Changes in Non-Food Household Expenditure between Sexes

by Marital and Work Status

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1. Introduction

Household expenditure behavior can be modeled either under assumptions that spouses work together to maximize household utility, or work as competitors who each have bargaining power as a result of their own income and different preferences from their utility functions. I use data from the Bureau of Labor Statistics' 2001 Consumer Expenditure Survey to determine the effect of an individual's sex and work status (whether the individual works) on the individual's household expenditure. By considering only expenditure and characteristic data for reference persons and their spouses, I am able to examine both single-earner and two-earner households; I am also able to examine households of unmarried and married individuals. In general, across both unmarried and married individuals, women are in households that are less likely to spend on Smoking Supplies, and more likely to spend on Housekeeping Supplies and Services. For log level expenditure on Personal Products and Personal Services, there is no significant difference in likelihood of spending between the households women are in and the households in which there are men.

2. Literature Review

Several models of household utility behavior attempt to describe how increases in income affect each earner's influence over his/her household's spending. Incomes are sometimes pooled so changes in either earner's income affect household consumption identically, but for certain

expenditure items, increases in consumption are associated only with an increase in one person's income. Originally, a theoretical model viewed the household headed as by an "altruistic dictator," and the husband and wife as subject to a single budget constraint. Under this dictator, all income would be allocated the same way, regardless of which spouse earned it. After this came a collective model, in which males and females did not allocate identically; they had different utility functions for the household, but still cared about each other's utility. Household behavior later was compared to the results of a Nash-bargaining game, in which individuals had separate utility functions. Their incomes affected their bargaining power, which in turn affected allocation of resources. [1]

There are examples of goods which fit in "separate spheres"; an increase in consumption of one of these goods as a result of only changes in income of only one sex may represent a gendered responsibility for purchasing this good, and not a share of bargaining power. Mary C. Noonan defines tasks performed on a daily basis, during a certain time, as female. Conversely, she labels tasks that occur irregularly and that can be performed at unfixed times as male tasks.[2] This division of spheres is supported by Phipps's results that increases in female income are associated with increases in spending on child care, while increases in male income are associated with more spending on car maintenance. In a different model, the notion of gendered tasks also instead can be divided such that females perform "unpleasant" household tasks like cleaning and laundry, while males perform "pleasant" tasks like shopping and meal preparation.[3] A study in the Netherlands confirms both of these theories; Van Der Lippe found that an increase

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[1] Phipps, Shelley A., and Burton Peter S., 1998, "What's Mine is yours? The influence of male and female incomes on patterns of household expenditure," *Economica*, 65, 599-600.

[2] Noonan, M. C. (2001). "The impact of domestic work on men's and women's wages." *Journal of Marriage and Family, 63,* 1134-1145. (#35)

[3] Stier, H., & Lewis-Epstein, N. (2000). "Women's part-time employment and gender inequality in the family." Journal of Family Issues, 21 (3), 390-410.

in female income correlates with an increase in cleaning services expenditure - a regular and unpleasant task - and an increase in male income correlates with an increase in restaurant and take-out food consumption, an occasional and not unpleasant task. [4]

3. Data

The data for this project are from the Bureau of Labor Statistics' Consumer Expenditure Surveys, and were collected in the first quarter of 2001.[5] I am using the Diary Survey, which was recorded over a two week period and has information on "small, frequently-purchased items" like Food, Beverages, Nonprescription Drugs, and Medical Supplies. The reason I am using the Diary Survey data instead of the Interview Survey data, which is collected every quarter for 15 months, is because I expect that changes in small household purchases will show a more immediate and clear correlation with changes in female labor force characteristics than large and infrequent purchases like "Rent, Utilities, or Insurance Premiums."

The Diary Survey data themselves are at a level of detail with information on how much a household spends on specific food items, like Pork, Fresh Vegetables, and Eggs. For this study, I choose to look at spending on four non-food goods: Smoking Supplies, Housekeeping Supplies and Services, Personal Products, and Personal Services. Smoking Supplies include spending on cigars, cigarettes, and smoking accessories; Housekeeping Supplies and Services include spending on soap, laundry detergent, stationary, gift wrap, and delivery services; Personal

[4] Lippe, T. van der, Tijdens, K., Ruijter, E. de (2004). "Outsourcing of Domestic Tasks and Timesaving Effects." *Journal of Family Issues* 25(2): 216-240.
[5] U.S. Dept. of Labor, Bureau of Labor Statistics. CONSUMER EXPENDITURE SURVEY, 2001: DIARY SURVEY [Computer file]. Washington, DC: U.S. Dept. of Labor, Bureau of Labor Statistics [producer], 2002. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2003.

Products include spending on hair care products, cosmetics, oral hygiene products, and deodorant; Personal Services include spending on haircuts and personal care appliance rental or repair.

The data on expenditure are collected at the level of a "Consumer Unit," which is defined as all of the people in a household related by blood, marriage, adoption, or another legal method. For this Consumer Unit, there are data on family size, household income, and number of earners. For each individual in the consumer unit, there are demographic data on his/her race, marital status and education level, as well as characteristic data on the number of weeks he/she worked. Each household has a reference person, for whom there are the data described above. Households also may have additional data for individuals like the reference person's spouse, child, grandchild, in-law, brother, sister, parent, or other household member.

The Bureau of Labor Statistics, in their published dataset, excludes ineligible (vacant, nonexistent, or otherwise ineligible) and non-responding (unable to be contacted or refused to participate) diaries. In the published dataset, there are 15,404 respondent interviews. I first restrict the data to families who do not purchase food stamps. Furthermore, I exclude individuals who are not a reference person or his or her spouse, to focus on one particular type of earner and establish a well-defined relationship with a second potential-earner in the household, if he/she in fact has a spouse. Examples of excluded individuals include the reference person's child, grandchild, in-law, brother, sister, or parent. Not all reference persons have a spouse, so some Consumer Units will have two records of identical expenditure (one for the reference person, one for his/her spouse) and others will have one record of expenditure (for the unmarried reference person). With these additional deletions, the data have expenditure information for 5226 persons: split by marital status, 3400 reference persons and 1826 spouses, and split up by gender as 2455

males and 2771 females.

To control for education, I create dummy variables for general levels of educational attainment. In the "low education" group, I put individuals who have never attended school, or attended up through 12th grade without a diploma. In the "medium education" group, I put individuals who have some college education or an associate's degree (occupational/vocational or academic). In the "high education" group, I put individuals who have a bachelor's, master's, or doctorate degree. Additionally, I control for race by making dummy variables for white, black, American Indian, Aleut, or Eskimo, and Asia or Pacific Islander individuals. The final demographic control I use is for marital status; though there are 1826 spouses, some of the 3400 reference persons are not married. Consequently, I make dummy variables for marital status of married, divorced, widowed, separated, or never married.

One potential shortcoming of the data is due to timing. Because the survey data are collected during a two-week period, there may be undocumented seasonal explanations for the level of spending on a certain item. For example, women more than men may spend more on Sweets during a holiday or special occasion than during other times of the year, but no question in the survey addresses this potential reason for spending. However, I have chosen items (Smoking Supplies, Housekeeping Supplies and Services, Personal Products, and Personal Services) that I believe do not face this possible seasonal variation. A more general potential shortcoming of the data is selection bias; the Bureau of Labor Statistics omits the data from households who were unable to be contacted or refused to participate, and this may cause the remaining data to be non-random in its sampling of the nation's households.

4. Methods and Results

To determine how household spending for both married and unmarried individuals differs between men and women, I perform regressions of consumer expenditure on individual and household characteristics. For spending on the four non-food items I am studying (Smoking Supplies, Housekeeping Supplies and Services, Personal Products, and Personal Products), I split goods into two categories: binary spending and log level spending. I choose to make spending on Smoking Supplies and Housekeeping Supplies and Services a binary value because I want to consider whether or not households spent any money at all on these goods and do not want to analyze how much they spent. After making the restrictions I describe above, 4207 individuals spend zero on Smoking Supplies, and 1019 spend an amount greater than zero. Similarly, 2238 individuals spend zero, and 2988 individuals spend an amount greater than zero on Housekeeping Supplies and Services.

Regarding spending on Personal Products and Personal Services, I choose to regress on the log of level of spending, since I predict that the relationship between an individual's characteristics (his/her sex, whether he/she works, his/her household income) and expenditure will correlate more strongly with how much the consumer spend on these goods, not whether he/she spends any money or not.

I use probit regressions on the binary dependent variables for smoking spending and housekeeping spending. The coefficient on each regressor will report a change in likelihood in the dependent variable (here, spending or not spending) for a marginal change in the continuous independent variable. For independent variables that are dummy variables, the coefficient will represent a change in probability of likelihood of the dependent for a change in probability for the binary independent. For the log level goods, I use ordinary least squares regressions.

Table 1 displays results for the four goods from each of the seven regressions. In general, women tend to be in households that are less likely to spend on Smoking Supplies and more likely to spend on Housekeeping Supplies and Services than men. Consider regression A of a binary for spending on sex, controlling for work status and other controls (log of household income, family size, and race, education, and marital demographics). Women compared to men are in households that are less likely by 2.75% to spend on Smoking Supplies. When regressing the same factors only with individuals without spouses (regression E), this coefficient is even stronger; women without spouses are in households that are 9.4% less likely to spend on Smoking Supplies than the households with unmarried men. Like the coefficients of regressions for Smoking Supplies, the coefficients for regressions A and E on Housekeeping Supplies and Services are significant and grow stronger for individuals without spouses. With this good, however, they reveal an *increase* in likelihood of expenditure for women's households. A woman is in a household that is 3.51% more likely to spend on Housekeeping Supplies and Services than a man's household, whether or not the individual has a spouse (regression A), and when the sample is restricted to individuals without spouses (regression E), this increase in likelihood for households with women grows to 14.0% more likely than households with men. For both regressions A and E, the coefficients on sex for Personal Products and Personal Services are not significant.

When controlling for individuals in one- or two-earner households instead of controlling for individuals who work or not, I arrive at the same result (regression F). In this case, women are in a household that is 2.96% less likely to spend on Smoking Supplies than a man's household, controlling for whether there are two earners or not; moreover, they are in households that are 3.87% more likely to spend on Housekeeping Supplies and Services than a man's

household. An individual's observation for the two-earner variable is zero when the individual does not work, his/her spouse does not work, or he/she does not have a spouse.

Regressions B and D contain interaction terms between sex and work and sex and two-earner households, respectively. These interaction terms allow the coefficients to capture different correlations depending on the values of the variables. For instance, females who don't work are in a household that is 7.46% more likely spend on Housekeeping Supplies and Services given that she doesn't work (regression B). Because the coefficient on the work-sex interaction term is not significant, there is no increase in likelihood if she works, so the likelihood for the working woman's household is positive and the same as the non-working woman's household.

These coefficients and results convey that women tend to use the household budget to spend on Housekeeping Supplies and Services, but the data are not detailed enough to reveal if this spending is on the products for the women themselves to use, or if this spending is on services the woman hires to clean because she is at work and too busy to do so herself. Though the data does not have this type of information, I interpret that the latter explanation is more probable because of the relationships established when controlling for when women work.

My results also suggest that household bargaining may differ for Personal Products and Personal Services. Regarding these items, it is possible that the categories are not gendered, and increases in expenditure can be attributed to male, female, or neutral goods. The data do not have information on which Personal Products a household purchased, so I cannot break down Personal Products into male and female divisions of expenditure. Another explanation for the lack of correlation is that the household absorbs either gender's additional income for these goods collectively; the household allocates "surplus" income identically regardless of who produced it (whether the surplus is from the man's paycheck or the woman's paycheck) and spenders are

collectively maximizing a single utility function. This clearly contrasts with the Nash-bargaining model in 2. Literature Review, since spenders do not compete to use the additional income for their own (potentially gendered) purposes.

5. Conclusion

My results reveal that household expenditure for Smoking Supplies and Housekeeping Supplies and Services is dependent on several factors: the individual's sex, marital status, and work status. For Personal Products and Personal Services, the relationship between an individual's sex and his/her household's level of expenditure is not significant, whether for the whole sample, males only, females only, or individuals without spouses only. Expenditure involving a yes-no decision among spouses is more sensitive to the earner's sex than level of expenditure on goods that would have been purchased at some level regardless of how the income is divided among spouses. This suggestions that as more women enter the work force, the demand for housekeeping products, services, and techniques will change, and innovations will be necessary to satisfy demand. Future research on a household's expenditure on childcare and elderly care as a function of individuals' sex, marital, and work status will provide insight on the potential need for more and better options for these dependents.

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