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*Surian sa mga Pag-aaral Pangkaunlaran ng Pilipinas*

## Wages, Housework, and Attitudes in the Philippines

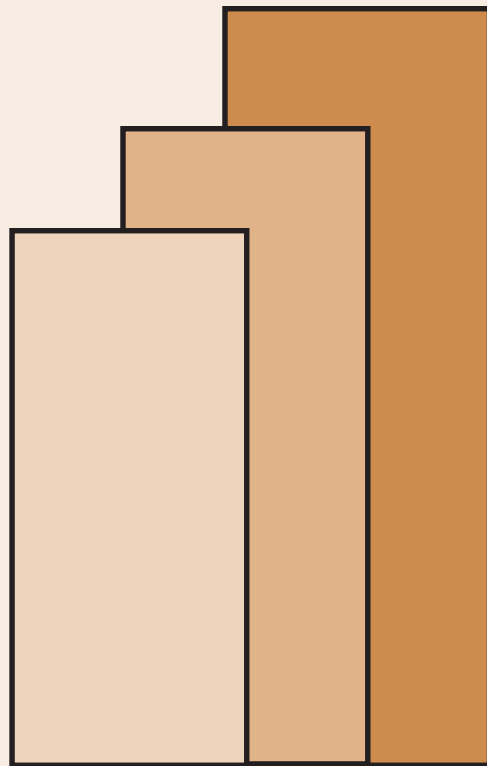
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Wages, housework and attitudes in the Philippines  
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This paper is one of the few studies that systematically analyze housework in the Philippines. It seeks to understand how wage and attitudes to work and family life affect the time devoted to housework. Based on different specifications and estimators, our findings indicate that the respondent's own wage is not a significant predictor of his or her housework hours but it is a significant predictor of the spouse's time devoted to non-market production. We find that the husband's housework hours are positively affected by the female respondent's wage while the wife's housework hours are negatively affected by the male respondent's wage. We turn to the Philippine context to explain these results and find the combination of egalitarian society and gender inequality in the labor market as plausible explanations. Results also show that both wage and attitudes have direct effects on the wife's housework time but that some of the effects of wage are mediated by the respondent's attitudes towards gender roles.

Keywords: Housework, Wage, Specialization, Instrumental Variable Technique, Philippines

JEL code: D13, J22

## I. Introduction

Time use studies indicate that people allocate significant amount of time to housework. This raises several important issues based on economic and sociological perspectives. First, despite the increasing trend in women's labor force participation, some evidence show that women still perform a significant chunk of housework even when they earn more than their spouses (Hersch and Stratton, 1994). This issue is aptly referred to as 'second shift' or overburden in sociology research and 'time poverty' in researches that attempt to render poverty more multidimensional. Second, housework and other services performed for household's own consumption are not included in the System of National Accounts computation. In most settings, long-standing roles ascribed to gender greatly contribute to how society value specialization (Cagatay, 1998). Age-old norms and traditions ascribe roles to men and women: women nurture and their comparative advantage is in domestic work and child care while men provide and their place is in the labor market. Women's contribution to society is therefore undervalued, if not invisible, and in some settings where relative resources affect household bargaining outcomes, a correct valuation of home-based production might shape more favorable environments for women.

Our research on housework is relevant in several ways. *First*, while the research topic is substantially researched on, there is still no study that systematically analyzes the determinants of housework hours in the Philippine context. *Second*, the bulk of the research on housework is cast within the framework of human capital accumulation. As such, most studies only deal with how housework influences wages. However, inspired by the work of Akerlof and Kranton's (2000) on identity economics, recent literature has emphasized the importance of attitudes in various labor market outcomes. In this literature, the division of household labor is shaped by age old norms/traditions. This is in contrast with Becker's theory, which establishes that specialization is associated with comparative advantages shaped by economic returns.

Our research aims to put these two important strands together to analyze housework in the Philippines. Doing so expands the determinants of housework hours, which makes the analysis of housework richer. We also note the similarities and differences of our research with other studies. Most studies analyze the direct effects of attitudes on the time spent on housework. Although in recent years, attitudes to work, parental responsibilities, and gender roles are used as instruments for time use in labor and non-labor production, our paper follows the former strand but we establish that attitudes towards gender roles at home and at work are mediating channels of wage. Instead of using attitudes as instruments, we follow the wage literature and use the mother's labor market participation history as an instrument for the respondent's wage. The use of mother's labor market participation history as an instrument for wage is inspired by the literature that sought to estimate the effect of maternal employment on the future labor market outcomes of children (see for example, Stafford, 1987; Ruhm, 2002).

We find that the respondent's wage is not a significant predictor of the respondent's housework hours, a result that is consistent with Kalenkoski, Ribar and Stratton (2009) among others. However, we find that the wife's housework hours are negatively affected by the male respondent's wage, a result that is not in line with specialization theory. Results also indicate that the husband's housework hours are positively affected by the respondent's wage. To explain these opposite results, we turn to the Philippine context and find the combination of egalitarian society and gender inequality in the labor market as plausible explanations. Results also indicate that attitudes consistently determine the way respondents and spouses allocate time in domestic production. Both wage and attitudes have direct effects on the wife's housework time but that some of the effects of wage are mediated by the respondent's attitudes towards sharing of household burden and the respondent's belief on the effect of working mothers in family life.

The paper is organized as follows: Section II reviews literature related to the present research. Section III discusses the data source and sample selection. Section IV discusses the empirical issues and strategy and section V discusses the results. Section VI concludes.

## II. Related Literature

Most of the research that tackle housework and wages uses Becker's theory of the family (1991), which emphasizes the role of specialization in the division of domestic labor. This specialization recognizes the comparative advantage of spouses in market and home production. In this context, the spouse with the higher income will focus on market production while the other spouse will allocate more time to non-market work in order to maximize household utility. The implications of Becker's theory (1991) have been tested in various settings but the bulk of the literature focuses on the wage-related advantages of marriage especially to men. Consistent with Becker, the explanation for male wage premium is often cast within the context of efficiency. Marriage either increases the time available for investment in market-specific human capital or the spouse contributes directly to a man's human capital (Bardasi and Taylor, 2008). While the male wage premium has been well-documented in Korenman and Neumark (1991) and Hersch and Stratton (2000) among others, Gray (1997) and Bardasi and Taylor (2008) find that it has continued to persist but has declined over time and some attribute it to selection (Nakosteen and Zimmer, 1987) or to individual-specific fixed effects (Korenman and Neumark, 1991). For studies directly related to housework, gender appears to be its main predictor (see for example, Coltrane, 1989). Other research focuses on one's involvement in market production and how this involvement can influence the allocation of time (see for example Cunningham, 2007).

A literature closely related with the study of housework analyzes the role of attitudes on labor market outcomes. This has been inspired by the work of Akerlof and Kranton's (2000) on identity economics. In their work, Akerlof and Kranton (2000) define gender identity as one's sense of belongingness to a social category, which prescribes behavioral norms. For example, *man* and *woman*, when interpreted as social categories are associated with the prescription that 'men work while women do housework'. Focusing on the social prescription that 'men are breadwinners and women are homemakers', Fortin (2005) finds that attitudes to gender roles are associated with women's low labor force participation and with large gender gap in income in OECD countries. Fortin (2009) provides

similar conclusion in the US. Focusing on the prescription that ‘a man should earn more than his wife’, Bertrand, Pan and Kamenica (2013) find that the wife is less likely to participate in the labor force when the wife’s potential income exceeds her husband’s actual income. Identity economics is akin to West and Zimmerman (1987) ‘doing gender’ theory that emphasizes the affirmation of traditional gender roles of males as providers and females as homemakers. Accordingly, nonconformity to these roles leads to compensation through under- or over-performance of the household chores. Brines (1994), for example, finds that while economically dependent wives conform to the efficiency and specialization hypotheses, husbands who are economically dependent perform less housework. Greenstein (2000) later concludes that economically dependent spouses carry out less housework and breadwinner wives perform more domestic chores. While these studies analyze the effects of attitudes on labor market outcomes, its effect on non-market outcomes, such as the time devoted to housework, can also be investigated. Presumably, time is allocated into market and non market activities.

Our research aims to expand the analysis of housework in the Philippines by including both wage and attitudes as determinants. We do so by recognizing and addressing the possible causality problem related to housework and wage. This causality problem may arise because the time devoted to housework can affect how much a person earns. For example, some women choose to work part-time or in flexible jobs to accommodate child care. Alternatively, high wages may encourage more time devoted to the labor market and less time doing housework. Within this context, our research is related to Bardasi and Taylor (2008) who argue that the observed male wage premium may be due to the selection of women who adjust their domestic production corresponding to their marriage to high- or low-wage men. To address this concern, Bardasi and Taylor (2008) use the women’s response to questions that reflect their attitudes towards work, parental responsibilities and gender roles as instruments for their working hours and the number of chores she is responsible for. Results indicate that not only male wage premium still exists but it depends on the wife’s time allocated in both market and home production as well.

Endogeneity bias can be an issue as well. This can happen when wage is correlated with unobservable characteristics that determine housework hours. Take for example, laziness, an attribute that is not measured in most survey data. If laziness lowers the time devoted to housework and this also lowers the returns to labor market participation, then there is a positive bias when OLS is used in estimating housework hours with wage as a determinant. To address these possible biases, our research uses the maternal employment history and work-related attributes to instrument for wage. This closely follows Cunningham (2007) who has analyzed the effect of women's employment history on the gendered division of household labor. The use of mother's labor market participation history as an instrument for wage is inspired by the literature that documents the effect of maternal employment on the future labor market outcomes of children (see for example, Stafford, 1987; Ruhm, 2002).

### III. Data source and selection of samples

This research uses the International Social Survey Program (ISSP) 2002 module on Family and Changing Gender Roles collected by the ISSP Research Group. The ISSP is a collaboration among the ISSP member countries that aim to conduct annual surveys on social science topics. The ISSP covers countries mostly from Europe and it covers Japan, the Philippines, and Taiwan in Asia. While it is ideal to undertake cross-country comparisons among these Asian countries, our research limits the coverage to the Philippines because it is only for this country that sample weights<sup>1</sup> data are available. The use of weights ensures that the figures/estimates are representative at the national level.

Data for the Philippines are collected using a stratified multistage clustered random sampling<sup>2</sup> by the Social Weather Stations in Quezon City through face-to-face interviews on voting-age adults (18 years old and above) in four study areas, namely, the National Capital Region, Luzon, Visayas and

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<sup>1</sup> ISSP 2002 computed the weights by dividing the projected population by the sample size,  $weight_i = \frac{population_i}{sample\ size_i}$  where  $i$  is the sampling area.

<sup>2</sup> For further details, see <http://www.issp.org>.

Mindanao. The sample size of each study areas are 300. The original Philippine samples consist of 600 male and 600 female respondents or around 46474 when weighted to get the corresponding population size. Each respondent provides information on the time devoted to housework and the work status of both the respondent and the spouse. From this information, the following sample selection criteria are applied. Based on the labor market hours of both the respondent and the spouse, only those with positive labor market hours are included. This leaves us with 309 samples, 49 percent of which are male and 51 percent are female. Samples excluded are helping family members, unemployed, students, retired, full time in the household or sick/disabled. There are also 4 respondents and 6 spouses in the data who reported to be a helping family member. These samples are also removed since their housework hours are likely to be outliers. This leaves us with 299 observations for the final sample, 48 percent of which are male and 52 percent are female. Using the sample weights, the population size based on the remaining samples is 11303. These selection criteria aim to address the possible bias in the estimates that the substantial heterogeneity in the full sample is likely to introduce.<sup>3</sup> While sample selection bias can also be an issue, it is easier corrected than the bias introduced by unobserved heterogeneity.<sup>4</sup> Finally, we note that the use of weights on these selected samples ensures the representativeness of the figures for the working population.

To look into the implications of the sample selection, comparison of some statistics using the full ISSP sample and the sample selected for the current research is provided in table 1. The mean hours spent on housework and market work by both respondents and their spouses do not substantially differ in both samples. However, male (female) respondents in the research sample earn higher (lower) wage. Male respondents are also older while female respondents are slightly younger in the research sample than in

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<sup>3</sup> Heterogeneity in the time spent on housework occurs since the samples have different modes of labor market participation. The time devoted to housework of working people is substantially different from those of the unemployed and this difference can be driven by some attributes systematic to the employed and the unemployed. For example, working people may care more about the psychological benefits (i.e. sense of fulfillment, sense of importance) of their contribution to the household's economic well-being. These psychological benefits may be of less importance to students or to the retired members of the society.

<sup>4</sup> Unobserved heterogeneity can be mitigated by the use of panel data and by controlling for fixed effects.



the full sample. While respondents have higher family income in the research sample, the number of children less than 6 years old is almost the same in both samples.

For variables with categorical values, table 1 shows the number of observations for each category as a percentage of the total observations. Looking at the categories for the respondents' attitudes towards work and housework, figures indicate that the percentages do not substantially differ between the full ISSP and the ISSP research sample. The research sample has higher percentages of full-time and part-time workers, a consequence of limiting the sample to these two categories. In the full ISSP sample, more respondents/spouses have completed higher secondary education or have education that is above higher secondary. More respondents worked full-time among those who worked before they had children and among those who worked when their children were still under school age. In addition, more respondents are not union members, do not have supervisory function in their workplace, and have mothers who did not work when the respondents were under school age. These patterns are also observed in the research sample. This mitigates the issue of the non-representativeness due to sample selection.

Housework data are the average hours per week spent on household work by both the respondent and the spouse as reported by the respondent when asked by the following question:

*On average, how many hours a week do you personally spend on household work, not including childcare and leisure time activities?*

*And what about your spouse/partner? On average, how many hours a week does she/he personally spend on household work, not including childcare and leisure time activities?*

There are also questions that elicit information on the respondent's attitudes towards gender roles on work and housework. Attitudinal questions include the following. Do you agree or disagree?

1. *Men ought to do a larger share of childcare than they do now?*
2. *All in all, family life suffers when the woman has a full-time job?*
3. *Both the man and woman should contribute to the household income?*

The questions are answered using a five-point scale with 1 as strongly agree and 5 as strongly disagree. The dataset, however, has no information on the gender attitude, wage, and age of the spouse.

The respondent's wage is the monthly average income, which includes salary, bonus, overtime payment, business, or private income. For clarity, male/female respondents will be used to refer to the respondents while wives/husbands will be used to refer to the spouses.

The survey means of some relevant variables used in the research are provided in table 1 (research sample column). It can be seen that the time devoted to non-market production by the female respondents and wives are higher while the time devoted to market activities are roughly the same for both gender. Male respondents earn higher wages than the female respondents while female respondents have higher under school age children. Majority of the respondents works full-time and have completed higher secondary or above higher secondary. Looking at the attitudes towards gender roles at work and at home, more female respondents disagree that men should do a larger share of childcare, disagree that family life suffers when women work and strongly agree that both husband and wife should contribute to household income. The same patterns can be observed for male respondents. There are more male respondents whose mothers worked before they had children. Looking at the respondent's labor market participation history, more males worked as full-time while more females worked as part-time. This observation is true for the case before having children and the case when the children are of under school age. The samples composed mainly of workers who are not union members and who do not supervise people at work. At the household level, the samples mostly have few children between 0 to 6 years old, are of *Visayan* origin and are Catholic. There are more urban respondents as well.

#### IV. Empirical issues and strategy

The research objective is to analyze the determinants of housework in the Philippines with a focus on wage and attitudes to gender roles in the family and labor market. The relationship of interest is captured by the following model:

$$housework_i = \beta_0 + \beta_1 sociodemographic\ attributes + \beta_2 respondent\ s\ wage + \beta_3 attitudes + u \quad 1$$

where  $i = male\ respondent, female\ respondent, wife\ or\ husband$  and sociodemographic attributes include age, educational attainment, part-time work indicator, number of children, ethnicity, religion, and geographic location. Using OLS to estimate this relationship may be biased due to wage endogeneity. To address this concern, we proceed with the instrumental variable technique and the model of interest becomes

$$respondent\ s\ wage = \alpha_0 + \alpha_1 INST + e \quad 2$$

$$housework_i = \beta_0 + \beta_1 sociodemographic\ attributes + \beta_2 respondent\ s\ wage + \beta_3 attitudes + u \quad 3$$

The instrument, *INST*, should satisfy some requirements namely, relevance and exclusion restriction. By relevance, we mean that the instrument should induce a change in wage while exclusion restriction means that the instrument should affect housework hours only through the respondent's wage. In this research, we use the mothers' labor market participation when the respondents were below 14 years old as an instrument for the respondent's wage. The effects of mother's labor market participation on children's outcomes have been widely documented. Within the context of time inputs and home production, Stafford (1987) and Ruhm (2002) among others show that maternal employment negatively affects children's cognitive skills. To the extent that cognitive skills are already set by age 8 (Heckman, Stixrud and Urzua, 2006) and that cognitive skills determine labor market outcomes (see for example, Green and Riddell, 2003), mother's labor market participation when her children are of formative age is a relevant determinant of the respondent's wage.

Within the context of gender identity, intergenerational transmission of behavior happens because children model their behavior from those of adults'. In this setting, maternal employment can be argued to positively affect the children's future career outcomes such as earnings. This is most likely when mother's

labor market participation has elicited positive behavioral responses from children that may be valuable in the labor market. Olivetti, Pattachini and Zenou (2013) explore this channel and find a role model effect on children's subsequent labor market choices.

However, mother's participation in the labor market can also affect the respondent's attitudes towards gender roles on market and nonmarket production. If this happens, the mother's employment history is not a valid instrument for wage and using IV technique will produce bias estimates with bigger standard errors than the OLS estimates. To check for this possibility, we run Probit regressions on attitudes against the instrument and results<sup>5</sup> show that the instrument is not a significant predictor of the respondent's attitudes. In addition, we run OLS on housework hours against the instrument to check if the instrument directly affects housework hours. Results indicate that the instrument is not a significant predictor of the time devoted to non-market production. Since the instrument does not have a direct effect on the time devoted to housework and it does not affect outcomes that can plausibly affect wage, the *exclusion restriction* requirement is satisfied. We also run OLS on wage against the mother's employment history with and without additional controls like sex, age, and job-related attributes. Results indicate that the instrument negatively affects wage and is significant at the 5 percent level in both specifications. This provides additional support for the *relevance* of the instrument. Taken together, these results indicate that the mother's employment history is a valid instrument for the respondent's wage.

Since the spouse's wage is not collected, our research will analyze the effect of the respondent's wage on the housework of both the respondent and the spouse. This is a limitation we acknowledge here and for which we provide a recommendation in our conclusion.

As with any wage estimation however, the problem of sample selection also needs to be addressed. This issue arises from the fact that wages are observed only for working respondents. In the current dataset, working respondent is defined to be those with reported wage. There are 21874 working respondents consisting around 47 percent of the total population size. Comparison of the mean values of

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<sup>5</sup> Results are not shown but are available from the corresponding author upon request.

the full population and the working population indicates that the latter is older and has higher family income. Most of them are working fulltime as well. To address the possible bias arising from the use of samples limited to wage earners, we follow Heckman (1979) and run a Probit regression separately for male and female respondents using the following specification:

$$working = \eta_0 + \eta_1 age + \eta_2 agesq + \eta_3 income + \eta_4 work\ experience + v \quad 4$$

where *working* is equal to 0 if the respondent has no wage data and 1 otherwise, *income* is the family income and *work experience* is the respondent's work history. Probit regressions are done using the population prior to any of the sample selections discussed above. Based on the results, we compute the Inverse Mill's Ratio,  $IMR = \phi(\beta x) / \Phi(\beta x)$ . IMR is then included in the wage regression using the working population only. Therefore, the final empirical strategy is the estimation of the following equations:

$$respondent's\ wage = \alpha_0 + \alpha_1 IMR + \alpha_2 INST + e \quad 5$$

$$housework_i = \beta_0 + \beta_1 sociodemographic\ attributes + \beta_2 respondent's\ wage + \beta_3 attitudes + u \quad 6$$

where *INST* is the mother's labor market history as reported by the respondents and  $i = male\ respondent, female\ respondent, wife\ or\ husband$ . Time devoted to housework and wages are in natural logarithm.

## V. Discussion of Results

As a benchmark, OLS estimates on housework against wage and other explanatory variables are presented in table 2. Controlling for the type of employment, educational attainment, age and its square, and geographical location (column A), results indicate that the respondent's own wage does not have a statistically significant effect on his or her housework. On the other hand, it has a statistically significant

effect on the time spent by his or her spouse doing housework. In particular, male wage negatively affects the housewife's housework hours while female wage positively affects the husband's time spent performing domestic duties. These observations are robust to the inclusion of additional control variables such as family origin, religion, and the number of young children are added (column B).

Table 3 presents the estimates when wage is instrumented for. In terms of signs, the respondent's own wage negatively affects his or her housework hours (columns A, B, A1, and B1). On the other hand, the female respondent's wage positively affects the husband's time on non-market production (columns D and D1). While these findings subscribe to the prediction of Becker's specialization theory, results show that the respondent's wage is not a statistically significant predictor of their time devoted to housework. These results are in line with studies like Kalenkoski, Ribar and Stratton (2009) and are consistent across different specifications (with and without attitudes) and estimators (OLS and instrumental variable regression).

From table 3 (columns C and C1), results also show that the male respondent's wage is a significant predictor of his wife's time devoted to domestic production. In particular, it negatively affects the wife's time devoted to performing housework, a result that holds even in specifications that control for attitudes. Given these, three observations are worth noting.

First, this result does not conform to Becker's specialization theory and suggests that other elements are in play. One possible explanation is that due to the substitution effect, higher wages increase the male respondent's opportunity cost and pushes him to work more and engage less in non-market production. To the extent that there are gains from complementarities (for example, doing housework together enhances marital relations through shared experiences), the wife decreases her degree of involvement in housework to pursue other activities. We investigate this complementarity and find a correlation of 0.51 for male respondent and wife's time devoted to housework and 0.54 for female respondent and husband's time on non-market production. We also run an OLS on the respondent's

housework against their spouse's housework and find a positive relationship even when sociodemographic factors are controlled for.<sup>6</sup>

Second, the male respondent's attitudes have direct effects on the wife's housework. Wives spend less time on housework when the male respondents agree that men should do a larger share of childcare. Wives also spend more time on housework when the male respondent agrees that family life suffers when wives work. These results emphasize the importance of attitudes on gender roles to understand household outcomes and are consistent with the dynamics of household relationship where spouses learn to adapt and adjust to accommodate each other's attitudes, values and preferences. This is in line with the cooperative household framework (Fortin and Lacroix, 1997; Browning and Chiappori, 1998) where intrahousehold outcomes follow from the symmetry of information obtained in a game repeated over time.

Third, the effect of wage on housework is lower when the respondent's attitudes are controlled for. The statistics in the lower panel of table 3 indicate support for the validity and relevance of the instrument. Given this, the negative effect of the respondent's wage on the wife's housework can be interpreted as causal. The inclusion of some attitude indicators has lowered the effect of wage on the wife's housework by 6 percentage points. This suggests that both wage and attitudes have direct effects on the wife's housework hours but that some of the effects of wage are mediated by the respondent's attitudes towards sharing of household burden and belief on the effect of working mothers in family life. To see if other variables act as a mediating channel of wage, estimations are done on the wife's housework hours by excluding some variables from the full set of explanatory variables. The estimates, presented in table 4, are then compared with the estimates using the full set of explanatory variables (reproduced in column A). When the number of under school age children (column B) and ethnicity and religion (column C) are not controlled for, the effect of wage on wife's housework hours is 1 to 2 percentage points less than the wage estimate in column A. It is 6 percentage points higher when attitudes

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<sup>6</sup> Results are not shown but are available from the corresponding author upon request.

towards gender roles are not controlled for. On the average, the result in column A suggests that a 1 percent wage increase (around PhP76.5)<sup>7</sup> will lead to a 2.4<sup>8</sup> decline in the wife's housework hours. Excluding ethnicity and religion leads to a 2.3 hours decline in the wife's housework hours (column B) while excluding the number of preschool children leads to a 2.2 hours decline (column C). When attitudes are not controlled for, the decline in wife's housework hours is around 2.8 hours (column D).

We also consider the fact that the time allocation of spouses on household chores may be simultaneously determined. To account for this possibility, the housework hours of both the respondents and the spouses are estimated simultaneously while treating the respondent's wage as endogenous. As before, the respondent's wage is instrumented by their mother's labor market participation history. IMR is also included to correct for the possible sample selection bias. Results, presented in table 5, are consistent with the results from the estimates in table 4. Attitudes are significant predictors of housework hours. Both the male respondent and the wife spend higher time in housework when the respondent believes that a working mother has adverse effects on family life. Wife's time in housework is lower when the male respondent believes that men should do a larger share of childcare. Similar observations can be noted for the female respondents. Housework time of both the female respondent and the husband is higher when the female respondent believes that men should do a larger share of the childcare. The female respondent's housework time is higher when she believes that both spouses should contribute to the household income.

From the first two columns of table 5, results show that the male respondent's wage lowers his and his wife's housework time. This is in sharp contrast with the results in table 3 that do not take into account simultaneity. In addition, the negative effect of male respondent's wage on the wife's housework hours is consistent with the results presented in table 3. However, the inclusion of the respondent's attitudes as explanatory variables lowers his housework hours by 6 percentage points more and the wife's housework hours by 11 percentage points. For female respondents, the inclusion of attitudes does not

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<sup>7</sup>Computed as  $\text{mean wage} \times 1\% = 7650.082 \times .01 = 76.5$

<sup>8</sup>Computed as  $76.5 \times (-0.031) = -2.4$



have a significant effect on the respondent's housework hours although it increases the husband's housework hours by 24 percentage points.

To check for other possible channels, an exercise similar to table 4 is done by excluding some variables from the full set of independent variables. Results are presented in table 6. Excluding the number of children below 6 years old (specification B) does not substantially change the wage estimate. Excluding ethnicity and religion (specification C) *either* does not change the wage estimates *or* renders the wage estimates insignificant. When attitudes are excluded (specification D), wage estimates widely differ from the wage estimates using the full explanatory variables (specification A) but are consistent in statistical significance in three out of four specifications.

## VI. Conclusions

This research aims to understand the possible role of attitudes towards gender roles in family and in labor markets within the context of the wage-housework hours nexus. Several econometric issues are addressed such as biases resulting from sample selection and wage endogeneity. To correct for sample selection, Heckman's (1979) procedure was implemented. To correct for endogeneity, the respondent's mother's labor market participation history was used as an instrument for the respondent's wage.

Results accounting for the simultaneity of the male respondent and his wife's housework hours show that the male respondent's wage affects his time doing housework, a result that is not found in estimates based on single equations. This confirms the specialization of labor dictated by economic returns. Results accounting for the simultaneity also indicate that the male respondent's wage negatively affects the wife's housework hours. In contrast, the female respondent's wage is not a significant predictor of her and her husband's time allocated to housework. This is a robust result observed in single equation models across specifications. While this is also observed in the simultaneous equation models without the attitudes, results controlling for attitudes show that the female respondent's wage significantly

and positively affects the husband's time allocated to housework. This conforms to the specialization of labor dictated by economic returns.

Results also show that wives' time devoted to housework does not conform to the specialization of labor and we find the complementarity of spousal housework hours as a plausible explanation for this result. Due to substitution effect, an increase in wage makes housework costlier for the male respondent and since there are marital gains that may be derived from complementarities, the wife decreases her time allocated to non-market work as well. For example, doing housework together enhances marital relations through shared experiences. This also provides an avenue for spouses to understand each other's attitudes, values and preferences, which are valuable information in a repeated game such as marriage. This possible gain from the complementarities of spousal housework in the Philippines is consistent with studies done in other countries as well. Hamermesh (2000) has shown that couples in the US prefer to simultaneously consume leisure. Hallberg (2003) has found that spouses in Sweden deliberately organize the timing of their leisure so that it can be enjoyed by the couples at the same time.

However, the complementarity result is not observed in both the respondent-spouse dyad. In contrast to the result concerning the male respondent-wife dyad, the female respondent's wage increases the husband's housework hours. These results can be explained by the prevailing idea that the Philippine society is egalitarian and by the shifting dynamics of gender roles among households and in the labor market. Typical of egalitarian households, wives and husbands are key decision makers on household issues in the Philippines. Bayudan (2006), for example, documents that it is a common practice among Filipino couples to consult with each other in every aspect of household issues and in some cases, wives are documented to be the final decisionmakers. In the labor market, women are participating more in response to the evolving environments that calls for women's increasing involvement outside of home. However, there is still evidence of labor market discrimination against women in the Philippines. ADB (2013) documents that women are more likely to be in vulnerable employment and they have significantly

lower employment rates than men. In addition, the gender wage gap that takes into account human capital gender differences is between 23% and 30%, an indication of high gender inequality.

Given this backdrop, the female's wage increases may be interpreted as a manifestation of success in the labor market and the increase in the husband's housework hours is a way to support her career. This is egalitarian in the sense that husbands may place a premium on the women's success in the labor market, which is still marked by significant gender inequality. The complementarity result is also consistent with the egalitarian idea in that wives make choices that can best serve the interest of their marriages. In the male respondent-wife dyad, wives can afford to lower their housework hours possibly due to the favorable labor market conditions that men enjoy in the Philippine labor market.

Results also indicate that attitudes towards sharing the burden of household chores and towards working mothers and family life consistently determine the way respondents and spouses allocate time in domestic production. Findings also show that the male respondent's wage continues to be a significant determinant of the wife's housework hours even when attitudes are controlled for. The paper also provides evidence that attitudes are the main mediating channel of wage. From the estimates using single equations, results indicate that both wage and attitudes have direct effects on the wife's housework hours but that some of the effects of wage are mediated by the respondent's attitudes towards sharing of household burden and the respondent's belief on the effect of working mothers in family life. Estimates from the simultaneous equations show similar results.

While this paper has analyzed a scantily-researched topic in the Philippines, there are other related issues that future research can help address. One, it is interesting to understand how the results are going to change if the effect of the spouse' wage is also taken into account. Two, measurement or reporting error may be another source of bias. This might happen since attitude indicators for both the respondent and the spouse are reported by the respondents. Future data collection should take these two points into account. Three, the analysis could be made richer if attitudes and all the relevant

socioeconomic variables are recorded over time since this will provide a dynamic scenario to better understand housework.

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Table 1: Comparison of full and selected samples, weighted

	Full ISSP sample		Research sample	
	Male	Female	Male	Female
<i>(Continuous variables) Mean</i>				
Market work (in hours): respondent	45.03	43.83	43.49	43.15
Market work (in hours): spouse	42.23	46.77	42.07	46.01
Housework (in hours): respondent	15.41	25.74	14.46	24.18
Housework (in hours): spouse	22.04	12.55	18.05	13.45
Wage: respondent	6537.6	5573.9	7934.8	5336.3
Age: respondent	39.85	38.98	43.25	37.89
Family income	10811.76	10577.95	14735.84	12965.28
Number of children aged <=6 years old	0.65	0.8	0.67	0.85
<i>(Categorical variables) percent of total observations</i>				
<b>Respondents' attitudes towards work and housework</b>				
<b>Men should do larger share of childcare.</b>				
Strongly agree	0.03	0.02	0.03	0.03
Agree	0.10	0.10	0.09	0.08
Neither	0.11	0.10	0.11	0.12
Disagree	0.21	0.24	0.20	0.26
Strongly disagree	0.05	0.04	0.06	0.02
<b>Family life suffers when women work.</b>				
Strongly agree	0.05	0.05	0.03	0.06
Agree	0.17	0.17	0.15	0.17
Neither	0.08	0.08	0.08	0.07
Disagree	0.16	0.17	0.19	0.20
Strongly disagree	0.04	0.03	0.03	0.03
<b>Both husband and wife should contribute to household income.</b>				
Strongly agree	0.20	0.24	0.22	0.27
Agree	0.25	0.23	0.22	0.22
Neither	0.03	0.02	0.03	0.01
Disagree	0.02	0.01	0.02	0.01
Strongly disagree	0.00	0.00	0.00	0.00
<b>Respondent's personal and work-related attributes</b>				
<b>Work status</b>				
Part-time	0.23	0.12	0.15	0.20
Full-time	0.10	0.07	0.34	0.32
Helping family member	0.01	0.01		
Unemployed	0.09	0.12		
Student	0.03	0.02		
Retired	0.02	0.01		
Housewife	0.01	0.15		
Permanently disabled	0.00	0.00		
Others	0.01	0.02		
<b>Educational attainment</b>				
No formal qualification	0.05	0.05	0.04	0.03
Lowest formal qualification	0.07	0.09	0.09	0.07
Above lowest qualification	0.09	0.07	0.09	0.07
Higher secondary completed	0.15	0.14	0.12	0.17
Above higher secondary level, below full university	0.14	0.14	0.14	0.16
University degree completed	0.00	0.01	0.01	0.01

<b>Worked before having children</b>				
Worked full-time	0.36	0.18	0.38	0.25
Worked part-time	0.06	0.07	0.08	0.10
Stayed home	0.04	0.28	0.03	0.17
<b>Worked even when children are of under school age</b>				
Worked full-time	0.33	0.09	0.34	0.14
Worked part-time	0.08	0.12	0.11	0.20
Stayed home	0.05	0.33	0.03	0.17
<b>Union member</b>				
No	0.47	0.48	0.48	0.49
Yes	0.03	0.02	0.01	0.01
<b>Supervises people at work</b>				
No	0.49	0.38	0.41	0.46
Yes	0.08	0.05	0.07	0.07
<b>Mother worked when respondent was a child.</b>				
No	0.28	0.30	0.27	0.33
Yes	0.21	0.21	0.20	0.20
<b>Spouse's personal and work-related attributes</b>				
<b>Work status</b>				
Part-time	0.07	0.10	0.16	0.09
Full-time	0.13	0.37	0.33	0.43
Helping family member	0.00	0.00		
Unemployed	0.08	0.03		
Student	0.00	0.00		
Retired	0.01	0.01		
Housewife	0.15	0.00		
Permanently disabled	0.00	0.00		
Others	0.02	0.00		
<b>Educational attainment</b>				
No formal qualification	0.05	0.05	0.04	0.03
Lowest formal qualification	0.09	0.09	0.09	0.06
Above lowest qualification	0.06	0.07	0.05	0.07
Higher secondary completed	0.15	0.18	0.12	0.20
Above higher secondary level, below full university	0.13	0.12	0.18	0.15
University degree completed	0.01	0.00	0.01	0.00
<b>Family origin/Ethnicity</b>				
Bicolano	0.04	0.03	0.03	0.07
Ilocano/Panggalatok	0.07	0.06	0.07	0.04
Tagalog	0.16	0.16	0.14	0.15
Ilonggo/Maranaw/Visayan/Waray	0.23	0.25	0.24	0.26
<b>Catholic</b>				
No	0.07	0.08	0.08	0.07
Yes	0.43	0.42	0.41	0.44
<b>Urban</b>				
No	0.30	0.29	0.27	0.27
Yes	0.20	0.21	0.21	0.24

Table 2: OLS on housework hours against respondent's wage

	A				B			
	Respondent		Spouse		Respondent		Spouse	
	Male	Female	Wife	Husband	Male	Female	Wife	Husband
Respondent's wage	-0.07 (0.12)	-0.04 (0.08)	-0.18** (0.08)	0.18** (0.09)	-0.11 (0.11)	-0.07 (0.08)	-0.16** (0.07)	0.18** (0.08)
$R^2$	0.18	0.25	0.25	0.18	0.11	0.10	0.17	0.12
Population size	5064	5481	4902	5218	5123	5504	4961	5241

Figures in the parentheses are standard errors. \*\*\*/\*\*/\* indicate significance at 1/5/10 percent level.

Column A uses as explanatory variables the respondent's age and its square, dummies for the educational attainment and a part-time work indicator, urban indicator.

Column B uses the explanatory variables in column A plus indicators for ethnicity and religion and the number of children up to 6 years old.



Table 3: Dependent variable: respondent and spouse's housework hours, estimates using IV

	Without respondent's attitudes				With respondent's attitudes			
	Respondent		Spouse		Respondent		Spouse	
	A	B	C	D	A1	B1	C1	D1
	Male	Female	Wife	Husband	Male	Female	Wife	Husband
Respondent's wage	-0.09 (0.13)	-0.1 (0.14)	-0.37*** (0.12)	0.18 (0.22)	-0.1 (0.13)	-0.05 (0.15)	-0.31*** (0.10)	0.15 (0.22)
Number of children up to 6 years old (0-5)	0.07 (0.10)	0.02 (0.06)	0.01 (0.08)	-0.01 (0.09)	0.08 (0.10)	0.01 (0.06)	0.02 (0.07)	-0.01 (0.09)
Respondent's age	-0.01 (0.05)	-0.03 (0.04)	-0.04 (0.04)	-0.04 (0.04)	-0.07 (0.06)	-0.01 (0.04)	-0.06* (0.04)	-0.03 (0.05)
Respondent's age^2	0.00 (0.00)	0.00 (0.00)	0.00* (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00** (0.00)	0.00 (0.00)
<b>Family Origin</b>								
Ilocano/Panggalatok	-1.54*** (0.57)	-1.49*** (0.41)	-1.05*** (0.38)	-1.33** (0.55)	-1.47** (0.58)	-1.42*** (0.43)	-1.23*** (0.39)	-1.46*** (0.53)
Tagalog	-0.75** (0.31)	-0.52*** (0.18)	0.07 (0.28)	-0.58** (0.29)	-0.70** (0.33)	-0.46** (0.18)	-0.09 (0.31)	-0.60** (0.28)
Ilonggo/Maranaw/Tausug/Visayan/Waray	-1.18*** (0.32)	-0.61*** (0.17)	-0.21 (0.29)	-0.51* (0.26)	-1.16*** (0.35)	-0.55*** (0.18)	-0.37 (0.31)	-0.57** (0.25)
Catholic	-0.17 (0.22)	0.19 (0.25)	0.06 (0.22)	0.22 (0.20)	-0.19 (0.22)	0.14 (0.25)	0.03 (0.20)	0.19 (0.19)
Urban	0.1 (0.21)	0.01 (0.13)	-0.26* (0.13)	-0.11 (0.16)	0.11 (0.22)	0.03 (0.13)	-0.23* (0.12)	-0.12 (0.16)
<b>Respondent's attitudes</b>								
Men should do larger share of childcare					-0.16 (0.22)	0.41** (0.17)	-0.37** (0.16)	0.18 (0.20)
Working woman: family life suffers					0.43** (0.19)	-0.27** (0.12)	0.43*** (0.14)	-0.40*** (0.15)
Both should contribute to hh income					0.29 (0.37)	0.42 (0.41)	-0.09 (0.22)	0.09 (0.42)
Population size	4204	4664	4043	4497	4204	4664	4043	4497
<b>Test for relevance of the instrument</b>								
Minimum eigenvalue statistic	26.89	10.68	27.46	6.03	26.21	9.88	26.53	5.75
LIML size of nominal 10% Wald test	8.68	8.68	8.68	8.68	8.68	8.68	8.68	8.68
<b>Overidentification test</b>								
Anderson-Rubin Chi squared	0.67	0.02	1.07	0.28	0.65	0.00	1.77	0.25
p-value	0.41	0.89	0.30	0.60	0.42	0.50	0.18	0.62
Basmann F	0.57	0.02	0.90	0.24	0.54	0.00	1.45	0.21
p-value	0.45	0.90	0.34	0.62	0.47	0.60	0.23	0.65

Figures in the parentheses are standard errors. \*\*\*/\*\*/\* indicate significance at 1/5/10 percent level.

Wage is instrumented by the mothers' labor market participation history and is corrected for sample selection bias by including IMR. Estimated using the instrumental variables estimator for survey data in Stata.

Table 4: Dependent variable: Wife's housework hours, estimates using IV, various specifications

	A	B	C	D
Respondent's wage	-0.31*** (0.10)	-0.29*** (0.10)	-0.30*** (0.10)	-0.37*** (0.12)
Number of children up to 6 years old (0-5)	0.02 (0.07)	-0.01 (0.09)		0.01 (0.08)
Respondent's age	-0.06* (0.04)	-0.10*** (0.04)	-0.07* (0.04)	-0.04 (0.04)
Respondent's age <sup>2</sup>	0.00** 0.00	0.00*** 0.00	0.00** 0.00	0.00* 0.00
<b>Family Origin</b>				
Ilocano/Panggalatok	-1.23*** (0.39)		-1.23*** (0.40)	-1.05*** (0.38)
Tagalog	-0.09 (0.31)		-0.09 (0.31)	0.07 (0.28)
Ilonggo/Maranaw/Tausug/Visayan/Waray	-0.37 (0.31)		-0.36 (0.31)	-0.21 (0.29)
Catholic	0.03 (0.20)		0.03 (0.20)	0.06 (0.22)
Urban	-0.23* (0.12)	-0.2 (0.15)	-0.23* (0.12)	-0.26* (0.13)
<b>Respondent's attitudes</b>				
Men should do larger share of childcare	-0.37** (0.16)	-0.21 (0.17)	-0.36** (0.16)	
Working woman: family life suffers	0.43*** (0.14)	0.47*** (0.17)	0.42*** (0.14)	
Both should contribute to hh income	-0.09 (0.22)	-0.09 (0.23)	-0.1 (0.21)	
Population Size	4043	4078	4043	4043
Test for relevance of the instrument				
Minimum eigenvalue statistic	26.53	32.12	27.49	27.46
LIML size of nominal 10 percent Wald test	8.68	8.68	8.68	8.68
Overidentification test				
Anderson-Rubin Chi squared	1.77	1.20	1.74	1.07
p-value	0.18	0.27	0.19	0.30
Basmann F	1.45	1.02	1.44	0.90
p-value	0.23	0.31	0.23	0.34

Figures in the parentheses are standard errors. \*\*\*/\*\*/\* indicate significance at 1/5/10 percent level.

Specification A: Full set of explanatory variables include the respondent's age and its square, dummies for the educational attainment and a part-time work indicator of respondent and spouse, urban indicator, the number of children below 6 years old, ethnicity, religion and attitude indicators.

Specification B: excludes the number of children below 6 years old.

Specification C: excludes ethnicity and religion.

Specification D: excludes attitudes.

Wage is instrumented by the mothers' labor market participation history and is corrected for sample selection bias by including IMR. Estimated using the instrumental variables estimator for survey data in Stata.

Table 5: Estimates from the simultaneous estimations of respondent's housework hours, spouse's housework hours and wage

	Male respondent				Female respondent			
	Respondent	Wife	Respondent	Wife	Respondent	Husband	Respondent	Husband
Respondent's wage	-0.14*	-0.38***	-0.20**	-0.49***	-0.14	0.2	-0.07	0.26**
	(0.08)	(0.09)	(0.09)	(0.11)	(0.12)	(0.14)	(0.11)	(0.13)
<b>Respondent's attitudes</b>								
Men should do larger share of childcare			-0.13	-0.33**			0.53***	0.36**
			(0.17)	(0.14)			(0.10)	(0.16)
Working woman: family life suffers			0.33**	0.39***			-0.20**	-0.2
			(0.16)	(0.12)			(0.09)	(0.13)
Both should contribute to hh income			0.37	0.23			0.35**	0.25
			(0.28)	(0.16)			(0.15)	(0.29)
/atanrho_12	0.47***		0.72***		0.51**		0.67***	
/atanrho_13	0.10		0.23		0.17		0.23	
/atanrho_23	0.52**		0.01		0.66***		-0.02	
Population Size	5130		5130		5504		5504	

Figures in the parentheses are standard errors. \*\*\*/\*\*/\* indicate significance at 1/5/10 percent level.

Full set of explanatory variables include the respondent's age and its square, dummies for the educational attainment and a part-time work indicator of respondent and spouse, urban indicator, the number of children below 6 years old, ethnicity and religion. Wage is instrumented by the mothers' labor market participation history and is corrected for sample selection bias by including IMR. Estimated using the conditional mixed process for survey data in Stata.

Table 6: Wage estimates from the simultaneous estimation of respondent's housework, spouse's housework and wage, various specifications

	Male respondent		Female Respondent	
	Respondent's housework	Wife's housework	Respondent's housework	Husband's housework
specification A	-0.20** (0.09)	-0.49*** (0.11)	-0.13 (0.14)	0.32** (0.15)
/atanhrho_12	0.52***		0.63***	
/atanhrho_13	0.17		0.36*	
/atanhrho_23	0.66***		-0.07	
specification B	-0.20** (0.08)	-0.52*** (0.10)	-0.13 (0.14)	0.31** (0.15)
/atanhrho_12	0.50***		0.62***	
/atanhrho_13	0.17		0.36*	
/atanhrho_23	0.68**		-0.07	
specification C	-0.26*** (0.08)	-0.49*** (0.06)	-0.28** (0.13)	0.06 (0.14)
/atanhrho_12	0.60***		0.75***	
/atanhrho_13	0.31*		0.52***	
/atanhrho_23	0.69***		0.15	
specification D	-0.14* (0.08)	-0.38*** (0.09)	-0.2 (0.16)	0.24 (0.17)
/atanhrho_12	0.52***		0.69***	
/atanhrho_13	0.10		0.35*	
/atanhrho_23	0.52**		-0.2	

Figures in the parentheses are standard errors. \*\*\*/\*\*/\* indicate significance at 1/5/10 percent level.

Specification A: Full set of explanatory variables include the respondent's age and its square, dummies for the educational attainment and a part-time work indicator of respondent and spouse, urban indicator, the number of children below 6 years old, ethnicity, religion and attitude indicators.

Specification B: excludes the number of children below 6 years old.

Specification C: excludes ethnicity and religion.

Specification D: excludes attitudes.

Wage is instrumented by the mothers' labor market participation history and is corrected for sample selection bias by including IMR. Estimated using the conditional mixed process for survey data in Stata.