

GENDER DIFFERENCES IN HOUSEHOLD PRODUCTION

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Abstract

Researchers know that household tasks are often distributed unequally among husbands and wives, but few studies have considered exactly how gender affects common determinants of household production. This paper investigates the how gender interacts with wages, spousal employment, and the number and age of household children when married couples divide household responsibilities.

Key Words: time use, housework, child care

Introduction

Social scientists have long recognized that the household can be studied as a productive unit, much like a firm. Becker (1965), for example, argued that spouses frequently divide household tasks in a manner predicted by economic principles. However, it is also known that social norms frequently drive the division of labor within a household. The “second shift” literature in particular notes that wives often shoulder a disproportionate amount of housework, even in dual-career households. The recent development of reliable time diary data has given researchers a window to analyze this issue in greater detail than was previously possible. This paper adds to this growing literature by using data from the American Time Use Survey (ATUS) to study how gender interacts with other explanatory variables in the decision to allocate time to household production.

Reid (1934) defined household production as any task performed by a household member that could have been accomplished by hiring a third party instead. Common examples of household production include tasks such as cooking, cleaning, yard work, and home maintenance. Traditionally, economists have modeled workers as allocating time between “labor” (paid work in the labor market) and “leisure” (everything else). While this standard model is useful for many purposes, the practice of pooling all non-labor time into the same category sometimes oversimplifies the problem by ignoring important differences in how people view different uses of time. In particular, note that

household production activities differ from “leisure” as the term is commonly understood, since people who engage in them generally derive little utility from doing so. Thus, it is often better to model people as allocating their time among three possible uses: market labor, ordinary leisure, and household production. Spending an hour on leisure or household production both require that the person spend one hour less on market labor, but there is little reason to suspect that the factors influencing these trade-offs are the same. Leisure is best thought of as a consumption good, whereas household production more closely resembles a substitute for market labor. When a person devotes an afternoon to cleaning his or her own house, as opposed to hiring a housecleaner, family members enjoy the same “good” (a clean home) but the production of that good has taken place within the household. While the members of the household might enjoy living in a clean house, the actual process of cleaning the house is more like labor than it is like leisure, since relatively few people actively enjoy vacuuming, dusting, and washing windows.

Obviously there are some activities that qualify as household production and that also might generate utility on their own. For example, many people enjoy gardening as a hobby; many also enjoy cooking. For most, though, the decision to spend a particular hour cutting the lawn is likely influenced by a different set of considerations than the decision to spend that hour watching television or reading a book. Donald and Hammermesh (2009), for example, found that workers engage in both less leisure and less household production than non-workers, but also report that

working in the labor market reduces leisure time by only a relatively small amount, while household production falls more substantially. This finding strongly confirms the need to distinguish household production from leisure activities.

Household production presents an important area for research. First, it represents a major component of daily life for most people, and therefore should be of interest to social scientists of all types. Moreover, household production is a significant source of economic activity and is directly tied to living standards. Franzis and Stewart (2006) calculated a measure of “extended income,” which includes estimates of household production with regular money income. They found that household production accounts for between a quarter and a third of total extended income. Zick et al. (2008) performed a similar analysis and found that household production somewhat reduces measures of economic inequality when it is included alongside money income. An investigation of the underlying patterns and determinants of household production therefore promises to illuminate a significant social and economic activity.

Many researchers have focused on the ways that time allocation decisions vary by gender. Basic economic theory suggests that higher wages increase the opportunity cost of household production and the two should therefore be negatively correlated. Hersch (2009) confirmed a negative relationship between housework and wages, but also finds that the association is stronger for women than for men across almost all occupations. Time diary information has also allowed researchers to observe how household members divide time devoted to housework and other productive tasks. For

example, previous studies have found that household production by one spouse is complementary to household production by the other; married people who spend a lot of time on household production tend to have spouses who devote a lot of time to these activities as well (Connelly and Kimmel, 2009). While wives, on average, spend more time on household production than their husbands (Kranz-Kent, 2009; Bittman et al., 2003; Alvarez and Miles, 2003; Hersch and Stratton, 2002), some tasks are more equitably distributed than others. Winkler and Ireland (2009) studied “household management,” which includes scheduling appointments, planning meals, allocating money, and other organizational decisions within the household. They found that husbands and wives share household management responsibilities more equally than other activities, such as housework. Not surprisingly, wives report more satisfaction when household tasks are distributed more equally (Lee and Waite, 2010; Thorne 2010).

Analysis and Results

This paper extends this body of research with data from the 2008 American Time Use Survey (ATUS). Begun in 2003, ATUS is an annual survey of respondents drawn from the Current Population Survey (CPS). Each respondent is asked to recount each activity from the prior day, including how long the person engaged in the activity, where the activity took place, and whether anyone else was present at the time. Interviewers record this information by classifying each activity into standardized categories such as personal care, eating and drinking, working, volunteer activities, travelling, etc. Because ATUS records each respondent’s daily activities with such fine

detail, it has become a valuable tool for researchers interested in time use. An additional advantage of this data set is that since ATUS respondents are drawn at random from CPS participants, each respondent's ATUS data can be linked to their CPS information. Researchers can therefore examine time use alongside demographics, earnings, and other variables, resulting in a more complete picture of how these factors affect time use.

Table 1 lists the variables used in this analysis. *HOUSEACT* represents the number of minutes the respondent devoted to household activities (ATUS Major Category 02) on the day prior to his or her interview. This category of activities includes time spent on food preparation, laundry, cleaning, lawn care, car maintenance, and other typical household jobs. *CHILDCARE* is the number of minutes spent caring for household children (ATUS Categories 03.01 - 03.03). Connelly and Kimmel (2009) demonstrated that adults often allocate time to traditional household production and child care quite differently, so these two activities are tracked as separate dependent variables. Independent variables include items such as demographic information, spousal employment, the number of hours the respondent works each week, and his or her hourly wage. Because time use preferences likely vary considerably based on marital status and employment, this study considers only married workers, so that weekly hours worked (*HOUR*) is positive for all respondents.

Several variables jointly investigate how time use varies by gender. *FEMALE* acts as a shift term indicating additional minutes spent on household activities and

child care respectively, unexplained by any other control variable. However, it is possible that the effects of other explanatory variables also differ by gender. The models therefore include interaction terms with gender on wage, spousal employment, the number of household children, and the age of the oldest household child to test for these effects. These interaction terms will indicate whether economic and lifestyle determinants of time use affect married men and women in the same way, or whether they affect women differently than men.

The resulting data set contains 2436 observations. The two dependent variables of interest, minutes devoted to household activities and minutes devoted to child care, have a lower bound of zero, so the Tobit model provides an appropriate estimation approach. Tobit estimation is commonly used as a substitute for ordinary least squares regression when the dependent variable has a lower or upper bound, because OLS parameter estimates will be both biased and inconsistent. We expect that an increase in hours worked in the labor market will result in less time devoted to each form of household production after controlling for other variables. We also expect that having an employed spouse will result in more time devoted to each activity. The expected effect of labor wages on household production is more subtle. An increase in the hourly wage increases the opportunity cost of both household activities and child care, and would therefore tend to reduce the time spent on each. However, previous research has found that affluent households devote more time to child care than lower-earning

households (Kimmel and Connelly, 2007; Bryant and Zick, 1996), so we should anticipate that hourly wages affect household activities and child care differently.

Table 2 describes the results of these two Tobit estimations. A few general findings stand out. First, these results strongly support the decision to treat household activities and child care as two distinct forms of household production. A comparison of the two models reveals differences in the time allocation to these activities. Older people spend more time on both, but the quantitative effect on household activities is more than twice as large as the corresponding marginal effect on child care. Weekly variations in these activities are also distinct; respondents spend more time on household activities, but not child care, on weekends and holidays. The number and age of household children affect both types of household production, but also do so differently. Conflating household activities with child care would ignore these important differences, while keeping them separate allows for a richer and more detailed analysis.

The models provide support for some a priori expectations, but not all. Not surprisingly, people who work longer hours each week do devote somewhat less time to household production. Also as anticipated, increases in the respondent's hourly wage are associated with more time spent on child care. However, wages are uncorrelated with time spent on household activities. The latter result runs counter to economic intuition, but matches the outcome of previous studies (Connelly and Kimmel, 2007; Hallberg and Klevmarken, 2003).

Gender plays an important role in both models, but that role is not the same in each. The results of each model emphatically confirm the conventional wisdom that married working women devote much more time to household production than their spouses. Both models feature gender-specific shift terms that are significant beyond the 1% level. Even after controlling for other pertinent variables, women spend almost an hour and a half more per day on household activities such as cooking, cleaning, and doing the laundry than their husbands. They also spend 108 minutes more per day on child care. Ignoring any interaction terms, these two results imply that the typical working wife puts in a “second shift” of well over three hours per weekday.

The estimation for household activities shows no significant interaction terms on gender. The effects of an increase in the hourly wage, spousal employment, the number of children, and the age of the oldest household child on women are statistically indistinguishable from those on men. Instead, the only gender-related difference in this model is the exogenous shift term, which likely reflects sociological and cultural norms. The child care model produces starkly different findings, however. While this model also features a statistically significant shift due to gender, it also exhibits two significant interaction terms. Specifically, the interaction term on the hourly wage indicates that the wage effect on child care is essentially nullified for women. Men who earn higher wages tend to spend more time on child care, but time devoted to child care by women is almost invariant with respect to wages. The data reveal a similar result for spousal employment. A working man with a stay-at-home wife will spend about 36 minutes

per day less on child care, presumably because the stay-at-home wife is specializing in this task. A working woman with a stay-at-home husband, however, spends roughly the same amount of time on child care as she would have if her spouse was employed. These results imply that working women spend much more time caring for children even when they have a non-working spouse. This finding again provides strong justification for differentiating between child care and other household activities. The breadwinner of a single-income household spends less time on household activities than they would in a dual-income household, and this effect is statistically identical whether the breadwinner is the husband or wife. This finding suggests that household tasks like cooking and cleaning may be re-assigned from one spouse to the other depending on their respective employment status. Child care does not behave this way, and is assigned predominantly to the woman of the household whether her husband works or not.

Conclusions

As expected, gender plays a large role in time allocation within the household. Married working women spend much more time on household production than their husbands. Household activities and child care operate differently, however. While women spend more time on household activities, they respond to other factors such as wages and spousal employment just like married men. Child care is different. The average working man spends less time on child care when his spouse doesn't work, but the typical working woman spends roughly the same amount of time on child care

regardless of whether her spouse works. Wages also have little if any effect on time devoted to child care for women. Whereas high-income men spend more time on child care than low-income men, women spend approximately the same amount of time caring for their children regardless of their wages. While the existence of a “second shift” for female workers is well-known, these findings strongly indicate that child care cannot be treated the same as other household activities, and it demonstrates that women’s time allocation for child care responds to outside variables differently than it does for men.

The wealth of time diary information available to researchers allows for several possible extensions of this work. This paper focuses entirely on married women and married men. Future research could investigate whether similar patterns emerge when single female workers are compared to their single male counterparts. The behavior of non-workers also merits study, as this paper suggests that stay-at-home moms allocate time quite differently than stay-at-home dads. Finally, this work shows that some variables affect men and women differently, so that models that limit male-female differences to a simple intercept change will miss noteworthy gender dynamics. Exploring other areas of time use, such as paid work hours and traditional leisure activities, with similar interaction terms could therefore also prove fruitful. Further work on time allocation will paint a more thorough picture of the workings of the household and can shine a historical light on gender roles within.

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Table 1: Description of Variables

| Variable | Description | Mean |
|-----------------|---|-------------|
| HOUSEACT | Minutes spent doing household activities | 117.1 |
| CHILDCARE | Minutes spent caring for household children | 75.0 |
| FEMALE | = 1 if female | 0.48 |
| HISPANIC | = 1 if Hispanic | 0.15 |
| BLACK | = 1 if black | 0.06 |
| ASIAN | = 1 if Asian | 0.05 |
| OTHERNW | = 1 if other non-white race | 0.03 |
| AGE | Age in years | 37.5 |
| SCHOOL | = 1 if in currently enrolled in school | 0.06 |
| METRO | = 1 if in a metropolitan area | 0.83 |
| SATURDAY | = 1 if diary day was a Saturday | 0.27 |
| SUNDAY | = 1 if diary day was a Sunday | 0.26 |
| HOLIDAY | = 1 if diary day was a holiday | 0.02 |
| HOUR | Number of hours worked per week | 41.7 |
| WAGE | Implied hourly wage | 23.35 |
| FWAGE | Female * Wage | 10.22 |
| SPOUSEWORK | = 1 if spouse is employed | 0.78 |

| | | |
|--------------|-----------------------------------|------|
| FSPOUSEWORK | Female * SpouseWork | 0.44 |
| NUMCHILD | Number of household children < 18 | 1.96 |
| FNUMCHILD | Female * NumChild | 0.92 |
| OLDESTCHILD | Age of oldest household child | 5.90 |
| FOLDESTCHILD | Female * OldestChild | 3.08 |

Table 2: Tobit Estimates

| Independent Variable | HOUSEACT | CHILDCARE |
|-----------------------------|--------------------|--------------------|
| Constant | -42.9 (29.2) | 43.9** (22.2) |
| FEMALE | 85.0*** (27.6) | 108.2*** (21.1) |
| HISPANIC | -26.0*** (9.89) | -53.5*** (7.8) |
| BLACK | -30.9** (13.8) | -33.1*** (10.7) |
| ASIAN | -11.4 (15.5) | -22.4** (11.7) |
| OTHERNW | -21.1 (20.9) | -17.7 (16.4) |
| AGE | 2.2*** (0.6) | 1.0** (0.5) |
| SCHOOL | -9.4 (13.4) | -3.2 (10.3) |
| METRO | -16.9* (10.1) | 10.1 |

| | | |
|-------------|-------------------|-------------------|
| | (8.8) | (6.9) |
| SATURDAY | 49.8*** (7.9) | -13.0** (6.1) |
| SUNDAY | 78.3*** (8.0) | 3.2 (6.1) |
| HOLIDAY | 86.8*** (26.3) | -16.2 (21.6) |
| HOUR | -0.9*** (0.3) | -0.8*** (0.2) |
| WAGE | 0.4 (0.3) | 0.8*** (0.2) |
| FWAGE | -0.4 (0.4) | -0.7** (0.3) |
| SPOUSEWORK | 36.2*** (10.1) | 36.5*** (7.8) |
| FSPOUSEWORK | -22.9 (19.5) | -38.1** (15.1) |
| NUMCHILD | 9.9* (5.1) | 4.1 (3.9) |
| FNUMCHILD | -4.7 | -3.0 |

| | | |
|-----------------------|---------------|-------------------|
| | (7.4) | (5.6) |
| OLDESTCHILD | -1.0 (1.2) | -12.1*** (1.0) |
| FOLDESTCHILD | 1.1 (1.4) | -1.6 (1.2) |
| | | |
| Log Likelihood | -12627.4 | -10955.3 |
| Pseudo R ² | 0.01 | 0.03 |
| Observations: | 2436 | 2436 |

*, **, and *** indicate significance at the 10%, 5%, and 1% level respectively.