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**Whose Double Shift?: Intra-Household Substitution of Home
Labor over the Mexican Business Cycle**

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Abstract

This paper examines the gendered division of housework among household members and how robust it is to macro and household level economic shocks. We use a panel data set from Mexico (ENEU) to examine how husbands, wives, unmarried women, sons, daughters, and other adult females in the household adjust their housework time when negative economic shocks lead to adjustments in income and labor market time requirements of others in the household. Three questions are addressed: 1) what is the distribution of household tasks among members of the household, 2) is there a double shift for women when they enter the labor market?, and 3) does the gender balance of homecare time change when there are shocks?. We find that in couple headed households wives work longer hours in the house than their husbands. This is due, in part, to their role as mothers. Children add to the mother's time but substitute for their father's time. Age cohort seems to boost this traditional roles within the household and education seems to modify this attitude. There is a shift and a half for wives, since her time devoted to homecare is reduced by half an hour per hour of market work. Third, the gender balance does not shift with economic shocks as husband's share of household work is non-responsive to macroeconomic shocks. The rest of the household, but mostly teenage girls and other adult women, substitute for wives work.

I. Introduction

Economic contractions may lead to an increase in poverty, as measured by a decrease of consumption levels due to a fall of labor income caused by unemployment or falling real wages. However, economic downturns potentially create *time* poverty as well. As real earnings decline due to inflation, lay-offs, decreased work shifts, and other demand-side adjustments, households may need to send more of its members to the labor market. Thus, “secondary workers”, primarily wives and children who do not work in favorable economic periods, enter the labor market (Cunningham 1998). Since women are usually still responsible for homecare even when they do have jobs, tight economic times may lead to working a “double work shift”, increased household responsibilities of others in the household, or elimination of some tasks.¹ Thus, the increased market work burden, especially for women, would lead to time poverty and/or a decrease in the consumption of home produced goods.

This paper examines the impact of business cycle fluctuations and labor supply on the household head’s (and spouse’s) housework time, other household members’ housework time, and total time input to the household. In this context, we also identify whether or not home and market responsibilities are clearly assigned by sex or if the gender roles become blurred as women take on “breadwinning” roles. The paper will consist of seven parts. Section II lays out a theoretical framework of the division of labor in the household, the importance of gender roles, where the division of labor by the sex is not possible, and bargaining models. Section III discusses the data and Section IV outlines some patterns of the division of housework responsibilities in the household,

¹ An alternative is that as earnings become scarce or uncertain, purchased goods become relatively more expensive so the demand for home produced goods and services increases to substitute for those that were

when the supply of labor changes and over the business cycle. Section V presents the empirical models and the challenges associated with those models. Section VI presents the model estimates and Section VII concludes.

II. Analytical Framework

The assignment of homecare tasks to household members is subject to each household member's expected earnings outside the home, value inside the home, gender identity, and bargaining position. First, an individual will work outside the home if the expected wage exceeds the benefit from working at home or enjoying leisure. Since women's wages are, on average, lower than men's, even if the value of women's housework is the same as men's, the women will be less likely to participate in the labor force.

Second, the value of an individual's non-labor market work depends on the demand for labor within the home, the potential supply of producers and their earnings ability. Since the theory of the household does not quantify the value of home labor, we borrow an ordinal ranking from the labor literature and extrapolate it to home labor. Children are a time intensive good that are highly valued by the household (Nakamura and Nakamura 1992) and improve with attention (Becker 1991). Therefore, the presence of valuable time intensive goods, whether children, infirm adults, a nice home, etc. will increase the value of non-work time, thereby decreasing the likelihood of being in the labor market. However, if there are several individuals in the household who have either a preference for or a comparative advantage in the care of these time intensive goods, the homework

previously purchased in the market. Our data do not include the information to test this hypothesis so it will not be treated here.

may be divided among these individuals, imposing fewer demands on the primary caregiver.

Third, women may choose to stay home in order to preserve their own and their household's (gender) "identity" (Akerlof 1999). Society is arranged such that everyone is assigned to various groups. The most basic group affiliations are those that are not chosen and are observable, such as being a member of a family or a gender group. The roles assigned to members of a group are fulfilled in order to 1) preserve one's own identity and/or 2) prevent punishments from those whose identity may be threatened by one's actions.² Therefore, a woman may choose to dedicate her time to homecare since, under traditional gender roles, having a well-run household is a "womanly" characteristic. To be deemed an unsuccessful homekeeper by her peers leads to less happiness than if she ignored the house in favor of leisure or market work. Furthermore, if a woman does not have a well-run house, this may reflect poorly on her spouse (or other household members) since he may be judged as unable to control his wife and therefore not be "macho" or powerful. In this case, in order to force the wife to behave such that she does not threaten his identity, the male has certain "threat points" that may exist outside the marriage (divorce (Manser 1980)) or inside the marriage (domestic violence, withholding of market goods (Lundberg and Pollack 1996)). If his wife does not behave in a manner to demonstrate to the husband's peer group that he is a "man", the husband's behavior will approach the threat points. However, if a woman has power, she is less likely to conform closely to societal expectations; i.e. gender roles.

These characteristics define the preference ranking and value that men and women place on their own time but they do not identify how the final allocation of time across

² Several other reasons are outlined in the Akerlof paper, but they are not relevant for this discussion.

household activities is made. Ideally, the optimal household “consumption package”, the mix of household and market work, would emerge if each household member allocated his/her labor to the activities where he/she has the highest value, taking as given the contributions of other household members.³ However, household members have different preferences and thus varying ideas about the optimal consumption package so the time allocation cannot emerge endogenously. In a household where only one person has decision making power, the household head will decide on the optimal “consumption package” of home produced goods and market purchased goods and assign household members accordingly. Thus, the head simultaneously decides on the mix of home and market work that the household will produce and the allocation of each household member’s time between the home and the market, taking into consideration the value of each member’s output in the home and market. This outcome would be observed in households headed by individuals who are not in a conjugal union with another member of the household or in households where the partner does not have any bargaining power.

In households where more than one individual has power, the choice of the final “consumption package”, and therefore the allocation of market and home responsibilities among household members to generate the package, is likely to be an outcome of a bargain among those with power.⁴ Since those with power are likely to have different ideas about the optimal “package” and how to allocate responsibilities across individuals

³ In other words, choose home and market activities in a Cournot framework where the labor supply of other members is taken as given (Kooreman 1994).

⁴ The division of household labor among those who live in the household has not been well developed in the theoretical literature. The original models of the household, so called “common preference” models (Mincer 1962, Becker 1991), treated the family as a single decision making unit, regardless of intra-household heterogeneity in preferences, earnings ability, and power (Lundberg and Pollack 1996). Becker integrated the gender division of homework into this theory by hypothesizing that specialization is efficient and since women develop homecare skills during infant care, women are allocated to the home (1991). Additionally, several bargaining models have emerged. A survey of these are given in Pollack (1994) or Lundberg and Pollack (1996).

in the household, each will attempt to convince the other to adopt his/her optimal outcome package, resulting in a third solution. We will assume that the outcome is a result of a repeated Nash game so each individual with power will allocate own time and that of non-dominant household members taking as given the actions of other individuals with power.

An economic shock to the household in the form of lower income, job loss, or uncertainty, will change the valuation of expected wage and non-work time and thus will affect the value of market and home time, thereby changing the distribution of home and market time across the household. If the primary breadwinner unexpectedly loses his/her job, secondary workers may enter the labor force, i.e. there is an added worker effect. Cunningham (1998) found a very strong added worker effect among Mexican wives, but not among men or single mothers, when economic uncertainty increased or the household suffered an unexpected negative shock to income. However, theory does not tell us what happens to the amount of time spent in housework. Based on time constraints, if wives do increase their time in the labor market, either home time or leisure must decrease. Depending on her position in the household, her preferences and identity; more or less of her leisure time would be sacrificed when she enters market activities. Alternatively, if her value in the market increases, other household members may take over some of her housework.

An addition to the model is required since 20% of all households in Mexico are headed by an adult without a partner (Cunningham 1998). Of these, 80% are headed by a woman who must act as both the breadwinner and caregiver. Their time allocation model differs from that of wives, and perhaps is not as subject to gender roles, since they incorporate the role of both the husband and the wife into their responsibilities. Although

unmarried women do not seem to adjust their labor market participation patterns during periods of economic downturns (Cunningham 1998), the shocks may be absorbed at the household level via increased home production or a shift in household responsibilities.

III. Data

The primary data are from the Mexican Urban Employment Survey (ENEU) collected by the Mexican National Statistical Institute (INEGI). Five periods of extreme business cycle conditions are included: 1988 (trough), 1990 (peak), 1993 (pre-crisis trough), 1995 (crisis), and 1996 (recovery). Each observation was initially surveyed in the first quarter of the year then resurveyed for four consecutive quarters, giving a 15 month time series for each individual. Included in the survey are questions regarding time spent in household work, the household composition, household earnings, and labor market behavior of all household members. By following the same sample over a fifteen month period, we eliminate the need to control for heterogeneity between sample members and can identify a causal relationship between changes in the household and time allocation, neither of which is possible with a cross-sectional data set.

The sample will be cut along several dimensions. In this paper, there are two types of household structure: couple-headed, where a pair of adults in a conjugal relationship are present, and single mother, where a partner is not present but there are children. Individual roles are defined by the household structure, the individual's place in the unit, sex, and age. The "husband" is the male of the conjugal relationship while "wife" is the female equivalent, regardless of actual legal status. In the formal analysis, households headed by women without children and men without a partner are dropped from the sample since the sample sizes are too small. Teenaged children are sons or daughters of the household head who are ages 13-17. Other adult women are females who are older

than age 18 but are not the household head or spouse. They may be daughters, mothers, sisters, or any other non-conjugal relation to the head, but not maids.

IV. Descriptive Statistics

4.1 Cross sectional means

4.4.1 Mean hours by household type

Time allocation patterns differ greatly by household structure, sex, and role. The total amount of time spent on homecare differs by household structure, as shown in Table 1. Households headed by a married (or consensual union) couple spend, an average of sixty hours per week in housework, as compared to 52 hours in households headed by an unmarried woman or 34 hours in those with only a single male as the head. Each of these household types have different average compositions, though, so the second column of Table 1 gives housework time on a per capita basis, showing that those in households headed by single women have the highest per capita weekly homecare burden, nearly 17 hours per person.

4.1.2 Mean hours by household type and position

Average weekly homecare hours by role in the household is given in Table 2. Not surprisingly, in couple headed households, wives perform an average of 75% of all housework. The remaining work is primarily done by daughters. Husbands and sons perform equal levels of housework, approximately six hours weekly suggesting that household chores and the associated time requirements are based on gender roles, not age. In those few households with other adult female relatives in the household (column

3), the non-head female takes over almost 2/3 of the wives' chores while everyone else's time allocation remains virtually unchanged. This substitution indicates that non-nuclear relatives are an important source of homecare and, perhaps, mother's and daughter's time are not perfectly substitutable.

In households headed by unmarried individuals, women spend less time and men spend more time on housework as compared to their married counterparts. The rest of the household, however, has very similar time allocations to their equals in households run by both a male and a female. Thus, housework allocation differs by household structure for the heads, but not for other members.

A notable gender difference is that girls spend approximately 2.5 times more hours on housework than their brothers. Thus, gender roles seem to be enforced early when girls and boys still have similar non-market responsibilities (school) and similar skills.

4.1.3. Mean hours by household type, role, and working status of head(s)

According to Table 3, wives (unmarried female household heads) spend approximately 49 (38) hours per week on housework when they do not hold formal jobs but only 33 (26) hours when they do. On average, there is not a significant difference in mean levels of housework hours of other family members when the female head of the household (whether married or not) is working or not working. Thus, the fact that husbands work outside the home does not explain their small contributions to homecare, since wives working outside the home spend considerable time on housework.

4.1.4. *Changes in hometime over the business cycle*

Graphs 1 and 2 show the time spent in housework and the time spent in total (home and market) work over the past ten years, broken down by household role. Neither graph suggests any cyclicity, i.e. the time spent in the household and the total work burden does not seem to differ with the business cycle despite the fact that wives do enter the labor force when there is a downturn in the economy. For example, in Graph 1, household time falls for women and increased for men, regardless of the business cycle, and in Graph 2, total work is more similar to hours worked in the surrounding periods than to similar points in the business cycle. However, graph 2 shows the higher work burden for women across all periods.

4.2 *Controlling for heterogeneity: changes in individual's homework time*

Table 3 does not necessarily imply that when a woman takes a paid job, her household time allocation patterns will reflect those in columns 1 and 2 since there may be something systematic about household time use choices of women who are in the labor market compared to those who only work in the home. Table 4 controls for the potential selectivity by measuring changes in an average woman's homecare hours (and those of other members of her household) when *she* enters the labor force. A negative value indicates that, on average, the individual of type k ($k =$ husband, wife or single mothers, son, daughter, other adult female, other adult male) decreases his/her homework time when the "head female" enters the labor force; a positive value indicates an increase in homework time.

As the wife enters the paid labor force, her weekly homework time falls an average of 12.3 hours while the rest of the household compensates by working six hours longer

each week. Therefore, we can summarize that nearly six hours of household time are lost when a wife goes to work. Conversely, when she stops working, the wife increases homecare time by 10 hours, relieving household members of two hours of work, and resulting in a net household gain of eight hours of housework weekly.

Table 4 may reflect some specialization in housework such that some household responsibilities cannot be substituted by anyone else. As a comparison, we consider the change in family member's housework when the husband changes his work status (the statistics are available from the authors) and find that his homecare time is simply lost unless there exists another male (or non-spouse female) in the household. Households headed by unmarried women show similar patterns to husbands.

V. Modeling Approach

Although the above tables are suggestive, there are many other factors that may explain the changes in housework time when the men and women adjust their labor supply. Some of these other characteristics may be proxied by observable characteristics such as education, age, and the composition of the rest of the household, but others, such as bargaining power and gender roles, are unmeasurable and unchanging in the short run. To control for both the time-invariant observable and unobservable characteristics, three models will be tested: a random effects model that will allow us to identify the correlation between housework and unchanging observable variables, an OLS model with first differenced dependent and independent variables that will eliminate all time-invariant effects and focus only on the correlation between changes, and a simultaneous instrumental variable model with differenced variables that will control for the simultaneous and endogenous nature of home time and market work decisions.

Throughout all three models, a Nash bargaining strategy (Kooreman 1994) in households headed by a couple will be assumed.⁵

The random effects model will identify the correlation between time spent in housework and demographic characteristics, household structure, and time spent in market work:⁶

$$hw_{it} = \alpha_1 + \beta_{11}X_{it} + \beta_{12}H_{it} + \beta_{13}LS_{sit} + \beta_{14}ILF_{it} + unemp_t + \varepsilon_{1ti} + u_{1i} \quad (1)$$

$$\text{share of } hw_{it} = \alpha_2 + \beta_{21}X_{it} + \beta_{22}H_{it} + \beta_{23}LS_{sit} + \beta_{24}ILF_{it} + unemp_t + \varepsilon_{2ti} + u_{2i} \quad (2)$$

where u_i is the individual specific disturbance term. The vector X_{it} includes personal characteristics that affect the productivity of home work and potential market wage (education and age). The number of household members of specific age and sex groups is given in vector H_{it} to capture the role of others in the household in terms of their contributions to homecare and/or the additional work burden they demand. Spouse's hours worked is given by LS_{sit} , own work status is given by ILF_{it} , and the unemployment rate in quarter t by $unemp_t$. The error term has two components: the "traditional" error term that is unique to each observations (ε_{ti}) and the "individual" error term that is unique to each individual but is time invariant (u_{1i}).

The dependent variable in equation (1) is a count of the number of hours spent in housework. In equation (2), it is the time spent in homecare by individual i relative to the time that everyone else in the household dedicates to these activities. The number of weekly hours spent in housework by individual i at time t , is measured by the ENEU

⁵ A Nash bargaining strategy is not necessarily Pareto optimal.

⁶ This method is preferred to a standard cross-sectional analysis since it controls for unobservable heterogeneity among individuals.

survey question: “Approximately how many hours did you spend last week in . . . housework, childcare, eldercare, or care for the ill without being paid?”.⁷

The random effects model has a few drawbacks. First, it requires a strong assumption that the individual-specific error term (u) is uncorrelated with the other regressors. However, since “gender roles”, which are included in the u term, are likely to affect both the dependent variable and other variables in the right hand side (such as hours worked or number of children), the estimates will be biased. Second, the random effects model simply shows a correlation between housework and other variables at one point in time so causality is difficult to establish. To fully take advantage of the time series information in the model and eliminate the missing variables, the data are differenced and estimated by OLS:

$$\begin{aligned}
 (hw_{i(t)} - hw_{i(t-1)}) = & \alpha + \beta_1(H_{i(t)} - H_{i(t-1)}) + \beta_2(LS_{si(t)} - LS_{si(t-1)}) + \beta_3(LS_{i(t)} - LS_{i(t-1)}) + \\
 & \beta_4(ILF_{si(t)} - ILF_{si(t-1)}) + \beta_5(ILF_{i(t)} - ILF_{i(t-1)}) + \\
 & \beta_6(unemp_{(t)} - unemp_{(t-1)}) + \varepsilon_{it} - \varepsilon_{i(t-1)}
 \end{aligned} \tag{3}$$

where ILF_{sit} is the labor force participation status at time t of the spouse of individual i , ILF_{it} is own labor force participation status at time t , and the other variables are defined the same as in the above models. Non-time variant information about demographics and household structure is lost in this specification, but it does show how home and market time allocations adjust together. A similar model that regresses the change of the share of housework on the same right hand side variables is also estimated.

Finally, to control for the inherent endogeneity between home and market time, a simultaneous instrumental variable model is estimated

⁷ “Durante la semana pasada ¿Cuántas horas a la semana aproximadamente. . . [dedicó a] quehaceres de su hogar, atención de niños, ancianos o enfermos, sin pago alguno?”

$$\begin{aligned}
(hw_{i(t)} - hw_{i(t-1)}) &= \alpha_h + \beta_1(H_{i(t)} - H_{i(t-1)}) + \beta_2(LS_{i(t)} - LS_{i(t-1)}) + \beta_3(hw_{si(t)} - hw_{si(t-1)}) \\
&\quad + \varepsilon_{it} - \varepsilon_{i(t-1)} \\
(LS_{i(t)} - LS_{i(t-1)}) &= \alpha_m + \beta_1(C_{i(t)} - C_{i(t-1)}) + \beta_2(hw_{i(t)} - hw_{i(t-1)}) + \beta_3(w_t - w_{(t-1)}) \\
&\quad + \beta_4(unemp_{(t)} - unemp_{(t-1)}) + \varepsilon_{it} - \varepsilon_{i(t-1)} \tag{4}
\end{aligned}$$

where the instruments for labor supply are changes in the unemployment rate (a proxy for labor demand), log real wage (w_t), and children present, C_i , (a proxy for the reservation wage). The other variables are defined as in the above models.

VI. Regression Results

6.1 *Random effects model*

The coefficient estimates from the random effects model are presented in Tables 5 (levels) and 6 (shares). Columns (1), (3), and (5) of each table give the reduced form estimates of the models where the unemployment rate is included but labor supply variables are not included. A higher unemployment rate is correlated with more housework by husbands, less by wives, and the same level by single mothers (Table 5). And, as expected, husband's share of housework increases and wife's decreases as the unemployment rate increases (Table 6). These changes may be due to increased labor supply by wives during business cycle downturns (Cunningham 1998) leading to a decrease in female housework in favor of market work and a substitution of her housework by her husband. However, single mothers' labor supply does not change in response to the business cycle (Cunningham 1998) which may explain why their housework time does not change either.

Columns (2), (4), and (6) include own and spouse labor force participation variables to more directly control for substitution between 1) own market and home time

and 2) own home and spouse's home time. The regression results show that even when controlling for wives' labor supply, husbands still spend more time in housework when the unemployment rate increases. Perhaps they are substituting for housework time of other member's who may enter the labor force in response to an increased risk of job loss in the household. On the other hand, housework time of wives does not change with respect to unemployment rate so their decrease in housework time seen in Column 3 was due to their increased labor supply. However, wives' share still decreases since husbands' level of housework (and share) increases slightly (at the 10% level).

Considering the relationship between housework and market work, husbands, wives, and single mothers who are in the labor force spend less time in housework than those who do not work, closely paralleling the results in Table 3. Wives (single mothers) who are in the labor force spend, on average, fourteen (twelve) fewer hours in homecare while husbands spend 4 fewer hours. Furthermore, women's share of housework decreases by 6% (5% for single mothers) when they are in the labor force. Although men who hold jobs work fewer hours in the household than men without jobs, they contribute a greater share of housework than their non-working counterparts. This may be due to the type of men who are not in the labor force. Non-working men tend to be incapable of work due to illness or age⁸ so they, in a sense, create greater time demands on other household members than do more able-bodied men (who also tend to be in the labor force). Thus, these stay-at-home men may contribute more hours to the household than their non-working counterparts, but they also demand more from it.

⁸ For example, the ENEU shows that 93% of husbands who are age 16-65 are in the labor force. Of those who are of working age but are not working and not in school, nearly 23% are retired, 5% are "ill" or "incapacitated" and 60% say that they are too old to work. This compares to 1.4%, 0.43%, and 3.01% of women. Most women (94%) cite "household responsibilities" as the motivation for not working while 9% of men give this explanation.

When the spouse works, both husbands and wives increase their housework to substitute for the other's housework responsibilities. The increase in women's housework per additional hour spent by her spouse in the labor market is three times the corresponding increase for husbands. However, men's share of total housework increases by more than women's. This is because men's initial levels are lower than women's, so an additional hour of housework for a male is a larger percent change than is a one hour increase by a woman.

Wives work longer hours if additional (non-spouse) household members are present, regardless of the sex or age of the people. Part of this is due to the "nurturing" role since children of any age increase the time that women spend on housework. The largest burden is young children, but even teenaged girls and other adult women do require attention by the mother. However, this additional time may be an "investment" by the mother since an additional daughter above the age of 12 (adult woman) requires an additional 0.23 (0.54) hours of housework per week (Column 4 in Table 5), but her presence leads to a decrease in the share of housework by 12% (23%) (Column 4 in Table 6), i.e. more goods and services are produced in the household, for the wife to enjoy, but she does not produce them herself.

The patterns for single mothers and husbands, both the primary breadwinners in the household, are distinct from wives but similar to each other. First, the presence of teenage daughters age 13-17 reduce the level of housework time of single mothers and the presence of anyone age 13 or older leads to a decrease in the husband's housework time but increases the housework time of wives. The magnitude of the fall is greater for the single mothers than for the men, in particular for teenage daughters where the presence of an additional teenage daughter reduces mother's household time by an hour

but husband's by only half an hour. There does seem to be a gender component to the single mothers' work since most substitution occurs among teenaged daughters in the household but teen girls and boys substitute equally for the husband's lost housework time.

Age cohort and education level of the individual reflect gender roles and associated homecare duties. Older women spend more time in homecare while older men spend less time, both of which clearly reflect the traditional division of labor by gender. However, education seems to modify this attitude since more educated women spend fewer hours in homecare while more educated men spend more time. Perhaps more educated women have more power over decision making since they have a lower threat point, so they can demand more from their (like-educated) husbands. However, the higher education may simply be correlated with more efficient home production skills or with wealth, which allows the woman to hire a domestic help.

6.2 *Differenced OLS Model*

A Breusch-Pagan test shows that a random effects model is a good specification, a Hausmann test suggests that the results may be inconsistent. This may be partly due to an omitted variable problem that encompasses the "gender" issue. In particular, women who have more decision making power (lower threat points) or who are less constrained by gender identity are likely to make different time commitments to the household than do women who feel that they are bound by traditional gender roles. Since a power variable cannot be measured or included in a regression framework, we can use a first difference approach to eliminate those missing variables, including power, that are fixed at the household level.

The results are presented in Tables 7 and 8. First, as in the random effects model, husband's housework is increasing as the unemployment rate increases by larger amounts, but wives' and single mothers' housework is not correlated with changes in the unemployment rate. Second, columns 1, 3, and 5 of Table 7 show that for wives, each additional hour of labor market work is correlated with one half hour less of housework while an additional hour of market work for husbands, on average, is associated with a fall in housework by 1/10 of an hour. The change in single mothers' work load is between that of husbands and wives with a fall of more than 1/3 of an hour of housework for each additional hour she works in the market. Therefore, women do not work a "double shift", on average. Instead, wives work a "shift and a half" and single mothers work "a shift and a tow-thirds". Husbands' total work burden increases the most on the margin, since their work burden almost doubles. However, it should be reiterated that husband's marginal increase is the highest but their total work burden remains far below that of women.

Third, husbands married to women who increase their labor supply do not change their household hours, but wives do increase their housework when their husbands' labor supply increases. This is also reflected in Table 8 as wives' share increases as husbands' labor supply increases but there is not a change in husbands' share when wives' labor supply changes. Thus, the finding in Table 5 that men with working wives spend more time in housework than men without working wives only shows that men who tend to be married to working women also tend to be the type who spend more time in housework. Given that these men do tend to work more in the household, they do not further increase their homecare time when wives' labor supply changes. Wives who have husbands who work both tend to be the type who work more in the household (from Table 5) and they

increase their housework hours even more as the husband increases his labor supply, to substitute for the fall in husbands' housework.

Fourth, teenaged children do not substitute for parent's housework time when parent's labor supply increases, as shown by the interactive terms in Table 7.

Furthermore, other adult females do not substitute for wife's lost housework time. Instead, they only step in to take over the home tasks of husbands and single mothers when these household head work longer hours.

Finally, with respect to total household time inputs to the household, a change in female labor supply does change the total time inputs, but not a change in male time (Table 9). The total amount of housework falls an average of $\frac{1}{2}$ hour for each additional hour worked by the wife but for the husbands, there is not change in total housework if his labor supply changes. Furthermore, total housework falls by 0.4 hours if the single mother works more, closely paralleling the fall in her housework, despite the additional work effort of other adult females in the household. Thus, as the probability of women's labor supply increases during downturns, the total household production falls even though other women in the household increase their work burdens.⁹

6.3 Simultaneous equation Instrumental variable estimation

The final set of estimates attempts to control for the endogeneity of household time allocations where bargaining is likely to determine the final allocations. The results are presented in Table 10 where the first column for each type of household head is the household time use estimation and the second column is the labor supply. Assuming a

⁹ The decrease in the time inputs to the household may not necessarily indicate that consumption of those good and services produced in the household fell since the household may have increased its efficiency in

Cournot “bargaining” game, the exogenous variables (used to instrument) are the (change in) adult women, children, the unemployment rate, and the (log) real wage while the endogenous variables are time allocated in the household and the market. It should be noted that the fit is not very good as all the pseudo- R^2 have values less than 0.

First considering the labor supply estimates, the unemployment rate does not affect husbands or single mother’s labor supply but it has a negative effect on wives. The difference from the findings for wives in Cunningham (1998) may be due to the inclusion of the crisis period in this sample, during which female labor supply tends to be negatively correlated with the unemployment rate¹⁰ or perhaps due to the continuous dependent variable in this estimation whereas Cunningham only considered labor force entry decisions.

Second, an increase in the local real wage is also negatively correlated with the wives’ labor supply but insignificant for husbands and single mothers. This may demonstrate the wealth effect, i.e. as women’s wages increase, they can work fewer hours to meet their earnings needs.

The household time use equation shows that home and market work are complementary for husbands, substitutes for single mothers, and are not correlated for wives. This contradicts the previous section that showed that there was a substitution between home and market work for all three groups. Thus, the last estimates may have overestimated the substitution for husbands and wives.

producing these goods and services or may substitute with market goods. However, a decrease of total household inputs of 12 hours weekly is likely not to be fully compensated by these other means.

¹⁰ The model was also estimated by including a variable that measures the magnitude of a decrease in household income (less own). The estimates show a positive correlation between this variable and wives’ labor supply, so as in Cunningham (1998), wives may respond to actual losses in income differently than expected losses in income. These findings may be biased, though, due to the likely endogeneity in a household variable.

Fourth, the time spent in housework appears to be complementary to the spouse's housework while labor supply is also complementary. Thus, spouses do not seem to substitute for each other but rather simultaneously respond to household demands.

VII. Conclusions

There is not evidence that women work a double shift when the economy gets worse, as proxied by the unemployment rate. Instead, in all specifications, husband's homework increases and wives and single mother's responsibilities remain constant. However, women's and men's housework time allocation does change in response to market work. Depending on the specification, wives reduce their homework load by 50-100% for each marginal hour worked and single mothers reduce their load from 26-40%. Husbands, however, reduce their homework load by 10% or even *increase* their homework when they work longer hours.

Despite the higher marginal housework hours of men, women do work longer total hours in the household although the nurturing role of women is preceded by their role as breadwinners when they are the sole head of households. Our analysis shows that the presence of children significantly increase the number of hours devoted by wives to homecare activities but not father's or single mother's. Teenage children, but mostly teenage girls, contribute long hours of work to the household reducing mother's share of household activities in both couple-headed and single headed households. Other female relatives also reduce the wives/single mother's share of housework. Therefore, we may conclude that household work is the burden of women in all households, and that their total work burdens do increase when economic conditions require them to work, but on the margin, men's work load, and thus their marginal time poverty, increases the most.

In households headed by older men and women this more traditional division of labor is even more pronounced. Education, however, smoothes the frontiers. More educated women, work fewer hours in the household and manage to make their equally educated husbands to contribute longer hours of labor to the household.

Although other females in the household do take over some of the work burden of the household heads and spouses, they are not perfect substitutes. Husbands, wives, and single mothers whose labor supply increases do not have lower homework burden if there are teenaged children in the household. However, other adult females do take up the omitted tasks when the household head (or spouse) works longer hours in the market. Thus, home tasks seem substitutable within, but not across, generation, regardless of gender.

However, the additional contribution of other adult women does not perfectly substitute for the head's lower time inputs since the total amount of housework inputs falls by 50% (40%) for each additional hour worked by the wife (single mother). Thus, the household "pays" when the head female's labor supply increases. If we assume that household inputs are relatively proportional to outputs, we can conclude that total household outcome also falls, so the household consumes fewer home produced (and possibly total) goods and services.

To conclude, when economic conditions require greater labor supply of household head, women, who are already time poor, become even poorer while men's time poverty increases at a faster rate. Furthermore, total household output decreases. Both of these lead to less happy and healthy homes, shedding light on the consequences of economic instability and non-monetary poverty. To address these issues, policies would need to provide goods and services to increase the efficiency of home production, taking into

consideration that households can only partially use their own (adult time) resources to cope with greater earnings demands.

VII. Tables

Table 1: Weekly Housework Time by Household Type

| | Mean hours | Mean hours per capita | Sample size |
|-----------------------------|------------------|--------------------------|----------------|
| Couple headed | 59.53 (24.52) | 13.57 (6.92) | 19659 |
| Single mother headed | 52.34 (32.47) | 17.39 (9.72) | 4089 |
| Single male headed | 33.96 (33.96) | 13.56 (8.55) | 1469 |

Table 2: Mean hours by position in the household and household type
(standard errors in parentheses, sample size in brackets)

| | Couple Headed | | Single mother | | Single male | |
|-------------------------|----------------------------|----------------------------|---------------------------|---------------------------|----------------------------|---------------------------|
| Head male | 5.59 (8.43) [18302] | 5.78 (8.9) [1367] | --- | --- | 10.93 (10.51) [1056] | 9.43 (5.65) [413] |
| Head Female | 44.6 (16.53) [16172] | 15.1 (16.52) [1232] | 32.7 (16.5) [3354] | 29.98 (17.76) [747] | --- | --- |
| Teenage son | 5.73 (7.38) [5478] | 5.03 (7.23) [381] | 7.2 (9.57) [642] | 6.42 (7.9) [85] | 7.77 (8.48) [106] | 7.64 (6.73) [15] |
| Teenage daughter | 14.03 (11.25) [5182] | 15.4 (11.97) [341] | 15.43 (11.82) [597] | 12.4 (10.2) [58] | 16.1 (12.4) [85] | 16.8 (21.75) [12] |
| Other male | 5.27 (7.39) [621] | 4.92 (7.24) [359] | 6.42 (9.73) [354] | 4.54 (6.81) [221] | 9.2 (9.63) [123] | 6.73 (5.11) [199] |
| Other female | --- | 28.69 (18.27) [1575] | --- | 25.61 (17.94) [919] | --- | 31.47 (31.64) [600] |

¹ hours do not sum to those in Table 1 due to differences in household composition. For example, not all households have daughters. But, in those that do, they perform, on average 14 hours of homework weekly.

Table 3: Mean hours by position in the household, household type, and head female's work status
(standard errors in parentheses, sample size in brackets)¹

| | Working women | | Non-working women | |
|------------------|----------------------------|----------------------------|-----------------------------|----------------------------|
| | Wives | Single mothers | Wives | Single mothers |
| Head male | 6.14 (8.9) [4607] | --- | 5.45 (8.33) [15062] | --- |
| Head female | 32.76 (32.76) [4607] | 25.81 (14.09) [1915] | 48.91 (14.81) [12797] | 37.82 (16.94) [2187] |
| Teenage son | 6.2 (7.4) [1475] | 8.0 (10.16) [483] | 5.52 (7.34) [43884] | 5.35 (7.36) [244] |
| Teenage daughter | 14.33 (11.73) [1401] | 15.59 (12.16) [447] | 14.04 (11.15) [4122] | 14.23 (10.66) [208] |
| Other male | 5.97 (7.63) [174] | 5.87 (8.39) [240] | 4.96 (7.26) [806] | 5.54 (9.02) [337] |
| Other female | 29.57 (18.26) [362] | 27.95 (17.99) [440] | 28.44 (18.27) [1213] | 23.5 (17.65) [486] |

Table 4: Change in mean hours by position in the household and household type when the head female changes her labor force participation status

| | Not working -> working | | Working -> not working | |
|------------------|----------------------------------|----------------------------|----------------------------------|--------------------------|
| | Wife | Single female | Wife | Single female |
| Head Male | 0.54 (9.84) [1160] | --- | -0.44 (10.02) [1338] | --- |
| Head Female | -12.35 (19.83) [1160] | -10.36 (20.47) [233] | 10.04 (20.49) [1338] | 6.92 (20.07) [323] |
| Teenage son | 0.56 (11.76) [383] | -0.95 (6.44) [59] | 1.91 (9.83) [430] | -0.47 (10.15) [63] |
| Teenage daughter | 4.47 (15.24) [382] | 0.43 (13.84) [47] | -2.07 (11.8) [390] | 3.12 (15.15) [47] |
| Other male | -0.67 (21.07) [34] | 1.43 (8.75) [23] | 1.86 (10.62) [95] | -2.53 (10.73) [30] |
| Other female | 4.88 (8.95) [84] | 0.89 (16.38) [54] | -0.63 (17.8) [43] | -1.5 (18.59) [88] |

Table 5: Random Effects Estimates– heads and spouses
Dependent variable: total time in housework (adults)

| | Husbands | | Wives | | Single Mothers | |
|--|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| <i>Labor Market Participation</i> | | | | | | |
| Unemployment rate | 0.36* (0.025) | 0.34* (0.025) | -0.15* (0.049) | -0.03 (0.042) | -0.15 (0.11) | -0.099 (0.1) |
| Spouse's hours of market work | --- | 0.016* (0.002) | --- | 0.03* (0.0024) | --- | --- |
| Own working condition | --- | -3.58* (0.087) | --- | -14.29* (0.12) | --- | -11.6* (0.28) |
| <i>Household Structure</i> | | | | | | |
| Children age 1-5 | 0.094 (0.063) | 0.11 (0.061) | 1.63* (0.12) | 1.27* (0.11) | 2.13* (0.52) | 2.17* (0.48) |
| Children age 6-12 | -0.24* (0.049) | -0.22* (0.048) | 0.59* (0.099) | 0.51* (0.083) | 0.66 (0.37) | 0.89* (0.33) |
| Daughters age 13-17 | -0.55* (0.071) | -0.52* (0.069) | 0.038 (0.14) | 0.23* (0.12) | -1.25* (0.41) | -0.66 (0.37) |
| Sons age 13-17 | -0.59* (0.07) | -0.54* (0.068) | 0.38* (0.14) | 0.48* (0.12) | -0.11 (0.4) | 0.27 (0.36) |
| Adult women | -0.053* (0.098) | -0.5* (0.095) | 0.85* (0.19) | 0.54* (0.16) | 0.26 (0.37) | -0.27 (0.33) |
| <i>Personal Characteristics</i> | | | | | | |
| No education | -0.95* (0.18) | -0.84* (0.17) | -0.3 (0.32) | -0.19 (0.26) | -0.016 (0.59) | 0.7 (0.52) |
| Incomplete primary | -0.2 (0.12) | -0.21 (0.12) | 0.1 (0.23) | 0.077 (0.19) | 0.78 (0.51) | 0.82 (0.45) |
| Incomplete secondary | 0.41* (0.12) | 0.45* (0.12) | -1.04* (0.23) | -0.59* (0.19) | -2.38* (0.61) | -1.72* (0.54) |
| Complete secondary | 0.47* (0.14) | 0.54* (0.13) | -4.43* (0.24) | -2.46* (0.2) | -3.68* (0.65) | -2.57* (0.57) |
| University complete or inc. | 0.45* (0.12) | 0.51* (0.12) | -9.38* (0.32) | -5.36* (0.26) | -9.09* (0.81) | -7.13* (0.72) |
| Age | -0.14* (0.019) | -0.078* (0.18) | 0.42* (0.04) | 0.64* (0.033) | 1.16* (0.067) | 1.15* (0.06) |
| Age squared | 0.0019* (0.00019) | 0.00086* (0.00019) | -0.0054* (0.00043) | -0.0081* (0.00036) | -0.011* (0.0006) | -0.012* (0.00054) |
| Constant | 6.69* (0.47) | 8.97* (0.46) | 37.51* (0.91) | 34.95* (0.76) | 5.95* (1.89) | 14.76* (1.72) |
| n | 94433 | 94433 | 96503 | 96503 | 20567 | 20567 |
| Wald chi2 (15) | 944.27 | 944.27 | 1836 | 16067 | 625.67 | 2544 |
| R2 (within) | 0.0001 | 0.0093 | 0.000 | 0.0546 | 0.000 | 0.022 |
| R2 (between) | 0.0495 | 0.104 | 0.0882 | 0.388 | 0.11 | 0.54 |
| R2 (overall) | 0.0198 | 0.046 | 0.0427 | 0.21 | 0.075 | 0.46 |

* significantly different than 0 at the 5% level

Table 6: Random Effects
 Dependent variable: share of total housework time

| | Husbands | | Wives | | Single mothers | |
|---|-----------|-----------|-----------|-----------|----------------|-----------|
| <i>Labor Force Participation</i> | | | | | | |
| Unemployment Rate | 0.14* | 0.12 | -0.49* | -0.44* | 0.11 | 0.12 |
| | (0.062) | (0.062) | (0.057) | (0.056) | (0.14) | (0.14) |
| Spouse's hours of market work | --- | 0.039* | --- | 0.024* | --- | --- |
| | | (0.0039) | | (0.003) | | |
| Own working condition | --- | -3.92* | --- | -6.31* | --- | -5.33* |
| | | (0.15) | | (0.15) | | (0.36) |
| <i>Household Structure</i> | | | | | | |
| Children age 1-5 | -0.5* | -0.49* | 0.65* | 0.47* | 2.26* | 2.21* |
| | (0.18) | (0.18) | (0.15) | (0.14) | (0.71) | (0.69) |
| Children age 6-12 | -0.96* | -0.95* | 0.54* | 0.5* | 0.33 | 0.43 |
| | (0.16) | (0.16) | (0.12) | (0.17) | (0.52) | (0.51) |
| Daughters age 13-17 | -4.74* | -4.69* | -12.79* | -12.71* | -18.31* | -18.09* |
| | (0.23) | (0.23) | (0.17) | (0.17) | (0.59) | (0.58) |
| Sons age 13-17 | -3.35* | -3.32* | -4.84* | -4.84* | -7.65* | -7.54* |
| | (0.22) | (0.22) | (0.17) | (0.16) | (0.56) | (0.55) |
| Adult women | -6.94* | -6.91* | -23.16* | -23.39* | -34.68* | -35.11* |
| | (0.33) | (0.32) | (0.24) | (0.23) | (0.54) | (0.53) |
| <i>Personal Characteristics</i> | | | | | | |
| Incomplete primary | 0.071 | 0.059 | -0.64* | -0.63* | 0.1 | 0.14 |
| | (0.49) | (0.48) | (0.28) | (0.27) | (0.77) | (0.75) |
| Incomplete secondary | 1.53* | 1.56* | 0.94* | 1.16* | 1.14 | 1.45 |
| | (0.49) | (0.48) | (0.29) | (0.28) | (0.91) | (0.89) |
| Complete secondary | 2.05* | 2.07* | 0.17 | 1.04* | 2.23* | 2.76* |
| | (0.55) | (0.55) | (0.3) | (0.29) | (0.98) | (0.96) |
| University complete or incomplete | 4.96* | 4.95* | -1.06* | 0.73 | -0.58 | 0.32 |
| | (0.5) | (0.49) | (0.39) | (0.38) | (1.22) | (1.2) |
| Age | -0.62* | -0.55* | 0.033 | 0.13* | 0.93* | 0.92* |
| | (0.074) | (0.074) | (0.049) | (0.048) | (0.098) | (0.097) |
| Age squared | 0.0066* | 0.0055* | -0.0022* | -0.0033* | -0.0081* | -0.0087* |
| | (0.00075) | (0.00075) | (0.00053) | (0.00052) | (0.0009) | (0.00089) |
| Constant | 30.19* | 32.62* | 91.01* | 89.46* | 63.88* | 68.1* |
| | (1.79) | (1.78) | (1.11) | (1.09) | (2.76) | (2.73) |
| n | 89961 | 89961 | 96050 | 96050 | 20122 | 20122 |
| Wald chi2 (15) | 1552.7 | 2303.62 | 21626.05 | 24637.8 | 5312.48 | 5709.88 |
| R2 (within) | 0.0002 | 0.0083 | 0.002 | 0.011 | 0.016 | 0.022 |
| R2 (between) | 0.089 | 0.089 | 0.53 | 0.55 | 0.53 | 0.54 |
| R2 (overall) | 0.062 | 0.067 | 0.38 | 0.39 | 0.44 | 0.46 |

* significantly different than 0 at the 5% level

Table 7: First difference coefficient estimates (standard errors in parentheses) – heads
 Dependent variable: own time in housework

| | <i>Husbands</i> | | <i>Wives</i> | | <i>Single Mothers</i> | |
|-----------------------------------|-----------------|----------|--------------|----------|-----------------------|--------|
| Unemployment rate | 0.15* | 0.16* | 0.027 | 0.079 | 0.023 | 0.045 |
| | (0.064) | (0.065) | (0.11) | (0.12) | (0.15) | (0.15) |
| Own labor supply | | | | | | |
| Hours of market work | -0.097* | --- | -0.56* | --- | -0.39* | --- |
| | (0.0047) | | (0.014) | | (0.017) | |
| Hours of market work ² | 0.00061* | --- | 0.0034* | --- | 0.003* | --- |
| | (0.000059) | | (0.00024) | | (0.00027) | |
| Hours*teen daughter | 0.00071 | --- | -0.013 | --- | -0.01 | --- |
| | (0.0022) | | (0.0085) | | (0.0098) | |
| Hours*teen son | -0.0044* | --- | 0.00044 | --- | -0.0022 | --- |
| | (0.0022) | | (0.0082) | | (0.0096) | |
| Hours*adult female | -0.0048* | --- | -0.015 | --- | -0.017* | --- |
| | (0.0021) | | (0.0084) | | (0.0074) | |
| Own labor force entry | --- | -3.19* | --- | -8.34* | --- | -3.91* |
| | | (0.19) | | (0.61) | | (0.36) |
| Entry*teen girl | --- | 0.26 | --- | 0.0037 | --- | 0.18 |
| | | (0.24) | | (0.79) | | (0.44) |
| Entry*teen boy | --- | -0.35 | --- | 1.11 | --- | -0.039 |
| | | (0.24) | | (0.79) | | (0.43) |
| Entry*adult female | --- | -0.73* | --- | -0.39 | --- | -1.72* |
| | | (0.31) | | (1.1) | | (0.48) |
| Own labor force exit | --- | 3.04* | --- | 5.96* | --- | -7.91* |
| | | (0.19) | | (0.27) | | (3.02) |
| Exit*teen girl | --- | -0.27 | --- | 0.062 | --- | 7.97 |
| | | (0.25) | | (0.26) | | (7.47) |
| Exit*teen boy | --- | -0.27 | --- | -0.18 | --- | -0.52 |
| | | (0.25) | | (0.24) | | (6.34) |
| Exit*adult female | --- | 0.57 | --- | -0.031 | --- | 9.16* |
| | | (0.3) | | (0.34) | | (4.25) |
| Spouse's labor supply | | | | | | |
| Spouse's labor force entry | -0.21 | --- | 1.25* | --- | --- | --- |
| | (0.3) | | (0.25) | | | |
| Spouse's labor force exit | 0.075 | --- | -2.2* | --- | --- | --- |
| | (0.14) | | (0.25) | | | |
| Spouse's hours of market work | --- | 0.0066* | --- | 0.074* | --- | --- |
| | | (0.0032) | | (0.0033) | | |
| Household | | | | | | |
| Children | -0.17* | -0.19* | 1.33* | 1.37* | 1.31* | 0.49* |
| | (0.056) | (0.056) | (0.092) | (0.099) | (0.2) | (0.2) |
| Adult women | -0.13 | -0.17 | 0.91* | 1.36* | -0.14 | 0.39 |
| | (0.12) | (0.12) | (0.19) | (0.21) | (0.28) | (0.29) |
| N | 37260 | 37260 | 34727 | 34727 | 19177 | 19177 |
| F | 141.25 | 105.94 | 586.6 | 113.4 | 168.88 | 21.72 |

| | | | | | | |
|-------------------------|-------|------|------|-------|-------|-------|
| Adjusted R ² | 0.036 | 0.03 | 0.14 | 0.037 | 0.066 | 0.012 |
|-------------------------|-------|------|------|-------|-------|-------|

* Significant at the 5% level

Table 8: First differences estimates (standard errors in parentheses) - heads
 Dependent variable: share of housework

| | Husbands | | Wives | | Single Mothers | |
|-----------------------------------|-----------------|---------|--------------|---------|-----------------------|---------|
| Own labor supply | | | | | | |
| Hours of market work | --- | -.13* | --- | -.262* | --- | -.85* |
| | | (.009) | | (.0168) | | (.18) |
| Hours of market work ² | --- | .0007* | --- | .0019* | --- | .01 |
| | | (.0001) | | (.0003) | | (.0034) |
| Own labor market entry | -4.5* | ---- | -5.16* | --- | -9.00 | --- |
| | (0.29) | | (0.57) | | (4.46) | |
| Own labor force exit | 3.82* | --- | 2.24* | --- | -2.10 | --- |
| | (0.29) | | (0.28) | | (3.74) | |
| Spouse's labor supply | | | | | | |
| Spouse labor force entry | ---- | .53 | --- | 1.59* | --- | --- |
| | | (0.58) | | (.313) | | |
| Spouse labor force exit | ---- | -.13 | --- | -2.35* | --- | --- |
| | | (0.26) | | (.312) | | |
| Spouse hours | 0.004 | --- | .0623* | --- | --- | --- |
| | (.006) | | (.004) | | | |
| Household | | | | | | |
| Children | -1.97* | -1.95* | -2.6* | -2.6* | .35 | 1.08 |
| | (0.108) | (.108) | (0.11) | (.113) | (.95) | (.86) |
| Adult women | -5.2* | -5.245* | -17.54* | -17.77* | 1.13 | -.62 |
| | (0.22) | (.22) | (0.23) | (.2315) | (1.86) | (1.68) |
| n | 34642 | 34642 | 34340 | 34340 | 269 | 269 |
| F | 267.01 | 235.52 | 1206.02 | 1096.00 | 1.12 | 13.36 |
| Adjusted R ² | 0.0037 | .039 | 0.15 | .16 | .0017 | .16 |

* significantly different than 0 at the 5% level

Table 9: Total housework

| | Couple-Headed | Single-Headed |
|---|-----------------------------------|----------------------|
| Wife's labor market hours | -0.50* (0.016) | -0.40* (.024) |
| Wife's labor market hours ² | 0.0031* (0.00029) | 0.003* .0004 |
| Husband's labor market hours | -0.0016 (0.011) | --- |
| Husband's labor market hours ² | 7.9x10 ⁻⁵ (0.00016) | --- |
| Children | 4.62* (0.12) | 6.72* (.29) |
| Adult women | 22.00* (0.24) | 22.04* (.409) |
| Constant | 0.043 (0.10) | 0.0008 (.205) |
| N | 89384 | 20566 |
| F-value | 2143.93* | 949.35* |
| Adjusted R ² | 0.044 | 0.16 |

* significant at the 5% level.

Table 10: Simultaneous equation

Dependent variables: hours worked in the home and worked in the market

| Dependent variable | <i>Husband</i> | | <i>Wife</i> | | <i>Single Mother</i> | |
|----------------------------|----------------|-----------------|---------------|-----------------|----------------------|-----------------|
| | Hours in home | Hours in market | Hours in home | Hours in market | Hours in home | Hours in market |
| Own hours: labor market | 0.11* | --- | 0.082 | --- | -0.26 | --- |
| | (0.032) | | (0.078) | | (0.42) | |
| Change in # adult women | -0.31* | --- | 0.41 | --- | 0.56 | --- |
| | (0.063) | | (0.31) | | (1.04) | |
| Change in # children | -0.61* | 3.95* | 2.07* | 0.47* | -4.72* | -9.36* |
| | (0.11) | (0.16) | (0.17) | (0.18) | (0.21) | (3.03) |
| Own hours: housework | --- | 3.15* | --- | 0.047 | --- | -1.99* |
| | | (0.21) | | (0.059) | | (0.62) |
| Spouse hours: housework | 0.021* | --- | 0.091* | --- | --- | --- |
| | (0.0034) | | (0.0067) | | | |
| Spouse hours: labor market | --- | 0.048* | --- | 0.039 | --- | --- |
| | | (0.0089) | | (0.0026) | | |
| Unemployment rate change | --- | 0.028 | --- | -0.16* | --- | -0.22 |
| | | (0.06) | | (0.06) | | (0.41) |
| Change in log(real wage) | --- | 0.34 | --- | -2.25* | --- | -0.9 |
| | | (0.44) | | (0.45) | | (1.77) |
| constant | 0.032 | 1.054* | 0.51* | 0.06 | 6.13* | 13.02* |
| | (0.069) | (0.15) | (0.064) | (0.059) | (0.71) | (3.53) |
| N | 87464 | 87464 | 89385 | 89385 | 19178 | 19178 |
| χ^2 | 366.74* | 810.21* | 343.84* | 273.69* | 614.65* | 13.58* |
| "R-squared" | -0.096 | -2.14 | -0.034 | -0.031 | 0.013 | -4.33 |

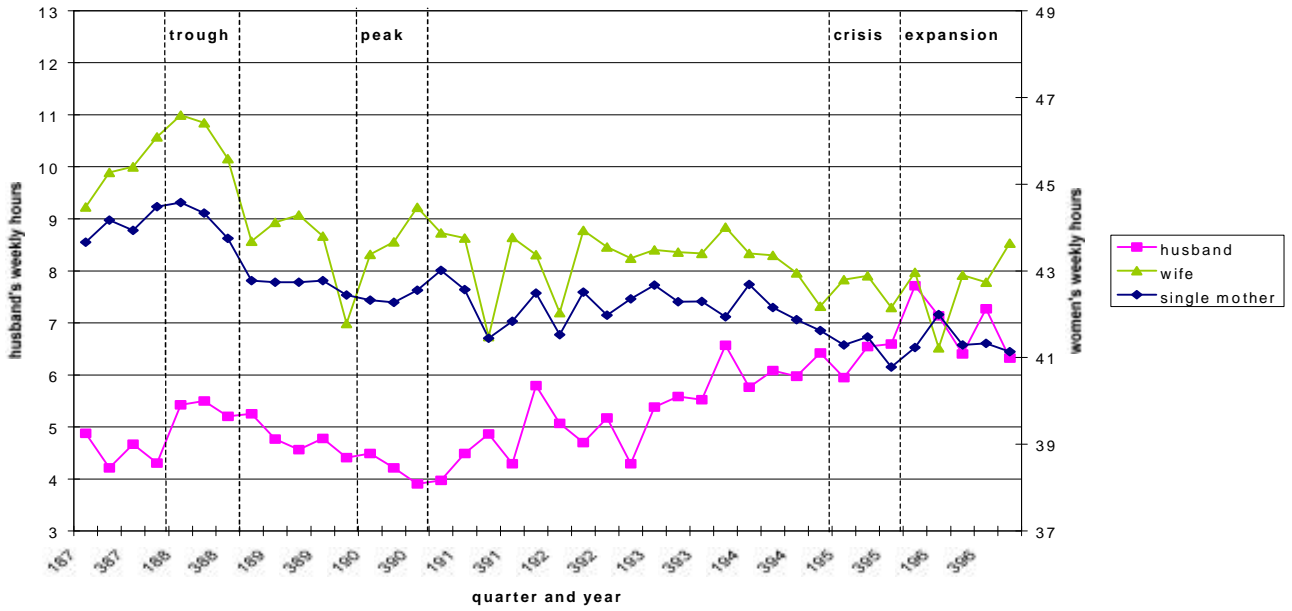
* statistically significant at the 5% level

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Graphs for the household time use paper.

Graph1: Time spent in housework



Graph2: Time spent in all (market + home) work

