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# THE ECONOMICS OF HOME PRODUCTION

JONI HERSCH\*

The composition of the labor force has changed dramatically since 1960. In 1960, only one-third of the labor force participants were female. However, since the 1960s, the labor force rates of men have declined, from 83.3% to 75% as of 1995, while the participation rate for women has surged, from 37.7% in 1960 to 58.9% in 1995.<sup>1</sup> The combination of rising labor force participation rates for women and falling rates for men has resulted in a work force that is approaching equal representation of each gender.

However, the picture at home indicates a far greater gender stratification of work than that of the paid labor market. Now as in the past, the bulk of the goods and services produced at home is provided by women. Although the time reported varies with the methods used to measure home production, recent data indicate that married, full-time employed women spend on average twenty to thirty hours per week on home production, while married full-time employed men average seven to fifteen hours per week.

When most married women were not in the labor force it was easy to understand, with or without resorting to economic theory, that most home production would be performed by women. But why is this still the case? And what effect does this "second shift" have on women's market earnings?

For many women, home production is their primary productive contribution, and this has important legal implications. For example, in many divorce cases, the main claim of wives to the assets accumulated during marriage is their contribution to the home. In a highly publicized pending case, Lorna Wendt argues that her role as a "corporate wife" entitles her to one-half of the \$52 - \$100 million estate

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1. See U.S. DEP'T OF COMMERCE, STATISTICAL ABSTRACT OF THE UNITED STATES 1996, at 394 (116th ed. 1996).

accumulated through the earnings of her husband Gary Wendt in his paid job as a rising executive and eventually CEO of GE Capital.<sup>2</sup> Similarly, in wrongful death cases, the economic loss of a woman's home services will frequently exceed the earnings loss.

After discussing the magnitude and measurement of home production, I describe the economic theories underlying the allocation of time within the household, followed by an examination of the effects of housework on earnings. The two main classes of economic theories, human capital theory and bargaining theory, yield implications consistent with the observed household allocation of labor: that is, women assume a greater proportion of home production while men specialize relatively more in market production. This stratification is further exacerbated by institutional factors such as the tax code that effectively discourage second earner employment while exempting home production from taxation, as noted by McCaffery;<sup>3</sup> the paucity of viable part-time and flextime employment options; and child care difficulties. Given the large amount of time spent on housework, it is not entirely surprising that housework time has a negative effect on market wages, an effect that is most pronounced for wives.

## I. MEASUREMENT AND MAGNITUDE OF HOME PRODUCTION

### A. THRESHOLD PROBLEMS AND CONCERNS

Measuring home production is not an easy task. Goods and services sold in the market can be valued at the price at which they are sold, and this is the method used in all national income accounting systems. However, by definition, nonmarket output carries no such market price. Estimating home production requires measurement of both time spent on home production and of the rate at which this time should be valued. Both of these raise difficult conceptual and practical issues.

There are two main uses of estimates of the value of nonmarket production. One use is to provide better measures of social output than that provided by conventional national income accounts such as Gross National Product ("GNP"). The failure to account for the value of home production can lead to misleading interpretations of

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2. See, e.g., Judith H. Dobrynski, *Was It His Career, or Theirs?*, N.Y. TIMES, Jan. 24, 1997, at D1, D6.

3. EDWARD J. McCAFFERY, *TAXING WOMEN* 19-23 (1997) [hereinafter *TAXING WOMEN*].

the growth of the economy or of the standard of living. Indeed, the magnitude of home production is surprisingly large. For example, Eisner<sup>4</sup> estimates the value of home production as one-third of conventionally measured GNP.<sup>5</sup> The other use for the value of nonmarket production is within the litigation context in providing value of damages in divorce or wrongful injury or death cases.

In any analysis of time or valuation of home production, it is necessary to distinguish home production from leisure. A number of productive activities have a leisure component to them, such as baking, gardening or playing with one's children. A way to operationalize the distinction is to define household production activities as those which can be done by paying a third party. However, none of the surveys which elicit time-use information instruct the respondent to make this distinction. Surveys simply request information on time use, but not whether the activities were solely for pleasure or production.

The most reliable method of collecting information on time spent on home production is through time diaries generated by subjects who recall all activities performed over the preceding twenty-four hour period, with the information collected by either phone, by personal interview or by the respondent filling out a diary. Measures of home production are derived by summing up time spent on activities such as cooking, cleaning and home maintenance.

Time-use studies using diary information were conducted in the United States in 1965, 1975, 1981-82, and 1985.<sup>6</sup> A conceptual problem with diary data is that much time at home involves joint activities, such as folding laundry while watching television. An additional problem is that infrequent activities, such as major home repairs, will not be measured reliably and tend to be underestimated.

The other common way of eliciting information is by simply asking survey respondents how much time they spent on home production in the preceding week or year. Since this is far easier to ask, and less costly to obtain, this is the measure of housework available in data sources not specifically designed to measure time use. The data sets

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4. Robert Eisner, *Extended Accounts for National Income and Product*, 26 J. ECON. LITERATURE 1673 (1988).

5. This estimate uses data from time use surveys to calculate hours of housework per week by gender and employment status, and evaluates housework time at the wage rate of domestic workers. See *id.* at 1673-74.

6. See F. Thomas Juster & Frank P. Stafford, *The Allocation of Time: Empirical Finds, Behavior Models, and Problems of Measurement*, 29 J. ECON. LITERATURE 471, 473 (1991).

with this measure of housework have far more observations and richer information on other work and personal characteristics than data sets using time diaries. This summary measure tends to provide housework values somewhat larger than diary data, although in most data sets the discrepancy is not so large as to make the summary measures unusable for research purposes.<sup>7</sup>

## B. VALUING HOME PRODUCTION TIME

Given a measure of time spent on home production, this time must be valued at some rate. The main methods of evaluating home production are by replacement cost or by the opportunity cost of the individual performing the work. Both methods have theoretical merit depending on the context, and both have substantial problems in application.

The replacement cost method is most frequently used in litigation where home production has been lost.<sup>8</sup> To evaluate the services of a homemaker who cooks, cleans house, does laundry and takes care of children, the replacement cost method would evaluate her time using the market wage rates of cooks, house cleaners, launderers and nannies, weighted by the amount of time spent on each of these activities. An obvious difficulty in evaluating nonmarket production by equivalent market purchased services is that much home production is done jointly, and much home production is done for brief periods of time and on an intermittent basis. A typical evening hour of a parent may include supervising homework while occasionally answering questions, folding laundry and reading the newspaper during the wash and dry cycles of the laundry. Purchasing equivalent market services involves other costs: screening, hiring and supervising the tutor, driving to the laundry or arranging pickup and delivery. In addition, most services have a minimum price. The tutor will charge by the hour whether the child needs ten minutes of help or the full hour. Evaluating home production at the market equivalent price leads to measurement errors that both overstate and understate the true value of home production. The overstatement arises from not accounting for joint

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7. See Joni Hersch & Leslie S. Stratton, *Housework, Fixed Effects, and Wages of Married Workers*, 32 J. HUM. RESOURCES 285-307 (1997) (comparing housework measures derived in the 1975 Time Use Survey to that available in summary form on the Panel Study of Income Dynamics).

8. See Charles C. Fischer, *The Valuation of Household Production: Divorce, Wrongful Injury and Death Litigation*, 53 AM. J. ECON. & SOC. 187, 190 (1994).

production; the understatement arises from not taking into account transaction costs.<sup>9</sup>

The opportunity cost method evaluates home production at the value of the best alternative activity. If the best alternative activity is working in the market, then the opportunity cost of time on home production should be measured as the marginal wage rate or by the predicted wage rate for those out of the labor force. The predicted wage will be based on individual observable characteristics such as education, job training and experience. However, the decision to specialize in home production results in a different set of productivity characteristics than that of someone specializing in the market. The implied wage for someone who specializes in home production will therefore typically be lower than if that same person had specialized in the market. In fact, this is one implication of Wells and Maher's dynamic bargaining model within households,<sup>10</sup> discussed in the next section.

### C. TIME AND HOUSEHOLD ALLOCATION OF HOME PRODUCTION

The gender-linked division of time on household tasks is observed in every data set. Time diary data from 1975 reported by Hill<sup>11</sup> indicates that full-time employed married women average almost 25 hours per week in home-oriented work, while their male counterparts average 12.7 hours per week.<sup>12</sup> Across all marital and employment statuses, women average nearly 35 hours per week in home-oriented work while men average 14.25 hours.<sup>13</sup> Juster and Stafford note that the trend over time in the United States has been a decline in hours spent on housework for women, from 41.8 hours per week in 1965 to 30.5 in 1981.<sup>14</sup> Over this period there has been a

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9. One approach to recognizing the value of joint production in the replacement cost method is to identify the primary task (say supervising homework), value this at the market wage rate and add a premium for multi-tasking. This corresponds to the wage premium that a McDonald's shift manager earns over other counter help, even though most of the manager's time is spent in activities similar to those workers.

10. See generally Robin Wells & Maria Maher, *Time and Surplus Allocation Within Marriage* (1996) (paper presented at the 1997 meeting of the American Economic Association) (unpublished manuscript on file with the *Southern California Review of Law and Women's Studies*).

11. Martha S. Hill, *Patterns of Time Use*, in *TIME, GOODS, AND WELL-BEING* 133, 148 tbl.7.3 (F. Thomas Juster & Frank P. Stafford eds., 1985).

12. See *id.*

13. See *id.*

14. See Juster & Stafford, *supra* note 6, at 471-77 tbl.3.

slight increase in men's housework time, from 11.5 hours per week to 13.8.<sup>15</sup>

The distribution of activities varies greatly by gender as well as by marital status. South and Spitze<sup>16</sup> report mean values of time spent in each of nine household tasks available in the National Survey of Families and Households 1987-88.<sup>17</sup> The total home production time is consistent with the values derived from time-use diaries. In every marital status women spend more time on housework than men, with married women spending over two times that of married men.<sup>18</sup>

The values indicate that gender stereotypes are based on observed behavior and are not misleading. For instance, married women average 10.14 hours per week preparing meals and 0.16 hours on car maintenance, while married men average 2.69 hours and 1.37 for meals and car maintenance respectively.<sup>19</sup> This type of specialization by gender within married households is predicted by the models discussed in the next section.

More noteworthy is that the gender patterns of behavior are observed for not-married individuals as well, with never-married, divorced and widowed women consistently spending far more time on traditional "female" tasks such as preparing meals, cleaning and laundry. Representative values reported in South and Spitze for the total time spent on meal preparation, washing dishes, cleaning house and washing and ironing for never-married women and men living independently are 19 hours per week for women and 12.7 hours per week for men.<sup>20</sup>

The division of time on home production between married couples is provided in Hersch and Stratton.<sup>21</sup> Once again we see a clear gender pattern to time spent on household activities that is consistent with gender specialization and serves to confirm stereotyping of household activities. The share of total household time done by

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15. *See id.*

16. Scott J. South & Glenna Spitze, *Housework in Marital and Nonmarital Households*, 59 AM. SOC. REV. 327, 341 tbl.3 (1994).

17. These are self-reported, non-diary values of time use.

18. *See* South & Spitze, *supra* note 16.

19. *See id.*

20. *Id.* at 341 tbl.3.

21. Joni Hersch & Leslie S. Stratton, *Household Specialization and the Male Marriage Wage Premium* (June 1997) (paper presented at the 1997 meeting of the American Economic Association) (unpublished manuscript on file with the *Southern California Review of Law and Women's Studies*).

wives is 78% of the meal preparation, 75% of the dish washing and after-meal cleanup, 80% of house cleaning, 70% of household shopping and 86% of the laundry.<sup>22</sup> In contrast, husbands do the far larger share of the total household time on auto maintenance (95%) and outdoor work and home maintenance (77%).<sup>23</sup> Time spent within the household on bill paying and driving other household members is shared more evenly, with wives responsible for 55% of the total household bill paying time and 40% of the time spent driving other household members.<sup>24</sup>

#### D. EVIDENCE FROM OTHER COUNTRIES

An examination of time allocation in other countries reveals patterns similar to those observed in the United States. A systematic initiative to collect time-use data in a number of countries began in the 1960s, and data on time allocation has continued to be collected in a number of countries every five to ten years. Juster and Stafford survey evidence on time allocation for several countries. Their data reveal that total average work time (market plus nonmarket work) is similar for men and women within industrialized countries, with women averaging higher total work time than men in relatively low income countries, such as Hungary and Finland.<sup>25</sup> In higher income countries, such as the United States and Sweden, men have slightly higher total work time than women.<sup>26</sup> However, the gap in total time by gender within industrialized countries is fairly small—ranging from 3.4 more hours on average per week for men in the United States to 5.2 more hours on average for women in Hungary.<sup>27</sup>

The time spent by women on housework (defined here as routine chores, home projects and child care) is fairly similar across industrialized countries, ranging from 27 hours per week (USSR) to 33.8 hours per week (Hungary).<sup>28</sup> Time spent by men on housework varies considerably more, from 3.5 hours per week in Japan to 18.1 hours per week in Sweden.<sup>29</sup>

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22. *See id.* at tbl.3.

23. *See id.*

24. *See id.*

25. Juster & Stafford, *supra* note 6, at 475 tbl.1.

26. *See id.*

27. *See id.*

28. *See id.*

29. *See id.*



## II. THEORIES OF HOUSEHOLD ALLOCATION

### A. INDIVIDUAL DECISION-MAKING AND HUMAN CAPITAL THEORY

Economists use the framework of utility maximization to explain consumption and time allocation decisions. In its most basic form, individuals maximize utility subject to a budget constraint, where utility depends on market goods and leisure time. The budget constraint gives the total income available to the individual to allocate among market goods and services and is determined by the individual's choice of hours to work for pay in the labor market as well as by the amount of non-labor income available.

Even in this most rudimentary form, this basic framework is useful in explaining many observed patterns of behavior. Of relevance to the household time allocation decision is whether an individual chooses to invest relatively more in market skills or in the non-market sector. For example, attending law school, medical school or getting a Ph.D. is a highly time-consuming process with a high opportunity cost (measured by the forgone earnings while in school). Individuals choose to invest in education and job training in order to maximize the net present value of utility (or earnings) over their lifetimes. These decisions are based on the cost of acquiring such skills and on the expected return derived from possession of such skills. Thus, individuals expecting a greater market working life will have a greater incentive to invest in market-related education and job training.

Individuals investing in larger amounts of skills raise their market earnings over time as well as their opportunity costs of time not spent in the market. More time devoted to market work yields higher market earnings and allows greater consumption of market goods. Applied to the individual, this time allocation decision is easily made according to the principle of utility maximization: individuals choose the time allocation (and investment path) which yields the greatest amount of satisfaction.

### B. HOUSEHOLD DECISION-MAKING AND BARGAINING THEORY

But most of us spend most of our life in a family. We are born into a family, share companionship, marry, sometimes divorce, and have children in a household. Taking the narrow view of an economist, living with others opens up a number of opportunities unavailable to individuals, by allowing new opportunities for specialization

and exchange which will lead to greater output than the sum of individual production. By allowing household members to spend more time in activities at which they are relatively more efficient, more can be produced within the household. Members of households may also produce "public goods" which can be shared by all without reducing individual consumption. The household public goods and the surplus generated by specialization and exchange can then be shared by the household. So far there is nothing controversial: any system of specialization and exchange will yield a greater surplus than a self-sufficient "Robinson Crusoe" type of economy in which each individual produces what he or she consumes.

The issue of efficiency addresses the household allocation which yields the biggest household surplus. However, the distribution of this surplus among the members of the household is an entirely different matter. The early models of the household assume that households maximize a common utility function and thus have ignored issues of distribution. Samuelson's consensus model<sup>30</sup> assumes there is a family utility function which all members of the household maximize subject to a budget constraint derived from pooling individual incomes. Becker's model assumes an altruistic head of household whose utility function includes the consumption and welfare of other family members.<sup>31</sup> By altering transfers to individual household members, this altruistic head can induce the other members of the household to act in a way to maximize family income.

Neither of these models are equipped to address issues of distribution. Both the consensus model and the altruistic model assume that family members pool their incomes, and that any increase in income affects total household demands. However, these models make no predictions regarding the distribution within the household. Yet, common sense, as well as the prevalence of divorce, suggest that individuals within the household may well differ in their preferences, and who has control over the resources may affect the intrahousehold allocation.

Bargaining models of marriage have been developed to examine how decisions are made within the household. These fall into two classes: cooperative models and noncooperative. In the cooperative

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30. See Paul A. Samuelson, *Social Indifference Curves*, 70 Q.J. ECON. 1-22 (1956).

31. See GARY S. BECKER, *A TREATISE ON THE FAMILY* 277-306 (enlarged ed. 1991).

Nash bargaining models of Manser and Brown<sup>32</sup> and McElroy and Horney,<sup>33</sup> both the husband and wife have utility functions that depend on their own consumption of private goods as well as on household public goods. If the couple does not reach agreement about the distribution of goods within the household, they divorce. If they divorce, each spouse receives the utility associated with divorce, which is referred to as their "threat point." The partner who will have the higher utility if divorced will have a greater influence on the distribution within the family.

Social changes which affect the utility of being single, such as the likelihood of remarriage, the social acceptability of remaining unmarried and laws affecting the division of marital property and child custody affect the threat point, even without any change in the household income. However, changes in household income will not necessarily have an affect on individual utility unless this changes the threat point from being divorced. If the household is, for instance, receiving food stamps or other welfare assistance, the allocation within the household would not differ, whether the nominal recipient is the husband or the wife.

Lundberg and Pollak propose a "separate spheres" bargaining model that differs from the divorce threat model in that the threat point is not divorce but instead is a non-cooperative marriage.<sup>34</sup> As in the divorce threat model, utility for each spouse depends on his or her own private consumption as well as on his or her consumption of the public goods produced in the marriage. Each spouse maximizes utility taking as given the other spouse's strategy. With both spouses producing both private goods and household public goods, the non-cooperative equilibrium leads to a lower output of public goods than if the spouses cooperated. The separate spheres model also differs from the divorce threat model in that it predicts the threat point within marriage will be altered by a change in the control of resources. For instance, food stamps or welfare payments paid to the mother will result in a stronger position for the mother.

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32. See generally Marilyn Manser & Murray Brown, *Marriage and Household Decision-Making: A Bargaining Analysis*, 21 INT'L ECON. REV. 31-44 (1980).

33. See generally Marjorie B. McElroy & Mary Jean Horney, *Nash-Bargained Household Decisions: Toward A Generalization of the Theory of Demand*, 22 INT'L ECON. REV. 333-49 (1981).

34. Shelly Lundberg & Robert A. Pollak, *Separate Spheres Bargaining and the Marriage Market*, 101 J. POL. ECON. 988, 988 (1993).

The Manser and Brown, McElroy and Horney, and Lundberg and Pollak models are one-period models. In contrast, Wells and Maher<sup>35</sup> develop a non-cooperative dynamic model in which partners choose between allocating time to household public goods production or career activities, and both activities exhibit learning effects (as in Becker's model). Thus, a wife who specializes in home production relatively more than her husband will lose the wage growth accruing to greater career activities. This results in a weaker bargaining position within the household since her alternative opportunities are correspondingly weaker. Although the efficient outcome is complete specialization within marriage, the non-contractibility of money transfers leads to inefficient incomplete specialization.

### C. GENDER SPECIALIZATION

Each of these models (except for Samuelson's consensus model) implies a division of labor within the household by gender, but for different reasons. Becker's altruism model is consistent with human capital theory, which predicts that one member of a household will specialize relatively more in market work while the other will specialize relatively more in home production.<sup>36</sup> Increasing returns to specialization resulting from learning effects leads to even greater efficiency gains by ever more complete specialization. This efficiency proposal alone does not imply that women will specialize in home production. However, many proponents of this theory argue that there are natural or innate differences by gender in comparative or absolute advantage that result in such gender specialization.<sup>37</sup> Even if the husband and wife have equal market ability, men are unable to bear children. Women, therefore, have an absolute advantage in childbearing, leading to the development of different skills. Thus the wedge created by the time required for childbearing, no matter how short, makes it optimal for women to specialize in home production and for men to specialize in market work. This absolute advantage in childbearing compounded with other maintained biological differences (such as "nurturing instincts") provides an economic rationale for the observed gender-linked division of labor within the household.

In the divorce threat bargaining models, the threat point determines the relative bargaining position. If housework is undesirable,

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35. Wells & Maher, *supra* note 10, at 3-4.

36. See BECKER, *supra* note 31, at 277-306.

37. See GARY S. BECKER, A TREATISE ON THE FAMILY 37-38 (1981).

the spouse with the lower threat point will perform a greater share within the household. Thus, the higher wage earner—typically the husband—will have a stronger bargaining position, because upon divorce he will be better able to purchase market substitutes (such as housekeepers or restaurant meals) for many of the services once provided by his wife. This inequity in earnings may then lead to the observed gender-linked division of household work.

The separate spheres model implies specialization in the household public good by gender as a means of reducing transactions costs. If the couple isn't cooperating, trying to reach an agreement on which public goods each spouse should provide is not likely to be resolved easily. Therefore the default option of performing the gender-stereotypical household responsibilities reduces the costs of coordination.

The dynamic noncooperative model implies that any disparity in wages by gender, with women earning less than men, results in wives producing a larger share of the household public good, while husbands specialize relatively more in their careers. Indeed, the disparity between home production performed by each spouse will be greater than the disparity in current relative wages due to the feedback mechanism in which more time in the market yields greater wage growth in future wages.

Thus economic theory provides firm support of the optimality of the observed gender-based division of labor. The other observed labor market differences easily follow given this gender-based division of labor. Women specializing in home production will anticipate fewer total years in the labor market and will optimally make lesser investments in human capital and job skills than men. Firms may invest less in job training of female workers (although the evidence on that based on recent data is inconclusive).

But keep in mind that the household decision resulting in the wife specializing in home production, while optimal for the household from an efficiency standpoint, may hurt her labor market options forever, via both the indirect effect on her skill accumulation and the direct effect of household responsibilities on wages. Her relatively weaker market power may further weaken any bargaining power she may possess to make the time allocation decision more equitable.

## D. TAX POLICY AND ALLOCATION OF HOUSEWORK TIME

Economic optimization implies that people reallocate their budgets in response to relative price changes. If the price of orange juice goes down relative to apple juice, consumers will buy more orange juice. By changing relative prices, the tax rate has a similar impact on the time allocation decision. Higher tax rates lower the value of one's own time relative to that of the market-purchased substitute. That is, someone with after-tax income of \$20 per hour is more likely to pay \$10 per hour for a housekeeper than someone with after-tax earnings of \$10 per hour.

Taxation may potentially play an important role in the allocation of housework time between spouses. The U.S. system of jointly taxing the household earnings of married couples results in a high effective tax rate of the second earner. If women are viewed as the marginal worker, as argued by McCaffery,<sup>38</sup> under current tax policy any gap in hourly wages will be greater when measured by after-tax rather than pre-tax earnings.

Although the effect of after-tax earnings on household time allocation has not been examined, the gender allocation may be exacerbated by the tax structure.<sup>39</sup> Evidence consistent with this hypothesis is provided by the examples of Norway and Sweden. In these countries, the tax rates are highly progressive, and individual earnings are taxed at individual marginal tax rates. This results in after-tax earnings that are more equal by gender than before-tax earnings, and the gap in time spent on home production by gender is also narrower than in the United States.<sup>40</sup> Note that the tax policy and gender equalization relation is not uniform across countries. For instance, the USSR had low tax rates but highly disparate levels of home production by gender.<sup>41</sup>

The tax implications of the divorce threat model may also influence distribution. As McElroy and Horney point out, their bargaining framework allows an examination of the effect of the "marriage tax" on household labor supply.<sup>42</sup> Family expenditure decisions will be based on the wife's after-tax marginal wage rate, while the wife's

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38. TAXING WOMEN, *supra* note 3, at 15.

39. Note, however, that the marginal tax rate is determined endogenously by the labor supply decisions of the household.

40. See Juster & Stafford, *supra* note 6, at 510.

41. See *id.*

42. McElroy & Horney, *supra* note 33, at 346.

threat point is determined by her after-tax marginal wage rate if not married.<sup>43</sup>

### III. HOUSEWORK AND WAGES

It has long been recognized that household responsibilities may affect women's earnings through their effect on human capital accumulation. Many observers have also suggested that the magnitude of time spent on home production by women may have an additional, more direct effect on wages.<sup>44</sup> This seems quite reasonable: if any full-time worker took a second job averaging thirty hours a week, we would not be surprised to see the worker's productivity suffering. Indeed, the empirical evidence confirms that, for women, there is an inverse relation between time on housework and wages.<sup>45</sup>

However, the mechanism by which housework affects wages is less clear. Yet it is vital to understand the source of any relation before considering any possible policy intervention. There are at least six possible mechanisms which may cause a negative housework effect, described below.

(1) Housework may not affect earnings at all, but individuals who spend more time on housework are innately less productive in the market. If so, the wage-housework relation is spurious and due to individual but unobservable fixed characteristics negatively correlated with wages and positively correlated with housework.

(2) Household responsibilities have a negative effect on market earnings by reducing the amount of effort available for market work. The model proposed by Gary Becker<sup>46</sup> assumes that physical effort is

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43. *See id.*

44. This point has been made by a wide range of economists, including VICTOR R. FUCHS, *WOMEN'S QUEST FOR ECONOMIC EQUALITY* 4, 43, 58-74 (1988); *WOMEN'S WORK, MEN'S WORK: SEX SEGREGATION ON THE JOB* (Barbara Reskin & Heidi I. Hartmann eds., 1986); Gary S. Becker, *Human Capital, Effort, and the Sexual Division of Labor*, 3 J. LAB. ECON. S33-S35 (1985); and Walter Y. Oi, *On Working*, 31 ECON. INQUIRY 8, 24 (1993), as well as by numerous journalists.

45. *See* Shelly Coverman, *Gender, Domestic Labor Time, and Wage Inequality*, 48 AM. SOC. REV. 623, 630 (1983); Joni Hersch, *The Impact of Nonmarket Work on Market Wages*, 81 AM. ECON. ASS'N PAPERS AND PROC. 157-60 (1991) [hereinafter Hersch, *Nonmarket Work*]; Joni Hersch, *Male-Female Differences in Hourly Wages: The Role of Human Capital, Working Conditions, and Housework*, 44 INDUS. & LAB. REL. REV. 746-59 (1991) [hereinafter Hersch, *Human Capital*]; Hersch & Stratton, *supra* note 7; Beth Anne Shelton & Juanita Firestone, *An Examination of Household Labor Time as a Factor in Composition and Treatment Effects on the Male-Female Wage Gap*, 21 SOC. FOCUS 265-78 (1988).

46. BECKER, *supra* note 31, at 545.

in limited supply. Individuals must allocate this limited effort across different activities. The more effort that is expended upon housework, the less effort will be available on the job and, consequently, wages will be lower. Since effort is difficult to measure directly, housework time may serve as a proxy. If so, controlling for effort on the job should eliminate the observed relation between housework and wages.

(3) Time spent on housework may be a proxy for unobserved human capital. Specialization leads to differences in human capital investments such as education and training. Although wage equations include information on observable and measurable determinants of wages, variables such as education and experience may represent different magnitudes of market human capital for workers primarily specializing in home production rather than in the labor market. Housework time, in this case, would represent a measure of human capital not otherwise included.

(4) Housework responsibilities do not directly reduce earnings, but individuals with heavy household responsibilities seek jobs compatible with such responsibilities. Jobs with flexible scheduling, which do not require overtime or allow workers to phone home or run errands during work hours, offer other benefits that may offset lower pay. Conversely, jobs that are risky, unpleasant or have mandatory overtime or require long hours (such as the law profession) warrant higher wages. Wage tradeoffs for working conditions are called compensating wage differentials. Housework time may be correlated with unobserved working conditions that warrant compensating differentials that on average favor men. Jobs compatible with household responsibilities held primarily by women may also be jobs with lower promotion and wage growth prospects.

(5) Housework may not directly affect wages by any of the earlier mechanisms, but the person primarily responsible for home production may also be responsible for other household-related chores such as arranging for and waiting for the plumber, picking up the dry cleaning, shopping for children's holiday gifts for teachers and picking up children at day care before closing time. This may mean that the work day is disrupted by phone calls or that the worker must stop work at a predetermined time no matter how productive they may be at that moment. This mechanism means that the timing of housework affects productivity by impinging on market time.



(6) Discrimination: Firms may simply view workers who demonstrate their involvement with their home and family as less desirable workers. This may be a very perverse form of discrimination, in that fathers who are very involved with raising their children are admired but mothers are frequently perceived as less serious about their careers.

Before examining the empirical evidence regarding each of these mechanisms, it is worth exploring what gender differences in housework effects tell us about the underlying mechanism. If the effect of housework on wages is similar for both men and women, then the effect may be direct. That is, housework genuinely reduces wages by lowering productivity in some fashion. If so, then inclusion of time spent on housework in wage equations should explain more of the gender wage disparity since women do more housework.

But if only women's wages are affected by housework, then housework may affect wages only after exceeding some minimum level (threshold effects) or the relation may not be direct but instead due to possible discrimination by employers. For instance, women with heavy household responsibilities may be placed on a "mommy track," and incur lower wage growth and weaker promotion prospects.

Finally, if the negative housework effect disappears when controlling for individual specific characteristics, this suggests that the gender difference in wages is due to gender differences in unmeasured individual characteristics.

#### A. EMPIRICAL EVIDENCE ON HOUSEWORK AND WAGES

The first issue to resolve is whether the negative housework effect is spurious and caused by the correlation of housework time with unobserved individual characteristics that would lead to lower wages, even if the individual did no housework. There are two empirical approaches that correct for this type of bias: instrumental variables estimators and fixed effects estimators. Using both of these approaches, Leslie Stratton and I find that this type of bias is not responsible for the negative housework effect for women, although the evidence for men is inconclusive.<sup>47</sup> The results indicate that, in estimates that do not control for individual fixed effects or the joint endogeneity of housework and wages, the negative housework effect

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47. See Hersch & Stratton, *supra* note 7, at 291-300; see also Hersch, *Nonmarket Work*, *supra* note 45, at 159.

is present for both men and women. The magnitude of the effect for wives is twice that for husbands and the difference is statistically significant. In the instrumental variables estimates and the fixed effects estimates, the housework effect remains negative for wives, but with a smaller magnitude. In these corrected results, housework does not have a significant effect on men's wages; however, since men's housework time varies little over time, these estimates may be biased toward zero.

One possible explanation for the difference in the effect by gender may be that there are threshold effects, in that the negative housework effect only kicks in after some minimal time is spent on housework. However, this premise is not supported by the data. In addition, the results are not affected by whether workers are employed full-time or part-time. These two findings suggest that housework affecting wages by impinging on market time is unlikely to be an important source of the wage-housework effect, but further research is necessary.

The addition of housework time to the wage equation increases the explanatory power of observable characteristics from between 27% and 30% to 38%.<sup>48</sup> Lowering women's housework time to the male average would increase women's wages by the same magnitude as raising women's average tenure to men's.

To examine the compensating differentials hypothesis as an explanation of the housework effect, I collected data from workers on a wide range of working conditions as well as on housework time, distinguishing in the survey between housework time on days working versus time spent on days not at work. I found that housework on job days has a negative effect on wages for women.<sup>49</sup> However, compensating differentials for work characteristics explain only a minor portion of the wage gap. Although the characteristics of jobs primarily held by men or by women are quite different, there is only limited evidence that working conditions other than job risk warrant compensating differentials.

Empirical evidence testing the effort theories and unobserved human capital theories are more preliminary, but suggest that neither

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48. See Hersch & Stratton, *supra* note 7, at 300-01.

49. Hersch, *Human Capital*, *supra* note 45, at 753 tbl.2.

of these hypotheses are the driving force behind the negative housework wage effect observed for women. In Hersch and Stratton<sup>50</sup> we examine these two hypotheses. If the effort story is true, then only current housework time should have an impact on current earnings and previous housework time should not be significant. Further, if a direct measure of effort is included in the estimation, housework time should no longer be significant. If housework time is a proxy for unobserved human capital, then accumulated housework time will be important.

A difficult problem to overcome is that effort is unobservable and proxies will typically be weak. In an attempt to elicit a measure of effort, I requested survey respondents to indicate on a zero-to-ten scale their effort on their job and on housework, using a similar scale to indicate effort expended watching television in order to scale responses. Using these data, as well as data from a national panel survey, we found that only current housework is significant, and that cumulative housework does not affect wages. This indicates that the hypothesis that housework is a proxy for unobserved human capital is unlikely to be true. The measured index of job effort is positively related to earnings, which suggests that it is a reasonable measure. However, including effort in the wage equation does not alter the negative effect of housework on wages.

## B. EMPIRICAL EVIDENCE ON HOUSEHOLD ALLOCATION

Given the observation that women do more housework than men within the house, is the household allocation of time consistent with human capital theory or with bargaining theory? In Hersch and Stratton we find evidence that the allocation is consistent with both theories, although more research is needed to distinguish between the human capital theories as well as among the different bargaining theories.<sup>51</sup>

We find that the husband's share of housework is significantly lower when he contributes a greater share of the household's income. This is predicted by human capital theory, since the higher earning

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50. Joni Hersch & Leslie S. Stratton, *How Housework Lowers Women's Wages: Unobserved Human Capital and Job Effort* (1994) (paper presented at the 1994 meeting of the Western Economic Association) (unpublished manuscript on file with *Southern California Review of Law and Women's Studies*).

51. See Joni Hersch & Leslie S. Stratton, *Housework, Wages, and the Division of Housework Time for Employed Spouses*, 84 AM. ECON. ASS'N PAPERS AND PROC. 120 (1994).

spouse has the higher opportunity cost of time. This result is also predicted by the divorce threat bargaining model, since the higher earning spouse will have the higher threat point.

Housework time of both spouses is inversely related to combined labor income. However, increases in combined income reduce the husband's time proportionately more than his wife's. There is also an inverse relation between own housework time and own labor market hours. Women whose husbands work more hours spend more time on housework. But this effect is not symmetric: an increase in the wife's market hours does not affect her husband's housework time.

#### IV. CONCLUSION

Home production is an important component of society's output. For many women, home production represents their main contribution to the household and therefore their main claim to assets accumulated during marriage. Home production also serves as the basis for compensating survivors for a woman's wrongful death.

Both human capital and bargaining models imply that the observed allocation of housework along gender lines is efficient. It is likewise efficient for the household member specializing in home production to invest in lesser amounts of human capital. Lower levels of education and training result in lower wages. Housework also appears to have a direct negative effect on wages in addition to the effect on human capital accumulation.

The specialization in home production by gender may relate to the male marital wage premium. Lorna Wendt claims that her husband's career was successful because she contributed to their two person career as the "corporate wife," by entertaining colleagues, as well as by assuming all responsibility for raising the children and managing the household.<sup>52</sup> While the Wendt situation is unusual because of the size of the estate, the arguments raised are not. There is strong evidence indicating that married men earn more on average than comparable single men.<sup>53</sup> There is no consistent evidence of a marital wage differential among women in either direction. Women are neither rewarded nor penalized directly for being married. Might the male

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52. See Dobrzynski, *supra* note 2.

53. See, e.g., Sanders Korenman & David Neumark, *Does Marriage Really Make Men More Productive?*, 26 J. HUM. RESOURCES 284-87 (1991); Eng Seng Loh, *Productivity Differences and the Marriage Wage Premium for White Males*, 31 J. HUM. RESOURCES 567-71 (1996); Hersch & Stratton, *supra* note 21, at 1.

marital premium be due to the within-household allocation between the husband and wife? Specialization within the household may allow married men to expend more effort in market production or to otherwise increase their productivity in this sector.

More work needs to be done to examine why we observe a negative housework effect that affects women's wages more than men's. Is it due to discrimination? Is it due to data problems? Are there genuine productivity differences by gender, and if so, what are these differences? Are the productivity differences due to institutional constraints, such as limited and poorly paid part time options? Can the labor market be restructured to eliminate either the productivity differences or the gender difference in the productivity difference? Can the tax system be restructured to change incentives to purchase market substitutes for home production, thereby minimizing the direct housework effect?