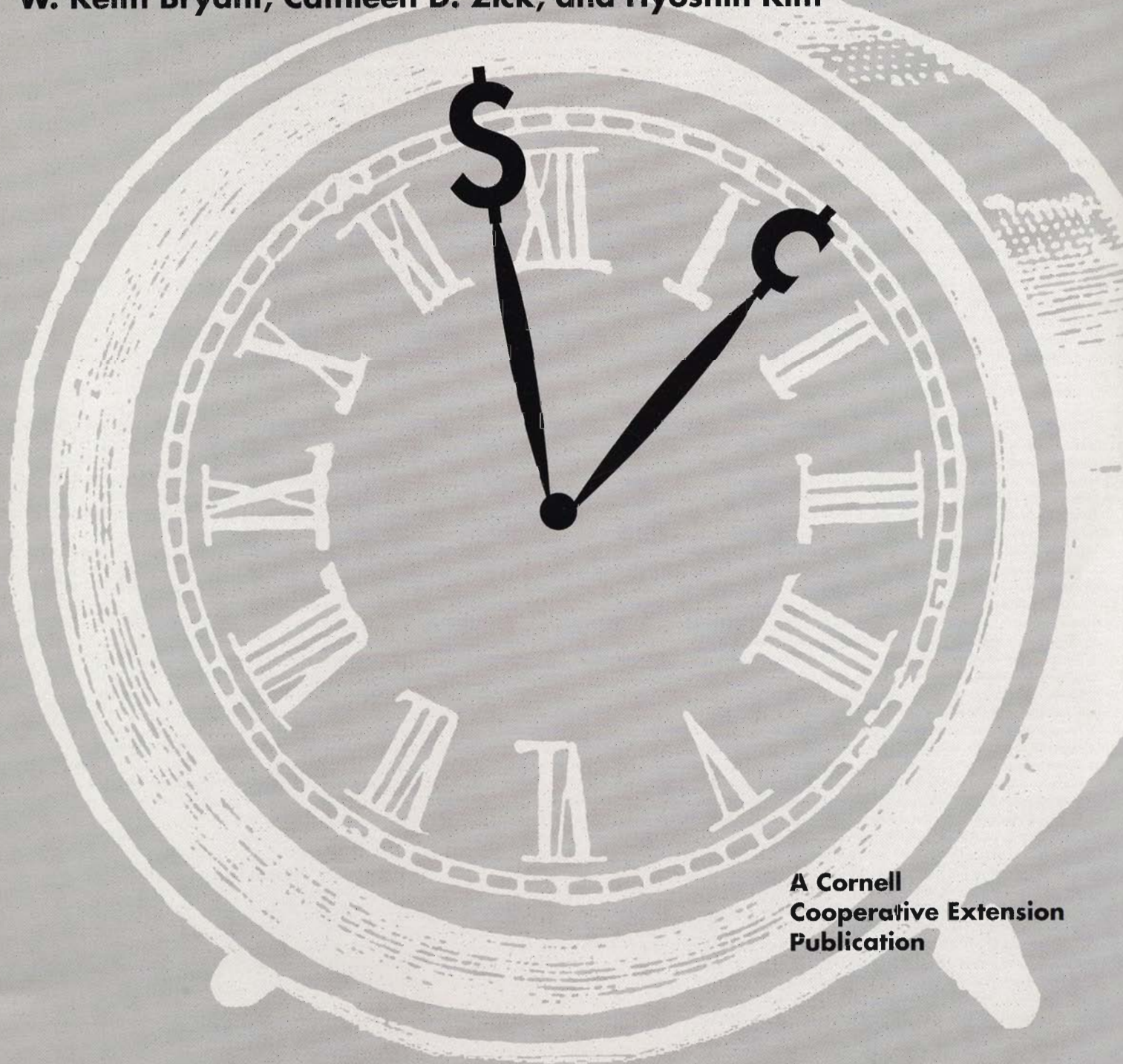


# Household Work: What's It Worth and Why?

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### Errata

We have found errors in three of the tables in this bulletin. The corrected tables appear on this errata sheet. They are as follows: Table 1.2, page 4, nonblack males, the brace in the 1-34 column encompasses the categories 6-14 through 15-17; and in the column 35-40, in the third cell down, 6-14, the top figure should be 1,150, not 1,065. In Table 3.1, page 13, under After-tax asked wage rate, married men, black, the figure should be \$2,309, not \$2,306, and married women, black, the figure should be \$6,888, not \$7,025. In Table 3.2, page 15, nonblack males, in the column 1-34, the brace encompasses the categories 6-14 through 18+ or no children. Please substitute these for the tables in the bulletin.

In addition, the following corrections should be made on page 20:

Column 1, line 22: 865 should be 765

Column 1, line 23: 14 should be 13

Column 2, line 11: 14 should be 13

Column 2, line 12: \$67.62 should be \$62.79 and 14 should be 13

Column 2, line 13: \$3,416.24 should be \$3,265.08

**Table 1.2. Median minutes per week spent in household work**

#### Nonblack males

Age of youngest child	Number of hours employed per week			
	0	1-34	35-40	40+
1			1,214 <sup>a</sup> 14	865 21
2-5			1,196 9	612 30
6-14		}	1,150 19	785 39
15-17	{		802 10	566 13
18+ or no children		1,273 16	1,034 9	761 36

Source: Subsample of married men and women, aged 25 to 65 years, in intact marriages in 1981, from T. F. Juster, M. S. Hill, F. P. Stafford, and J. E. Parsons, *Time Use Longitudinal Panel Study, 1975-1981* (data tape) (Ann Arbor: Survey Research Center, Institute for Social Research, University of Michigan, 1988).

<sup>a</sup>Top number is median, bottom number is number of observations.

**Table 3.1. 1988 median annual values of the time spent in household work by married men and women in the 1981 sample**

	<i>After-tax offered wage rate</i>	<i>After-tax asked wage rate</i>	<i>Private household workers' wage rate</i>
Married men			
Black	\$ 3,142	\$ 2,309	\$ 2,422
Nonblack	7,077	5,911	3,202
Married women			
Black	6,695	6,888	7,610
Nonblack	10,391	10,833	8,753

Source: Calculated from offered, asked, and private household workers' wage rates estimated from 1989 *Current Population Survey* and time spent in household work from 1981 *Longitudinal Time Use Survey*.

**Table 3.2. Median yearly value of household work based on the 1988 wage offered function (in dollars)**

<i>Age of youngest child</i>	<i>Number of hours employed per week</i>			
	<i>Not employed</i>	<i>1-34</i>	<i>35-40</i>	<i>40+</i>
1			\$ 7,871 14	\$ 7,808 21
2-5			\$ 9,291 9	\$ 5,958 30
6-14			\$ 9,409 19	\$ 7,903 39
15-17			\$ 6,586 10	\$ 6,341 13
18+ or no children	\$11,155 16	\$ 9,650 9	\$ 6,724 36	\$ 6,284 39

Source: Estimates apply to the subsample of married men and women, aged 25 to 65, in intact marriages in 1981, from T. F. Juster, M. S. Hill, F. P. Stafford, and J. E. Parsons, *Time Use Longitudinal Panel Study, 1975-1981* (data tape) (Ann Arbor: Survey Research Center, Institute for Social Research, University of Michigan, 1988). The wage offered function estimated from a sample of men and women in intact marriages, aged 25 to 65, in the 1989 *Current Population Survey* who worked 3,000 hours or less in 1988. The wage offered is net of federal income taxes.

<sup>a</sup>Top number is median, bottom number is number of observations in cell.

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**H**OUSEHOLD WORK—cooking, cleaning, washing, ironing, child and family care, mowing, gardening, painting, and fixing—is very valuable, else it would not be done. But it is not remunerated as is work in the marketplace. The time spent in household work is worth a sizable sum (Gauger and Walker, 1980; Murphy, 1982; Peskin, 1983; Zick and Bryant, 1983, 1990). For instance, the total value of the time husbands and wives in white, two-spouse families spent in household work in 1975 was estimated to be almost \$13,000 per family (measured in 1979 dollars). By 1979, the estimated value had increased to about \$15,000, or 81 percent of a household's cash income (Zick and Bryant, 1990).

Existing studies of the dollar value of household work are based on data gathered in the 1960s and 1970s. Dramatic demographic and socioeconomic changes have occurred during the past couple of decades, and these studies do not represent current reality. Furthermore, because time use varies widely among types of families, global estimates such as those quoted above are likely to be grossly inadequate for many purposes.

The goal of this publication is to present up-to-date and useful estimates of the dollar value of household work done in families in the United States. The time-use information comes from nationally representative data collected in 1981. The estimates of the dollar values of time per hour come from 1988. These estimates are intended for extension specialists to use with families and for educators to use in the classroom. Separate estimates are presented for men and women in two-spouse families by race and by salient characteristics of the individuals and families.

Part 1 describes the data on household work performed by men and women in two-spouse families and estimates the amount of time they spend in household work per year based on relevant personal and family characteristics. Part 2 discusses the conceptual issues and problems in estimating the hourly dollar value of household work and presents three alternative estimates:

- the market wage rate commanded by individuals in the labor market (or the wage rate they could command if they are not currently employed), called the *offered wage* in the tables in this bulletin;
- the wage rate individuals ask for if they are to work an additional hour in the labor market if they are employed, or the first hour if they are not employed, called the *asked wage rate*;<sup>1</sup> and
- the market alternative cost, which is the rate one would have to pay a worker in the marketplace to do the work.

Part 3 brings the time-use and the three different dollar values per hour together and presents estimates of the annual dollar value of household work done by husbands and wives based on particular characteristics of individuals and their families. Each of the three approaches for valuing time is used to construct estimates of the annual dollar value of household work so that the reader may select a preferred method. Part 4 estimates the present value of the expected future household work through age 65, the oldest age for which the time-use data are relevant.

<sup>1</sup> Economists frequently use two other names for the asked wage rate: the reservation wage rate and the shadow wage rate. We use the word *asked* because it most clearly represents the underlying concept.

## Part 1: The Time-Use Data

The time-use data presented here come from the *Time Use Longitudinal Panel Study, 1975–1981*, collected by the Survey Research Center, Institute for Social Research, at the University of Michigan. This data set contains the most recent nationally representative public-use data focusing on allocation of household time. Participants in this study were initially interviewed in 1975 as part of the Time Use in Economic and Social Accounts Survey. In 1981 the same households were recontacted. Those who agreed to participate in the 1981 study were interviewed and asked to record their time use over a twenty-four-hour period on four separate occasions. These four time diaries were spread across a twelve-month period and all seven days of the week to ensure that seasonal and weekday or weekend variations in time use were captured in the data. The data from each time diary were then combined to construct estimates of time use for a typical week. The weekly figures were multiplied by 52 to generate estimates of annual time use.

From the 1981 reinterview sample, a subsample of husbands and wives, aged 25 to 65 years, in married intact families, was selected for this project. This subsample includes 249 nonblack males, 281 nonblack females, 6 black males, and 8 black females. The nonblack sample members are mostly whites and a few Asians. The average times per year reported were adjusted to make them nationally representative of married men and women aged 25 to 65 years. The measure of average used is the median, which is the value above which half the sample lies and below which half the sample lies. It is used instead of the mean because it is less affected by a few extremely high or low values.

Total household work is defined here as the sum of the time the individual spends preparing food, cleaning up after cooking and meals, cleaning both indoors and out, doing laundry, doing indoor and outdoor repairs on houses, cars, furniture, and appliances, gardening, looking after pets, caring for family members, chauffeuring, shopping, running errands, and managing family finances. Leisure time activities, sleeping, personal care of oneself, eating, work for pay, social activities, and volunteer work for people and organizations not in the family are excluded. This definition of household work is consistent with the definitions that have been used historically in time diary studies (Gauger and Walker, 1980; Juster and Stafford, 1985; Morgan, Sirageldin, and Baerwaldt, 1966; Walker and Woods, 1976).

Household work reported as primary time use is included but secondary time use is not. For example, a person might simultaneously watch TV and iron clothes. Watching TV is leisure, and ironing is household work. If when asked, “What were you doing at 7:00 P.M.,” the individual responded, “TV watching,” because that was what he or she considered to be the primary activity, the time simultaneously spent ironing would be considered secondary and would not be reported. This distinction is consistent with treatments in the literature of primary and secondary time.

## The Tables

Table 1.1 shows the median hours per week that black and nonblack married men and women spent in household work in 1981. Not surprisingly, married women spent more time than did married men. Blacks spent 3 to 4 hours per week less in household work than whites. Overall, married males in intact families spent 12.5 hours and married females spent 34.5 hours per week in household work. These estimates are a trifle lower than mean figures for the mid-1970s, which is to be expected because time spent in household work is trending downward and because medians are less affected by very high values and thus are typically somewhat lower than means.

**Table 1.1. Median hours per week spent in household work by married men and women**

<i>Sex</i>	<i>Hours per week</i>	
	<i>Black</i>	<i>Nonblack</i>
Males	9.64	12.75
Females	30.30	34.85

Source: Subsample of married men and women, aged 25 to 65 years, in intact marriages in 1981, from T. F. Juster, M. S. Hill, F. P. Stafford, and J. E. Parsons, *Time Use Longitudinal Panel Study, 1975-1981* (data tape) (Ann Arbor: Survey Research Center, Institute for Social Research, University of Michigan, 1988).

Table 1.2 presents the median number of minutes spent in household work per week by married nonblack men and women in intact families based on the age of the youngest child in the family and the number of hours per week the parent is employed. These two variables, age of youngest child and employment, typically account for most of the variation in household work hours spent by married women.<sup>2</sup> The table shows that married females spend the greatest amount of time in household work when they have a child less than one year old and when they are not employed. As children grow older and as they work more hours in the labor market, the time married women spend in household work falls. These relationships hold for married men also but are more muted.

<sup>2</sup> See, for instance, Walker and Woods (1976).

**Table 1.2. Median minutes per week spent in household work**

**Nonblack females**

<i>Age of youngest child</i>	<i>Number of hours employed per week</i>			
	<i>Not employed</i>	<i>1-34</i>	<i>35-40</i>	<i>40+</i>
1	3,578 <sup>a</sup> 10	2,917 11	2,062 13	} 2,833 9
2-5	3,202 7	2,489 16	2,087 9	
6-14	2,708 15	2,692 22	1,492 25	} 1,572 8
15-17	2,724 6	1,944 10	1,299 8	
18+ or no children	2,343 35	1,790 23	1,472 33	1,015 13

**Nonblack males**

<i>Age of youngest child</i>	<i>Number of hours employed per week</i>			
	<i>0</i>	<i>1-34</i>	<i>35-40</i>	<i>40+</i>
1			1,214 <sup>a</sup> 14	865 21
2-5			1,196 9	612 30
6-14			1,065 19	785 39
15-17	} 1,273 16	} 1,034 9	802 10	566 13
18+ or no children				761 36

Source: Subsample of married men and women, aged 25 to 65 years, in intact marriages in 1981, from T. F. Juster, M. S. Hill, F. P. Stafford, and J. E. Parsons, *Time Use Longitudinal Panel Study, 1975-1981* (data tape) (Ann Arbor: Survey Research Center, Institute for Social Research, University of Michigan, 1988).

<sup>a</sup>Top number is median, bottom number is number of observations.



## Part 2: The Dollar Value of Time per Hour

Assigning a value to the time spent in household work has occupied many scholars over a long period of time. Oli Hawrylyshyn (1976) first discussed the various ways it might be done. We will review the dominant techniques, first clarifying what they attempt to measure.

### The Concept

Placing a dollar value on household work is an attempt to measure the benefit derived from the time spent in household work. The term *benefit* is not to be interpreted as simply the contribution of the time spent to the monetary value of the goods and services produced. Rather, it means utility or well-being and has as much or as little psychological value as the household work contains for the individual.

An individual may be positively disposed to household work and derive a value from the time doing it beyond the goods and services produced. This individual may love cooking and be a happier, better person for having cooked the family meals. Alternatively, he or she might derive pleasure from the process of gardening as well as from the vegetables and flowers that result. Or the individual might enjoy being with his or her children above and beyond the satisfaction derived from the growth and development resulting from the parent's efforts. These examples show that there is psychological value in time spent in household work over and above its contribution to the value of whatever good or service is produced. A good measure of the benefit of time spent in household work should capture both positive aspects of value.

Another person may detest cooking, cleaning, and other aspects of household work or dislike the physical or social environment in which it is done. For such an individual the psychological cost of devoting time to household work must be deducted from the value of the time spent producing

the goods and services. Thus a good measure of the benefit should also capture any negative aspects.

Finally, some people have a neutral attitude toward household work, seeing it solely as a means of producing needed goods and services (meals, cleaned and pressed clothes, and happy, well-adjusted children). For such people, the benefit simply equals the contribution of the time spent to the value of the home-produced goods and services. Yet even in this case, the value of this benefit may differ from the cost of those same goods and services in the market because home-produced goods and services need not be perfect substitutes for those found in the market. Purchased child care, for instance, may be inferior to that provided by a family member. Thus a good measure of the benefit of time spent in household work should reflect the contribution of the time spent to the value the family places on the home-produced goods and services.

The problem, then, is to devise a technique that measures the family's assessment of both the monetary and psychological benefits of time spent in household work. One approach is to ask individuals directly what dollar value they place on their household work time. This strategy is rarely used because respondents typically find it difficult, if not impossible, to answer such a question.

Because it is so hard to measure the value of nonmarket time directly, several indirect measures have been developed. The oldest of these, the market alternative cost, values the time spent in household work at the wage rates those activities command in the marketplace. More recently developed measures, such as the market wage rate and the asked wage rate, value household work time by measuring the worth of alternative activities that are precluded by doing household work. That is, they measure the "oppor-

tunity costs” associated with doing household work.

Opportunity cost measures of time rely on the assumption that individuals are motivated to allocate their time so as to reap the highest benefits given their resources. In this context, the value of time spent in one activity can be measured against the value of other, precluded activities. Specifically, time spent in household work cannot be spent in some other way such as working for pay, sleeping, or engaging in leisure activities. The benefit that could have been derived from these activities had to be given up to devote the time to household work. If those activities were forgone so that household work could be done, the value of the time spent in household work must be at least equal to the value of the activities forgone. Thus if one can measure the value or benefit of the next best alternative use of time—the opportunity cost—then one has measured the value of the time spent in household work.

## **The Measures**

### *The Offered Wage Rate*

The most frequently used measure of the dollar value of time in household work is the wage rate the individual commands in the labor market or could command if she or he were to enter the labor market. Economists argue that for an employed person, the hourly value in money and nonmoney benefits of the time spent in household work must be at least equal to the wage rate. If the value of the time spent in household work was lower than the per hour wage rate, the individual would be motivated to do less household work and more market work. This could be done by working longer hours at a current job, by seeking a new job with longer hours, or by seeking a second, part-time job.

Economists assume that the more time is spent in household work, the less it is worth per hour. Furthermore, an individual will spend time in household work until the value of the last hour spent equals the wage rate. To do otherwise would be to act other

than in his or her best interest and that of the family. The wage rate, then, is the opportunity cost of time for the employed person. Because it is so easily observed and measured, it is an attractive measure of the per hour dollar value of household work.

For those who are not employed outside the home, the wage rate that could be commanded in the labor market is a more problematic measure of the per hour value of household work. The time of a person who is not employed must be worth more to the family in the household than if he or she worked for pay. That is, the per hour value of time spent in household work must exceed the wage rate the individual could command. Thus the potential market wage serves as a lower bound of the value of household work time for nonemployed individuals.

In sum, then, the wage rate earned by employed people and the wage rate nonemployed people could command in the labor market are frequently used as the per hour value of time spent in household work (for examples see Ferber and Green, 1985; Ferber and Birnbaum, 1980). That rate is equal to the per hour value of household work for an employed person and is a lower bound estimate for those who are not employed.

Criticism of the market wage rate as a measure of the opportunity cost of time abounds. One argument is that although the per hour wage earned in the labor market is the opportunity cost of time, this rate is an overestimate because it is calculated before federal and state income taxes. The actual value of the time should be based on take-home pay and, therefore, income taxes need to be deducted from the market wage rate. This is correct, and it is the wage rate net of federal income taxes that is used in this bulletin. Unfortunately, the data do not exist to calculate state and local income or payroll taxes. We thus refer to the after-tax wage rate before state and local income and payroll taxes have been deducted.

Another argument is that the logic justifying the after-tax wage rate as the opportunity

cost of time is correct only if people have a choice over whether and how much they work for pay. If they have no choice, the opportunity cost of time is not equal to the after-tax wage rate because working for pay is not an option. If too little work for pay is available (i.e., the individual is willing to work more hours at the same wage rate but cannot find additional work), then the individual is forced into less valued household activities and the wage rate overestimates the per hour value of household work. If too much work for pay is demanded of the employee, the reverse is true. That is, the individual works more hours than he or she prefers and is prevented from doing other, more valued household activities. The wage rate underestimates the per hour value of household work.

The after-tax wage rate can be adjusted for the over- and underestimation if information is available on employment options or on the underlying causal conditions. In the figures given here, the after-tax wage rate has been adjusted based on information on the unemployment rate in different regions. No other adjustments were possible because of a paucity of information pertaining to the options facing each member of our sample.

Another criticism is that there are other aspects of working for pay than the wage rate that influence decisions as to whether and how much to work. Fringe benefits such as health insurance, the social aspects of being employed, or liking one's job augment the monetary benefits of employment. Likewise, costs such as commuting expenses, health and safety risks of the job, and disliking the job must be deducted. These criticisms are valid, but data do not exist to make the adjustments to take them into account.

One reply to such criticisms is that the labor market works to create wage differentials based on such attributes as working conditions and fringe benefits. Hence unpleasant and unsafe jobs tend to pay higher wages to compensate workers for unpleasant and unsafe working conditions.

Likewise, jobs with desirable working conditions and high fringe benefits tend to pay less. To the extent that wage differentials compensate for working conditions and fringe benefits, the after-tax wage rate is an adequate measure of the opportunity cost of household work. Commuting costs, however, being person- rather than job-specific, are not accounted for by wage differentials.

Another reply to these criticisms is that, despite their drawbacks, the after-tax wage rate of those employed and the after-tax wage rate that could be commanded by those who are not are still valuable. When used as averages for individuals in sex, age, race, and family type categories, after-tax wage rates balance out the under- and overestimates for particular individuals.

A final criticism is that, at best, the market wage rate measures the opportunity cost of the marginal, or last, hour spent in household work; inframarginal, or previous, hours are worth more. Consequently, estimating the value of time spent in household work by multiplying the time spent by the marginal opportunity cost results in an estimate of the total value, which is biased downward. The argument is correct unless the production processes within the household are homogeneous of degree one, a technical condition in which, if all inputs into the household production process are doubled, the household output will be doubled. If so, the market wage rate is the appropriate measure. There is no evidence either way on the issue.

#### *The Asked Wage Rate*

Some scholars have objected to using the market wage rate as a measure of the value of household work time because it inherently understates the value of such time for the very people who spend the most time in household work activities—full-time homemakers, male or female. This objection has led economists to develop an alternative measure called the asked wage.

Like the market wage rate, the asked wage is based on opportunity cost. It is defined

here as the lowest after-tax wage an individual will accept to do one more hour of work in the labor market. For an employed person, the asked wage rate is the after-tax market wage rate. For a nonemployed person, it is the lowest wage rate that would entice that person to work a first hour in the labor market.

Calculation of the asked wage rate for nonemployed individuals is based on the premise that household characteristics such as the number and ages of children or the number and types of appliances affect the benefits to be obtained from spending time in household work. For example, there will be more demand for clean clothes if there are younger as opposed to older children in the family, and, therefore, the time spent laundering clothes will yield greater benefits. The benefits gained from time spent doing laundry are likely to be different if the clothes are cleaned by hand rather than with the assistance of an automatic washer and dryer. Thus the first step in calculating the asked wage rate is to identify the household characteristics that influence the value of time spent in household work. These characteristics are then used to construct estimates of the asked wage for nonemployed individuals.

Because the asked wage rate is based on opportunity cost, it suffers from the same criticisms that are directed at the market wage rate. In addition, critics point out that the accuracy of a nonemployed individual's asked wage rate is dependent on identifying all of the relevant household characteristics. In the asked wage estimates calculated for this bulletin, careful attention is given to specifying the production-related household characteristics.

### *The Market Alternative Cost*

The market alternative cost methodology is based on the premise that time spent in household work should be valued at the rate one would have to pay someone in the marketplace to do that work. As such, it is an accounting rather than an opportunity-cost-

based measure. This measure has the longest history in the literature, and it has been used by several different scholars (Gauger and Walker, 1980; Murphy and Peskin, 1981, Peskin 1983; Walker and Gauger, 1973).

Two accounting procedures have been used to arrive at market alternative cost estimates. The first approach equates the value of household work time with the hourly wage paid to a housekeeper. This is often referred to as the market alternative housekeeper method. The second approach, called the market alternative individual method, is a bit more complicated. It requires that the time spent in each household work task, such as cooking, doing laundry, watching children, or mowing the lawn, be identified. Time spent doing each task is then valued at the wage rate that would be paid in the marketplace for that labor. For example, time spent preparing meals would be valued at a cook's wage rate while time spent sewing would be valued at a dressmaker's wage rate. With this information, an overall hourly value can be constructed by multiplying each wage rate by the fraction of total household work time an individual spends in that particular activity and then summing the components.

One criticism of market alternative cost estimates is that they do not capture the value of household work time from the family's perspective. If families valued household work at the corresponding market wage, they would be indifferent between doing the work themselves and hiring someone else to do it. Because many families do not purchase these market services, they must perceive that the value of their time is less than that of comparable labor in the marketplace.

The marketplace and the family may value time spent in the same activity differently. Skill levels may vary. For example, someone who has a bachelor's degree in business and is employed as a financial counselor may be more skilled in managing family finances than is an individual who has never taken a finance class. Also, busi-

nesses typically own sophisticated equipment not usually purchased by families that enhances the relative productivity of an employee's time. For instance, the typical restaurant cook has access to a large oven, a grill, fryers, a myriad of pots and pans, and perhaps a walk-in refrigerator. If used properly, this equipment can make the professional cook's time more productive than a comparable amount of time spent by an individual cooking at home. Thus productivity differences between the home and the marketplace based on skill and equipment may bias the market alternative cost estimates of the value of household work time.

A second criticism of the market alternative cost approach is that these estimates are typically based on the higher wage rates of full-time employees rather than the lower wage rates of part-time employees. Those who do household work do not typically work at one task full-time. Thus the application of full-time market wage rates is likely to overstate the market's valuation of this work time. Unfortunately, data on wages paid part-time workers are not readily available so the estimates presented here, like those constructed in the past, are based on wages for full-time employees.

### **The Data and the Estimation Procedures**

The data used to construct the three value of time estimates come from the U.S. Bureau of the Census's *Current Population Survey (CPS)* for 1989, which gives data for 1988. The *CPS* is an annual national survey taken in the spring of each year. It contains a wealth of information about the sociodemographic characteristics of individuals, the families to which they belong, and the households in which they reside. It also contains great detail on employment: whether individuals worked for pay, how much they worked, the occupation and industry in which they worked, their wages and salaries. Crucial for the purposes of this bulletin, the *CPS* contains information on sources of family income other than earn-

ings and on total income.

The 1989 *CPS* was used in three ways. It provided the estimated wage rate used to calculate the market alternative cost estimate of the value of time spent in household work. Data from the *CPS* were also used to obtain estimates of the after-tax market wage rate individuals with given characteristics could command in the labor market in 1988. This is referred to as the after-tax offered wage rate because it is the wage rate employers would offer to individuals with given characteristics. Data from the *CPS* were, finally, used to obtain estimates of the after-tax asked wage rate for individuals with given characteristics, asked because this is the wage rate that such an individual would ask to be paid if he or she were to work one more hour—the next hour for those already employed and the first hour for those not employed.

The market alternative cost estimate of the value of household work time was calculated from the average wage rate for private household workers in 1988. This category includes launderers and ironers, cooks, housekeepers and butlers, child care workers, housecleaners, and servants employed by private households. These occupations encompass the vast majority of the tasks defined as household work. The repair occupations of plumber, electrician, painter, carpenter, and the like are excluded. The time spent repairing that is included in total household work time is infrequent and small. The before-tax wage rate was used because that is the wage rate people would have to pay to employ such workers in their homes. It represents the hourly cost of hiring household work done rather than doing it oneself. It may be slightly biased downward because it does not include fringe benefits such as room and board or the wage rates of repair occupations.

To estimate the after-tax offered and asked wage rates, a subsample of married men and women, aged 25 to 65 years, in intact families, was chosen from the 1989 *CPS*. The sample included 1,462 married

black men, 21,113 married white men, 1,433 married black women, and 22,937 married white women. Information on federal income tax rates in 1988 was added to these subsamples. Estimates of the after-tax offered and asked wage rates as of 1988 were made for black and white married men and women separately.

The offered and asked wage rates were estimated as follows. A person's after-tax offered wage rate is that which he or she is paid (if employed) or could get (if not employed) based on personal characteristics and conditions in the local labor market.<sup>3</sup> Using the data from the subsample of the 1989 *CPS*, we can estimate this after-tax offered wage rate by statistically relating actual wage rates received by employed individuals to their personal characteristics along with the local unemployment rate to represent local labor market conditions. After statistically correcting for sample selection bias, the resulting equation can be used to estimate the after-tax offered wage rate of any individual, employed or not.<sup>4</sup>

The asked wage rate is estimated indirectly. An employed person's after-tax offered wage rate (what his or her employer is willing to pay adjusted for taxes) equals the asked wage rate (the wage rate the individual is willing and able to accept, at the margin, for an hour's work). A not employed individual's asking wage rate must be higher than his or her offered wage rate; otherwise he or she would be employed. The hours of paid employment are statistically related to the individual's personal charac-

teristics and local labor market conditions that determine both the offered wage and the asked wage. Once estimated, this relation can be used along with the estimate of the offered wage rate to extract an estimate of the asked wage rate, that is, the after-tax wage rate that would induce employed people to work one more hour and the after-tax wage rate that would induce not employed people to work the first hour.<sup>5</sup> As estimated, the asked wage rate is already on an after-tax basis.

Table 2.1 contains estimates of the median after-tax offered and asked wage rates for married black and white men and women aged 25 to 65 years in 1988. The medians are reported instead of the means because means are more influenced by very high or very low values. The median offered wage rates reflect the situation in the labor market: males have higher wage rates than females and whites command higher wage rates than blacks for a medley of reasons including education, experience in the labor market, and discrimination.

The asked wage rates reflect the values families place on household work time because they are the after-tax wage rates an individual would have to receive to work one more hour in the labor market if already employed or the first hour if not employed. Employment for an extra hour means that that hour must be taken from some other activity. To sacrifice an extra hour, a person must receive added benefits at least equal to what is sacrificed. To be employed one

<sup>3</sup> For salaried workers, an implicit wage rate is calculated by dividing salary by hours worked.

<sup>4</sup> The statistical adjustment is necessary because people usually choose to be either employed or not employed. Because outwardly similar people make different choices—to be employed or not—they must be different in ways that are unobserved. These unobserved differences mean that the offered wage equation estimated from the observed information on those who are employed will be somewhat different from the offered wage of those who are not employed. The adjustment corrects for the effect of these unobserved differences.

<sup>5</sup> The hours of paid employment is a function of the variables that affect both the asking wage and the offered wage. Consequently, the estimate of the after-tax offered wage equation and the hours of work equation can be jointly solved to obtain the equation for the asked wage rate. Once obtained, it can be used to provide an estimate of the asked wage rate for any individual with given personal characteristics and hours of work (positive for those employed, zero for those who are not). The wage asked equation must be statistically adjusted in the same way that the offered wage equation is adjusted so that it can be used to estimate asked wage rates for both employed and not employed individuals.

**Table 2.1. Median after-tax offered wage rate and asked wage rate for married black and white men and women, aged 25 to 65, 1988**

	Offered wage rate	Asked wage rate
Married men		
Black	\$7.03	\$7.08
White	\$9.93	\$8.33
Married women		
Black	\$4.26	\$3.30
White	\$5.67	\$8.41

Source: Wage rates estimated from the 1989 *Current Population Survey* and applied to the sample of married men and women in 1981.

additional hour, then, the individual asks to be paid at least the value of what is given up. Hence the asked wage reflects the value the family places on time.

### Before or After Tax?

Table 2.1 reports after-tax offered and asked wage rates because it is after-tax dollars that a person receives and can spend. Under some circumstances, expressing the value of household work time in before-tax dollars per hour is relevant and conversion is easy: simply divide the after-tax value per hour by one minus the marginal tax rate. The marginal tax rate is the tax bracket the family is in. According to the 1988 federal income tax code, for instance, the tax bracket is 15 percent if the family's taxable income is less than or equal to \$29,750; 28 percent if taxable family income is greater than \$29,750 and less than or equal to \$71,900; and 33 percent if taxable family income is greater than \$71,900 and less than or equal to \$149,250. The tax bracket is 28 percent if taxable family income is greater than \$149,250. For instance, from Table 2.1 the after-tax offered wage rate for white married women aged 25 to 65 years in intact families is \$5.67 per hour. Suppose the woman's taxable family income is \$35,000 and, in consequence, she is in the 28 percent tax bracket. Her before-tax offered wage rate, then, is  $\$5.67 / (1 - .28) = \$5.67 / .72 = \$7.88$ . As valued by the before-tax wage rate employ-

ers would offer, her household work time is worth \$7.88 before federal taxes and \$5.67 per hour after federal taxes.<sup>6</sup>

When should the before-tax and after-tax estimates of the offered and asked wage rates be used? The after-tax estimate (of either the offered or asked wage rate) is appropriate when an economic value of time from the perspective of the individual is desired. What is the value of John W. Gray's household work time to himself, for instance? An after-tax estimate is in order because John Gray must trade off his time among household work, employment hours, and other activities. If his before-tax wage rate is \$10 per hour and he is in the 28 percent marginal tax bracket (i.e., the taxable income of his family was greater than \$29,750 and less than or equal to \$71,900 in 1988), he will take home  $\$10 \times (1 - .28) = \$7.20$  if he works an added hour. If his household work time were worth less than \$7.20 per hour, he would have spent more time in market work. If his household work time were worth more to him than \$7.20 per hour, he would have spent more time in household work and less in market work. At the margin, then, \$7.20 per hour is a good estimate of the value of his time to him.

An after-tax estimate of the value of household work time is useful in other contexts. If one wants to adjust estimates of Gross National Product to include the value added to the economy by household work, the after-tax value of the household work time is the value added.

The before-tax estimate of the value of household work (using either the offered or asked wage rate estimate) is appropriate

<sup>6</sup> According to the 1988 federal income tax code, taxable income for a family that does not itemize equals total family income less exemptions and less the standard deduction. Exemptions were equal to \$1,950 per family member, and the standard deduction was \$5,000. For the woman in the example in the text, total family income is \$47,800. She is in a family of four and therefore her exemptions total 4 times \$1,950 = \$7,800. The standard deduction is \$5,000. Taxable family income, therefore, is  $\$47,800 - \$7,800 - \$5,000 = \$35,000$ .

when a monetary payment will be made on the basis of the value of household work time. Suppose for some reason someone wants to pay John Gray a sum of money based on the value of his household work time. Perhaps he has been injured and must be recompensed for the time he could not work either at his job or at household work. Because he is in the 28 percent tax bracket, he must be paid \$10 per hour to net \$7.20 after federal taxes. Another application would be to make full-time housepersons eligible for Social Security benefits on the basis of the household work they have done. To become eligible they must make contributions to Social Security (in lieu of paying Social Security taxes) in proportion to the value of their household work. Because employed people pay Social Security taxes on before-tax earnings, equal treatment of the not employed would be to base their contributions on the before-tax value of their household work.

### **Market Alternative Wage Rate**

The market alternative wage rate is measured by the mean wage rate in the previous year earned by private household workers as reported in the following year's *Current Population Survey*. The mean before-tax wage rate in 1988 in private household occupations was \$4.83 per hour. It is measured on a before-tax basis because that is the wage rate households would have to pay if the services were hired. Because the market alternative wage rate does not change as the characteristics of the individual to which it is applied change, tables are not needed to figure out the wage rate. According to the thinking behind the market alternative wage rate, an hour of household work is worth \$4.83 regardless of the characteristics of the person who does it.



### Part 3. Annual Value of Household Work

Three estimates of the annual value of household work are made based on the offered wage rate, the asked wage rate, and the private household worker's market alternative wage rate.

The data on the weekly time in minutes spent by married men and women in household work in 1981 are multiplied by 52 weeks and divided by 60 minutes to obtain estimates of the annual time in hours spent in household work by each of the married men and women in the 1981 sample. The estimate of the annual time spent in household work for each member of the 1981 sample is then multiplied by the estimates of the after-tax offered wage rate, the after-tax asked wage rate, and the before-tax private household worker's wage rate. This process yields three different estimates of the annual value in 1988 dollars of household work for each member of the 1981 sample. These estimates are then cross-tabulated by the age of the youngest child in the family and the number of hours of paid employment worked by the individual. A median annual value of household work is then calculated for each cell.

The overall results are presented in Table 3.1. The estimates based on the offered and asked wage rates are on an after-tax basis; the private household worker's wage rate (the market alternative wage rate) is before

taxes. For men and regardless of color, the annual value of household work is highest when estimated by the offered wage rate and least when estimated by the market alternative wage rate. This is because most married men are employed at higher than the private domestic worker's wage rate. Consequently, both their offered and asked wage rates, even on an after-tax basis, exceed that of the private domestic worker. For black women, the annual value of household work is highest when estimated by the market alternative wage rate (private household worker's wage rate) and least when estimated by the offered wage rate.

For nonblack women, the estimate of the annual value of household work is highest when the asked wage rate is used and lowest when the private household worker's wage rate is used. These results, too, are reasonable in light of the labor market experience of married women. Many more nonblack married women than men are not employed and, consequently, the asked wage rate should dominate in any average that is struck. Furthermore, few of those nonblack married women who are employed are paid wages as low as those paid to private domestic workers. Thus the annual value of household work as estimated by the offered wage rate can be expected to be between the

**Table 3.1. 1988 median annual values of the time spent in household work by married men and women in the 1981 sample**

	<i>After-tax offered wage rate</i>	<i>After-tax asked wage rate</i>	<i>Private household workers' wage rate</i>
Married men			
Black	\$ 3,142	\$ 2,306	\$ 2,422
Nonblack	7,077	5,911	3,202
Married women			
Black	6,695	7,025	7,610
Nonblack	10,391	10,833	8,753

Source: Calculated from offered, asked, and private household workers' wage rates estimated from 1989 *Current Population Survey* and time spent in household work from 1981 *Longitudinal Time Use Survey*.

values as estimated by the asked and market alternative wage rates. The opposite is true for black married women. A higher proportion of black married women are employed, but they are employed at very low wage rates. Consequently, the value of their household work as estimated by the market alternative wage rate can be expected to exceed the other estimates.

The median annual values of the time spent in household work as estimated by the after-tax offered wage rate by the age of youngest child and the individual's hours of paid employment are presented in Table 3.2. Detailed tables of the annual values as estimated by the other two techniques (i.e., after-tax asked wage rate and the market alternative wage rate) are not presented. The reason for concentrating on the estimates based on the after-tax offered wage rate is that these appear to be the more statistically stable of the two estimates based on the opportunity cost concept. Furthermore, they gain some credibility by virtue of their being somewhat more closely tied to labor market values than are the asked wage estimates. Because they are based on the opportunity cost concept, they are estimates of how the families themselves value the time spent in household work and thus are more useful in a family management context than are the estimates based on the market alternative wage rate. That is, families are concerned with valuing and allocating time among the myriad of family and work activities in

accordance with their own views of the value of time and not in accordance with the cost of market substitute labor. The values of household work based on the market alternative wage rate, however, are useful as points of comparison in some management contexts. Thus estimates based on the market alternative wage rate can be easily computed by the reader by dividing the weekly time estimates on Table 1.2 by 60 to convert minutes to hours per week, multiplying by 52 to convert to annual hours per year, and then multiplying by \$4.83 per hour. The result is the annual median value of time spent in household work as estimated by the market alternative wage rate.

With few exceptions the detailed estimates of the annual value of household work time make a good deal of sense. The value of household work time of married women is greatest when the "time crunch" is greatest, that is, when children are small and when the women are employed full-time. It is lower when the youngest child grows older and is less physically and socially dependent. Similarly, it is lower when the mother is not employed and is, therefore, not as time bound as when she is fully employed. The annual value of the household work time of married males is much less related to the age of the youngest child and the hours of their employment. This, too, is not unexpected given that social norms governing who does what in the household are changing, although slowly.

**Table 3.2. Median yearly value of household work based on the 1988 wage offered function (in dollars)**

Nonblack females

Age of youngest child	Number of hours employed per week				
	Not employed	1-34	35-40	40+	
1	\$14,833 <sup>a</sup> 10	\$16,997 11	\$11,295 13	}	\$11,489 9
2-5	\$15,920 7	\$11,551 16	\$10,349 9		
6-14	\$13,739 15	\$11,383 22	\$ 8,418 25	}	\$ 7,809 8
15-17	\$12,283 6	\$ 9,726 10	\$ 6,344 8		
18+ or no children	\$12,924 35	\$ 9,097 23	\$ 6,948 33		\$ 5,802 13

Nonblack males

Age of youngest child	Number of hours employed per week				
	Not employed	1-34	35-40	40+	
1			\$ 7,871 14	\$ 7,808 21	
2-5			\$ 9,291 9	\$ 5,958 30	
6-14			\$ 9,409 19	\$ 7,903 39	
15-17			\$ 6,586 10	\$ 6,341 13	
18+ or no children	{ \$11,155 16	{ \$ 9,650 9	\$ 6,724 36	\$ 6,284 39	

Source: Estimates apply to the subsample of married men and women, aged 25 to 65, in intact marriages in 1981, from T. F. Juster, M. S. Hill, F. P. Stafford, and J. E. Parsons, *Time Use Longitudinal Panel Study, 1975-1981* (data tape) (Ann Arbor: Survey Research Center, Institute for Social Research, University of Michigan, 1988). The wage offered function estimated from a sample of men and women in intact marriages, aged 25 to 65, in the 1989 *Current Population Survey* who worked 3,000 hours or less in 1988. The wage offered is net of federal income taxes.

<sup>a</sup>Top number is median, bottom number is number of observations in cell.

## Part 4: Present Value Calculations

### The Formula

Sometimes an individual wants to know the economic value of household work over a period of years. Arriving at such a figure is complicated for a couple of reasons. First, both the amount of time spent in household work activities and the value of this time are influenced by such factors as age, education, number of children, and the age of the youngest child in the home. Thus forecasts of future household work activities and the value of time spent in these activities must be adjusted for the aging of the people doing the work and their children, for children leaving home, and so on.

Second, the promise of household work to be done at some future time is worth less than comparable household work done today because the value derived from such work will not be realized until some point in the future, whereas the benefits of household work done today will be enjoyed today. In addition, the future is uncertain. Couples may divorce or one partner may die, and then the household will never enjoy the benefits of that person's future household work. These uncertainties also decrease the value of future household work.

In this section, we present estimates of the dollar value of the future benefit of household work for married men and women. These estimates are adjusted for some of the major complications identified above. We compute what is known as the present value of the estimated future income stream generated by an individual's household work activities. The present value tells you what sum of money would need to be invested today (measured in 1988 dollars) to generate the future stream of household work benefits that would be produced by an individual.<sup>7</sup> The basic calculation is:

$$PV_i = \sum_{t=1}^{65-A_{i1}} (\hat{H}_{it} * \hat{W}_{it}) / (1+r)^{t-1}$$

where,

$PV_i$  = the present value of the future stream of individual  $i$ 's household work contributions,

$A_{i1}$  = age of individual  $i$  in year 1,

$\hat{H}_{it}$  = predicted hours spent in household work in year  $t$  by individual  $i$  based on equations 1.1 and 1.2,

$\hat{W}_{it}$  = the predicted hourly value of individual  $i$ 's time in year  $t$  based on the offered wage rate or the market alternative wage rate, and

$r$  = the interest rate, also known as the discount rate.

The present value calculation carries through until age 65. The decision regarding the age at which to terminate the calculation is difficult. One option would be to carry the calculation out until the age of death, but predicting an individual's age of death is complicated because it will vary depending on personal habits (e.g., smoking, exercise), preexisting health conditions, and many other factors on which no information exists in the data set. Age 65 is considered the conventional age of retirement from market work. This strategy has the obvious drawback that it does not count the value of any household work done after age 65. Nevertheless, because we have no information on individuals beyond that age and because of the inherent difficulty associated with predicting individual-specific life expectancy, we elected to use age 65 as the stopping point.

We calculate the present value figures twice, using both the offered wage and the market alternative wage as measures of the

<sup>7</sup> Interested readers are referred to Walden (1992) for a detailed description of the present value concept.

value of time. The after-tax offered wage is used rather than the asked wage because it provides an individual-specific measure of the value of household work that is directly linked to measures of productivity in the labor market and, therefore, somewhat easier to predict into the future than estimates of the asked wage rate. The offered wage often generates the highest or next to the highest estimates of the annual value of household work (see Table 3.1) and is the least conservative of the three measures that could be used.

The present value calculations based on the market alternative wage provide a conservative contrast to the present values generated with the predicted offered wage rates. The market alternative wage generates the lowest annual values of household work time of the three measures for nonblacks, the group for which the present value calculations are feasible (see Table 3.1). Market alternative measures do not vary with an individual's characteristics, thus all sample members are assigned the mean wage of \$4.83 per hour for the purposes of this second set of present value calculations.

Present value computations are clearly sensitive to the nominal interest rate ( $r$ ) that is chosen. The nominal interest rate is equal to the real rate of interest plus the rate of inflation. For the purpose of this study, the annual rate of inflation is estimated to be 3.7 percent.<sup>8</sup> The choice of the real interest rate (i.e., inflation-adjusted interest rate) is somewhat arbitrary. Morgan and Duncan (1980) argue that the real rate of interest has averaged 3 percent historically. Following their lead, the calculations are done using a 3 percent real interest rate. Because the estimated annual inflation rate is 3.7 percent, this means that the nominal rate  $r = 3.0 + 3.7 = 6.7\%$ .

Computations done using the equation reflect the discounting of future household work because the benefits are not enjoyed

today (i.e., it corrects for the opportunity costs by discounting each future year's contribution by the interest rate). The equation is further modified to incorporate some of the complicating realities noted earlier. Specifically, by including a term in the numerator that measures sex-specific probabilities of living to "age  $t$ " given one's current age ( $P_t$ ), we factor in the uncertainty that the individual will live to perform household work in each of the future years.

We also make adjustments in the predicted offered wage and the private household worker's wage that reflect the wage growth that takes place over time. Average nominal wage growth was approximated to be 3.7 percent per year. This figure is obtained by estimating the average trend in the *Consumer Price Index* between 1981 and 1990 on the assumption that money wage growth, on average, keeps pace with inflation. This growth factor is also included in the numerator of the present value calculations.

As the family changes over time, the annual value of the household work of the husband and wife falls as children grow older and leave the home, hence reducing the time spent in household work, rises in value per hour as the amount of market work increases, and rises as the individuals grow older and gain experience. Consequently, the predicted annual values of household work from the individual's age at the time of the 1981 sample survey to age 65 must change as the individual grows older and the family changes. The predicted values of household work at each point in the present value calculation are thus adjusted to reflect the aging of the individual and the accompanying change in the family.

Finally, to make the computations tractable, a series of assumptions must be made. First, it is assumed that an individual stays married to the same person until the end of the analysis period (age 65). Second, the individual does not have any additional children in the future. Third, the individual does not go back to school in the future.

<sup>8</sup> The average annual rate of interest in the Consumer Price Index over the period 1981–90 is 3.7 percent.

Fourth, each child under age 18 that lives in the home at the time the data were collected leaves home at age 18.<sup>9</sup> Finally, the husband and wife continue to live in the same city as at the time of the interview (or in a city of similar size) until age 65.

The modifications and assumptions outlined above are all included in the following present value formula:

$$PV_i = \sum_{t=1}^{65-A_{it}} (P_t^* \hat{H}_{it}^* \hat{W}_{it} (.037)^{t-1}) / (1+.067)^{t-1}$$

where all of the variables are defined as they were previously. This formula was used to calculate the present value of household work contributions for all married nonblack men and women aged 25 and 65 in our sample from the *Time Use Longitudinal Panel Study*. There are too few blacks in the sample to generate reliable, age-specific present value estimates for that group. Thus no calculations are done for black men or women.

### The Results Using the Offered Wage Rate

The results in this section focus on the estimates generated when the predicted offered wage rate is used in the present value calculations. The median present value of household work contributions for married men and women stratified by age are presented in Table 4.1. It is important to stratify the figures by age because the computation is sensitive to the number of years remaining between the individual's current age and age 65. The closer an individual is to age 65, the fewer years are contributed to the present value calculation. Thus it does not make sense to group individuals across wide age ranges when presenting the figures (i.e.,

<sup>9</sup> Even though many 18-year-olds do not leave the family until after they are 18, the assumption is reasonable for the purpose of forecasting future time spent in household work. Household work declines as children get older and is little affected by teenagers. Hence assuming that children leave home at age 18, even if they do not, cannot lead to much error in forecasting household work time.

median figures should not be calculated based on a group of women that includes 25-year-olds as well as 55-year-olds).

Table 4.1 shows that the present value of future household work contributions that rely on offered wage estimates are higher for women than for men. The present value of the household work time of married women aged 25 to 34 years in intact marriages to age 65 is \$380,132. For analogous men, the figure is \$234,530. These are significant sums and reflect the importance of household work not only to families but to society as a whole. Even though the wage rates offered to females are much lower than those for men, the present value of their household work time is much higher because they spend so much more time doing household work. The present value of married men's household work time is as high as it is because of their much higher offered wage rates.

### The Results Using the Market Alternative Wage Rate

The present value calculations based on the market alternative wage of \$4.83 per hour appear in Table 4.2. Not surprisingly, the median present value figures based on the market alternative wage rate are generally lower than those based on the offered wage rate. The pattern by age and gender, however, remains the same: the present value of women's household work time is higher than men's and the present values for both men and women fall with age. Because the market alternative wage rate is measured by the private household worker's wage rate of \$4.83 per hour before taxes and in the first year, the pattern of present values by gender and age clearly reflects the amounts of time married men and women spend in household work.

Recall that the value of household work time as estimated by the market alternative wage rate is based on the cost of hiring a private household worker to replace the individual in question: \$175,513 for a married nonblack woman aged 25 to 34 years in an intact marriage. This estimate is \$380,132

when the offered wage rate is used—a difference of \$204,619. The analogous difference for married men of the same age is  $\$234,530 - \$71,584 = \$162,946$ . These large differences are, in essence, the differences between the worth of hired domestic help in the family versus the worth of the household

work of wives and husbands. The differences serve to remind us of what we already know: domestic help, no matter how good, is a poor substitute for a husband or wife. The differences remind us of the value individuals as well as society place on marriage.

**Table 4.1. Median present values of household work of nonblack females and males based on estimated offered wage rate and the estimated hours of household work, a 3 percent discount rate, and adjustments for mortality**

Age in $t_0$	Gender	
	Females	Males
25–34	\$380,132	\$234,530
35–44	272,433	185,935
45–54	178,472	126,333
55–65	82,585	51,815

Source: Estimates apply to the subsample of married men and women, aged 25 to 65, in intact marriages in 1981, from T. F. Juster, M. S. Hill, F. P. Stafford, and J. E. Parsons, *Time Use Longitudinal Panel Study, 1975–1981* (data tape) (Ann Arbor: Survey Research Center, Institute for Social Research, University of Michigan, 1988). The parameters of the wage offered function are estimated from a sample of men and women in intact marriages, aged 25 to 65, in the 1989 *Current Population Survey* who worked 3,000 hours or less in 1988. Wage offered is net of federal income taxes. Mortality adjustments are made with data from the 1991 U.S. Department of Health and Human Services, National Center for Health Statistics, *Vital Statistics of the United States, 1988 Life Tables*, DHHS Publication No. (PHS) 91-1104, Hyattsville, Md.: Public Health Service.

**Table 4.2. Median present values of household work of nonblack females and males based on market alternative wage rate and the estimated hours of household work, a 3 percent discount rate, and adjustments for mortality**

Age in $t_0$	Gender	
	Females	Males
25–34	\$175,513	\$71,584
35–44	139,966	61,417
45–54	112,990	44,926
55–65	65,347	21,486

Source: Estimates apply to the subsample of married men and women, aged 25 to 65, in intact marriages in 1981, from T. F. Juster, M. S. Hill, F. P. Stafford, and J. E. Parsons, *Time Use Longitudinal Panel Study, 1975–1981* (data tape) (Ann Arbor: Survey Research Center, Institute for Social Research, University of Michigan, 1988). The parameters of the wage offered function are estimated from a sample of men and women in intact marriages, aged 25 to 65, in the 1989 *Current Population Survey* who worked 3,000 hours or less in 1988. Wage offered is net of federal income taxes. Mortality adjustments are made with data from the 1991 U.S. Department of Health and Human Services, National Center for Health Statistics, *Vital Statistics of the United States, 1988 Life Tables*, DHHS Publication No. (PHS) 91-1104, Hyattsville, Md.: Public Health Service.

## Putting the Tables to Work

The tables in this bulletin can be used in a variety of ways to assist in planning.

A couple contemplating having children may want to know the amount of time and its value when planning the work load associated with children of various ages. Table 1.2 displays the median amounts of time nonblack married females and males spent in household work according to the age of their youngest child and the hours per week they were employed. It can give the reader an idea of what to expect. For instance, if a wife whose youngest child is less than one year old plans to be employed 35 to 40 hours per week, she can expect to put in an average of about 2,062 minutes or 34 hours each week doing household work. Her total workweek, composed of both paid employment and unpaid household work, would be 69 to 74 hours. If her husband were employed at least 40 hours per week, he could expect to put in an average of 865 minutes or 14 hours doing household work for a total workweek of at least 54 hours. Table 1.2 also indicates that household work will decline for both husband and wife as the child grows older but relatively more so for the wife than for the husband.

These figures are, of course, averages based on the experiences of many couples, and the behavior of any given couple will vary above or below these averages. These figures, adjusted for the couple's own experience, are useful starting points in the planning process.

Perhaps the couple is contemplating hiring someone else to do much or all of the household work and needs an estimate of the cost. The market alternative wage rate in 1988 was \$4.83 per hour. This is the wage rate of people doing jobs that resemble household work. To estimate the cost of replacing the wife's or husband's household work one needs to know how much time each spends. In the example given above, the married woman employed 35 to 40 hours

per week and with a child less than one year old spends an average of 2,062 minutes or 34 hours per week in household work. To hire this work done at the national market alternative wage rate of \$4.83 per hour would cost 34 hours times \$4.83 = \$164.22 per week or 34 times 52 weeks times \$4.83 = \$8,539.44 per year. To replace the household work of the husband who works at least 40 hours per week and has a child less than one year old would cost 14 hours times \$4.83 = \$67.62 per week or 14 times 52 times \$4.83 = \$3,416.24 per year. The going wage rate for paid household workers varies by location and is higher now than it was in 1988. But these estimates are a good beginning point.

Although it is easy to figure the dollar cost of replacing the wife's household work with that of a paid employee, there is another pertinent way to reckon the cost. By hiring the household work done, the couple forgoes the benefits that accrue from doing the work themselves. We have argued that hired household labor is not a perfect substitute, and may not even be a good substitute, for the labor of household members. The benefits the wife and husband derive from doing the household work themselves, therefore, can be expected to be higher than the replacement costs. These benefits are estimated by the value of their time spent in household work based on either the offered or the asked wage rate.

Here, we use the estimates based on the after-tax offered wage rate presented in Table 3.2. The values vary by the age of the youngest child in the family and the parent's hours of paid employment. The estimated annual value of the household work of a married woman who is employed 35 to 40 hours per week and who has a child under one year old is \$11,295 per year. The estimate for a married man employed at least 40 hours per week and with a child less than one year old is \$7,808 per year. Thus to replace the wife's household work with hired



labor is to forgo \$11,295 of value and cost \$8,539. To replace the husband's household work with hired labor would be to forgo \$7,808 of value and cost \$3,416. Suppose that the household work done by the hired labor is just worth the cost: \$8,539 per year to replace the wife's household work, \$3,416 to replace the husband's. If so, hiring out what the wife does costs  $\$11,295 - \$8,539 = \$2,756$  in value because the couple loses \$11,295 in benefits and gains only \$8,539. Hiring out what the husband does costs  $\$7,808 - \$3,416 = \$4,392$  in value. Of course, the value of hiring household work done may well exceed the dollar costs (\$8,539 and \$4,392, respectively) in which case the net costs would be less. Indeed, the couple may value hiring the jobs out enough (i.e., more than \$11,295 in the case of the wife's work) that the replacement is worth the cost. Alternatively, the couple might gain by hiring out some but not all of the household tasks, keeping the ones that fit their paid work schedules or that they find personally more rewarding. Comparisons beginning with these figures and adjusting for individual circumstances focus discussion of the alternatives on the relevant issues: just what is given up and what is gained.

A third example concerns planning for life insurance and uses the present values of household work time presented in Tables 4.1 and 4.2. Life insurance is supposed to provide insurance against the income the family loses when a husband or wife dies. Certainly, in contemplating the amount of life insurance to carry on each spouse, both should be covered for the present value of the earnings that would be lost through death.<sup>10</sup> But the family also loses the future household work the individual would have done had death not occurred. Table 4.1 presents estimates of the present values of the household work of husbands and wives to age 65. These figures provide useful

information in thinking about insurance needs.

For instance, based on the after-tax offered wage rate, the present value of the household work time of a married woman aged 25 to 34 years is \$380,132. The figure for a similarly aged male is \$234,530. To make up the loss the families of these individuals would incur because of their deaths, the insurance policy on the wife's life should be for \$380,132 plus the present value of her expected earnings. The appropriate amount of life insurance on the husband would be \$234,530 plus the present value of his expected earnings.

Perhaps, however, the couple simply wishes insurance policies to cover the present value of the earnings forgone through death plus the cost to replace the household work of the spouse with hired labor. In this case, the estimates in Table 4.2 are relevant for they are based on the market alternative wage rate. Accordingly, for married men and women aged 25 to 34 years, \$175,513 would suffice to cover the cost of replacing the work done by the woman in the market and \$71,584 would cover the cost of hiring someone to do the work of the man. Again, these sums should be added to the present value of each individual's money income that would be lost through death. The answers, of course, depend on the ages of the spouses. Tables 4.1 and 4.2 provide estimates by age and so are useful for couples of different ages. Obviously, the present values fall as age increases, which means that the amount of insurance needed declines with age.

It is important to realize that the present value estimates in either Table 4.1 or 4.2 are on the low side because the present value calculations were taken to age 65. With current life expectancies, most people will live for at least an additional ten years. The value of the household work done beyond age 65 years is not reckoned in the data presented here.

<sup>10</sup> The present value formulas presented in Part 4 can be used to estimate the present value of an individual's future earnings.

## Conclusion

In this publication we have presented estimates of the dollar value of household work in the United States using three different valuation techniques and data from the most recent nationally representative time-use study. The estimates of the hourly values are based on 1988 data; the information on household work comes from 1981 data. Thus our figures should be viewed with caution because the relationships between sociodemographic characteristics such as age of youngest child and household work time may have changed during the 1980s.

The dollar value of household work done by married women and men in the United States is substantial. The estimates are highest when based on the after-tax asked wage and lowest when based on the market alternative wage. The estimates based on the after-tax offered wage typically fall in between with the median annual value of household work calculated to be \$10,391 for nonblack married women and \$7,077 for nonblack married men (see Table 3.1).

How do our figures compare with those found in earlier studies? Gauger and Walker (1980) used market alternative wage data from 1979 and time-use data from 1967 to estimate the value of household work. Their estimates of the annual dollar value of mothers' household work range from \$6,200 (for an employed mother whose youngest child was aged 2 to 5) to \$13,300 (for a nonemployed mother whose youngest child was under age 1). For the fathers, the figures ranged from \$2,200 (for fathers whose youngest child was aged 12 to 17) to \$4,000 (for fathers whose youngest child was aged 1 or under). Our estimates are different in important respects. Gauger and Walker used market wage rates for each occupation analogous to each household task (e.g., cooks' wage rates for food preparation time, laundry workers' wage rates for laundry time). We used the wage rate for private household workers for all household work

time as well as the offered and asked wage rates.

Zick and Bryant (1990) used 1979 after-tax asked wage estimates along with reports of usual time spent in housework activities to calculate the value of household work. They estimated the mean annual value of household work done by married nonblack women to be about \$12,700 per year and that for married nonblack men about \$2,400. Although the median estimates of the value of household work presented here are typically nominally higher than those presented in our earlier study, in real (i.e., inflation-adjusted) terms, they are lower. This decline is explained in part by the difference between means and medians: medians are lower than means when, as is the case here, the distribution is skewed to the right. In addition, there is the difference in the reliability in the way household work time was measured in the two surveys from which the time data came for the two studies.

A downward trend in the real value of household work activities during the past 10 to 15 years should not be surprising. During the past couple of decades, if a family kept its real income in step with inflation, it typically did so by sending a second person—the wife—into the labor market. The opportunity cost of this shift in the allocation of household time can be measured by the decline in the real total value of household work. As women have increased their market work time they have tended to decrease the amount of time they spend in household work. In response, husbands appear to have increased their household work time, but not by enough to offset the loss completely.<sup>11</sup>

<sup>11</sup> For a discussion of trends in household work time of wives and husbands see Douthitt (1969), Gershuny and Robinson (1988), and Zick and McCullough (1991).

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