WOMEN'S EARNINGS AND HOUSEHOLD DIVISION OF LABOUR AMONG COUPLES IN GHANA

Nkechi S. Owoo

Monica P. Lambon-Quayefio

Sylvia Gyan

Abena D. Oduro

University of Ghana
Department of Economics

Abstract:

Do married Ghanaian women's earnings relieve their childcare and domestic burdens or intensify it? Much of the work on the effect of women's earnings on household work has focused on developed countries. In this paper, we examine the evidence for three hypotheses (i.e. autonomy, relative resource and compensatory gender display/gender deviance) in a developing country context. Using two waves of the Ghana Socioeconomic Panel Survey (GSEPS) and a random effects regression model, we find that women reduce their time spent in domestic work with increases in their absolute earnings, consistent with the autonomy hypothesis. This is true, particularly for rural Ghana. We also find evidence in support of the relative resource hypothesis among both rural and urban women, where women who have larger shares of spousal income appear to do less domestic work and spend less time in primary childcare. Interestingly, male partners spend more time in primary childcare when their wives earn more. Other interesting results are noted: The presence of younger children in the household increase women's domestic and childcare burdens, although the presence of older children mitigates this. Access to labour-saving devices and help from other women present in the household helps to reduce housework burdens among women in Ghana while longer cohabitation durations increase these burdens. Ethnic and regional differences are also observed. The use of panel data contributes to the robustness of the observed associations as it controls for fixed, unobserved traits among women. The contribution of women's domestic work in the analysis of gender gaps in labour outcomes is often ignored despite the noted correlation between gender inequality in domestic work and female labour force participation. The study aims to contribute to the discourse on issues relating to domestic work and women's bargaining power within households. Results have implications for understanding the significance of women's monetary resources, separate from their male partners, and the design of appropriate development policies and interventions.

I. INTRODUCTION

According to Article 24 of the United Nations' Declaration of Human Rights, everyone has the right to rest and leisure, including reasonable limitation of working hours. In many parts of the world, particularly in developing countries, women bear a triple burden of work- they perform duties at the market, household and community levels. Market work may include self- or wage-employment; domestic work includes looking after children, the elderly and performing housework; while community tasks include preserving culture and tradition, through the organization of funerals and religious ceremonies, among others. The competing demands of this triple role puts women's health at risk; when women are overworked, this has an impact on the whole household, including children and youth (FAO, 2016).

Research dating back to the 1980s and 1990s have noted significant differences in gender time burdens (Blackden and Bhanu 1999; Ilahi 2000). The situation is not different in more recent times (Wodon and Ying, 2010). Globally, women carry out 75 percent of all unpaid care and domestic work. According to the UN (2016), women spend up to three hours more a day doing housework than men and spend up to 10 times the amount of time a day caring for children and the elderly. In sub-Saharan Africa, where basic amenities are not accessible, the burden can be extraordinary. For example, women in the region spend 16 million hours each day collecting water, with women and girls responsible for collecting 71 percent of all household water (UNICEF, 2016).

The concept of "household time overhead" (Harvey and Taylor, 2000) is particularly relevant here. As relates to women, it describes a situation where the amount of time that they spend on household chores is so high that it presents a full-time occupation. A consequence of these high housework burdens is that women have limited opportunities to engage in market work and earn incomes, a situation which can limit their bargaining and decision-making power within the household. Furthermore, when women are fully engaged in the business of domestic and care work, there are reduced opportunities for training and educational pursuits. The burdens of childcare and domestic responsibilities also cut into the time women could spend on paid work, a concept known as "time-related underemployment" (ILO, 2016), which can ultimately influence the overall gender pay gap. Women's disproportionate childcare and domestic workloads may therefore contribute in significant ways to the "feminization of poverty" that is observed in many developing countries around the world, including Ghana.

A virtual cycle between domestic work burdens and women's bargaining status is evident. As women continue to take on the bulk of domestic and care work, they have fewer opportunities for paid work and resource accumulation. With lower access to resources, they have lower decision-making abilities within their households, which likely perpetuates an unequal distribution of domestic work within their households. Research, in mostly developed country settings, have examined whether higher earnings by women could encourage greater involvement by male partners' in household duties through bargaining mechanisms. According to bargaining models, which form the basis for household decision-making in modern economics, greater resource ownership strengthens one's bargaining position and increases his/her power to make social and economic decisions within the household. The link between women's higher earnings and their participation in domestic work is therefore an empirical question, and one that we explore comprehensively in this research.

The growing body of research in this area, largely conducted in developed countries, has produced important theories about the nature of the association between women's monetary resources and their carrying out of domestic labor. While some researchers (e.g. Gupta,2007) find that women's absolute earnings are important correlates of their domestic work (i.e. the autonomy hypothesis), others (e.g. (Killewald and Gough, 2010) argue that women's earnings, compared to their husbands, is a more important factor (i.e. economic dependence and gender display hypotheses). In this paper, we test these theories in a developing country setting, using the Ghana Socioeconomic Panel Survey (GSEPS) and a random effects model specification.

Specific research questions to be examined include the following:

1. How much time is spent on childcare and domestic work by men and women in Ghanaian households, and how has this division of work changed over time?

2. What is the effect of men's and women's *absolute* earnings on women's domestic work hours?

3. What are the effects of the *relative* share of women's earnings on time spent on domestic work?

The research makes a number of contributions to the existing literature. First, despite the burgeoning literature on 'doing gender', very little has been done (if any) on the effect of women's absolute and relative earnings on household division of labour in a developing country context, largely due to unavailability of time use and panel data for analysis purposes. In Ghana, no work has been done, making this an important contribution to the existing discourse. Second, it is possible that high-earning wives spend less time in household labour not necessarily because of their greater earnings, but because women with high earnings have fixed, unobserved traits that are correlated with lower levels of domestic production, such as a lower preference for housework. Therefore, wives'

earnings may give them autonomy to reduce their time in household labour. Using panel data, our research controls for such unobserved attributes of wives- an approach other notable studies (e.g. Gupta, 2007; Wodon and Ying, 2010) have not explored. The study aims to contribute to the discourse on issues relating to domestic work and women's bargaining power. Results have implications for understanding the significance of women's own monetary resources, separate from their male partners. Based on the research findings, we make a number of policy recommendations to improve women's well-being.

II.   THE HYPOTHESES

Earlier theories on household production conceptualized men and women as collaborative players pursuing a common objective, which is the maximization of household wellbeing (Becker, 1991). Based on beliefs about their respective skills, women would perform domestic activities while men would be engaged in the labour market. Structural and feminist critiques of these models have argued that men and women could have differing interests and capabilities (Blumberg & Coleman, 1989; England & Budig, 1998). The continued over-representation of women in domestic work may therefore be attributable more to women's weaker bargaining positions, due to their typically lower earnings, and not as a result of a desire to cooperate toward maximizing the household's welfare. The basic idea is that the more a person depends financially on their partner, the less power that person has in making social and economic decisions in the household. Recent research has therefore focused on the importance of women's earnings in improving their bargaining power and decision-making outcomes within the household (Gupta, 2007, Killewald and Gough, 2010).

a.   The Autonomy Hypothesis

The autonomy hypothesis posits that women with lower earnings, in absolute terms, will take on greater amounts of housework. The autonomous effect of women's earnings on their household outcomes is explained by their enhanced abilities to afford substitutes for childcare and domestic labor.

In the United States, Killewald and Gough (2010) found that wives' earnings are significantly negatively related to their time in housework. Other authors have found similar results (Gupta, 2007). Gupta and Ash (2008) used data from the second wave of the US's National Survey of Families and Households (NSFH) conducted between 1992 and 1994. The dependent variable was weekly hours spent on four tasks: cleaning, doing dishes, cooking, and laundry. Annual labour earnings of each member of the couple from the year preceding the survey were collected. Their results revealed that women's earnings are negatively associated with their housework hours, independent of their partners' earnings and their shares of couples' total earnings.

Although the hypothesis also predicts that higher absolute earnings of male partners will lead to a reduction in women's time spent in domestic work, the effect of women's own absolute earnings is expected to be greater (Gupta, 2006, 2007). Gupta (2006) showed that the effect of women's own earnings on their housework time is much greater than that of their husbands' earnings. Using data on the National Survey of Families and Households (NSFH), conservative models initially suggest that the negative link between women's housework and their own earnings is two to three times greater than that with their partners. In a more complete model, they found that the association with partners' earnings was not statistically significant. The author concludes that women do not benefit much, as far as housework is concerned, from their male partners' income.

A well-documented mechanism for the negative relationship between wives' housework hours and their earnings has been the outsourcing of housework (Craig et al., 2016; Gonalons-Pons, 2015; Gupta, 2006; Risman, 2011). By this argument, women who experience increases in their own earnings reduce their housework time by purchasing market substitutes or engaging domestic workers for their household labour (Killewald and Gough, 2010). Killewald and Gough (2010) used data from the 1976 – 2003 waves of the Panel Study of Income Dynamics and employed fixed effects models to examine whether increases in wives' earnings allowed them to forego or outsource some domestic tasks. The results show that wives' earnings are significantly and negatively related to their time in housework. It is expected that hiring domestic workers could reduce time used in housework and ease pressure on subjective time (Risman, 2011). It is perceived by some authors (Gupta 2006, 2007, Gupta and Ash, 2008) that high-earning wives can purchase market substitutes for their housekeeping services such that although their husbands' housework hours do not increase that much, they are able to devote less time for housework. For instance, Wing (1994) reports that women's wages are significantly positively related to the probability of hiring domestic workers in Hong Kong, concluding that domestic workers and a woman's own time are substitutes in the household production process. Cohen (1998) finds similar results in the US, but also reports a weaker positive relation with husbands' earnings. Surveys about the use of domestic services in France indicate that the majority of respondents would like to hire domestic services from the market but do not do so mainly because of income (budgetary) constraints (Flipo, 1996).

b.   The Relative Resource Hypothesis

The relative resource theory proposes a negative relationship between a partner's share of the couple's total income and the time the partner spends on domestic work. The partner with fewer resources compensates the other by taking on more housework. The observed gender gap in housework in many developed and developing country settings may therefore be explained as a consequence of the economic dependence of women on men, given that wives' earnings are typically lower than their male partners. If housework is assumed to be an unwanted activity for both women and their male partners, then, all other things constant, the one with more resources may be expected to perform less housework than his/her partner (Bittman et al., 2003; Evertsson and Nermo, 2004). Under the relative resource hypothesis therefore, women's time spent in domestic work should decrease whenever their earnings rise relative to their male partner's, as more resources give them more power to negotiate smaller household responsibilities (Baxter et al., 2008).

c. The Compensatory Gender Display Hypothesis

Despite the existence of autonomy theories which predict a negative association between women's earnings and their involvement in domestic work, gender-based theories seek to explain why women who earn much more or as much as their spouses continue to be burdened by relatively more housework (Evertsson & Nermo, 2004; Pyke, 1994; Deding and Lausten, 2006; Bittman et al., 2003). When the idea of non-rational influences on human behavior such as childhood socialization and gendered norms are considered, it becomes more likely that a woman's earnings do not automatically give her control of household decisions nor reduce her time for housework (Pyke, 1994; Engle et al., 1999). A woman's earnings, wealth and resources (relative to those of her husband) can therefore only have a limited effect on decision making power (Connelly and Kimmel, 2009).

The gender display theory of housework was proposed by West and Zimmerman (1987), who argued that individuals do gender through their daily behaviors such as domestic work particularly when relating with the opposite gender. According to the compensatory gender display or gender deviance hypothesis, women whose earnings are greater than their male partners' will adopt a gender-traditional division of household labor and exaggerate their housework functions in the face of their gender-atypical relative incomes. Therefore, married women whose earnings exceed their husbands' will do more housework compared to other women, and men whose earnings are unusually low, compared to their spouses', will do less housework than other men.

Using data from six developing countries (i.e. Cameroon, Chad, Egypt, India, Kenya and Nigeria), for example, Simister (2013) finds that as a wife earned a larger fraction of household earnings, the husband initially took on a larger fraction of the housework but as she earned almost all household income, he reduced his fraction of housework. The core implication of the gender deviance hypothesis is the claim that women who earn more than their partners will attempt to neutralize their deviance from societal norms and expectations (which expect male partners to be the primary breadwinners) by doing more housework than they would have if they were not earning much more than their partners (Evertsson & Nermo, 2004).

III. METHODS

a. Data

The data used for the analyses is the Ghana Socioeconomic Panel Survey (GSEPS). Two waves of the data are available- the first wave of data collection took place over a 6-month period (November 2009 to April 2010); the second wave started in 2014 and was completed in 2015. The survey provides regionally representative data for the then 10 regions of Ghana[1]. In total, 5010 households from 334 Enumeration Areas (EAs) were sampled. Fifteen households were then selected from each of the EAs. The number of EAs for each region was proportionately allocated based on the estimated 2009 population share for each region. EAs for Upper East Region and Upper West Region, which have relatively smaller population sizes, were over-sampled to allow for a reasonable number of households to be interviewed in these regions. The GSEPS is ideal for the examination of these relationships due to its panel nature and also because time-use information was collected in both waves. In this study, we define domestic work, primary and secondary childcare as the total time spent engaging in a series of related activities within a 24-hour period on a typical working day.

Childcare is divided into two types- primary and secondary childcare, following Craig et al. (2012). Primary childcare is described as the time spent exclusively supervising children while not performing any other domestic activity. This includes helping with homework, teaching, storytelling, playing outside, giving a bath, etc. The relevant survey question is as follows:

"Does [Name] spend time caring for children while not doing any other activity? If so, how much time does [Name] spend doing this activity (in hours and minutes)."

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[1] Six (6) additional regions were created in 2018

Secondary childcare is described as the time spent performing a number of daily activities, in addition to reading, watching TV and/or listening to the radio, with a child less than 15 years of age being present. The relevant survey question is:

"Does [Name] undertake this activity whilst a child (<15years) [Name] is caring for is with [Name]?

The decision to analyze effects of earnings on childcare separately from other housework follows the rationale by Sullivan (2013). Because of the generally negative perception of housework as boring, repetitive, and isolated (Blood and Wolfe, 1960; Oakley, 1974), the performance of housework by women and men in couples has long been regarded in the sociological literature as a measure of marital power, so that those with less 'power' (defined here as earnings) do more housework. Childcare, in contrast, is perceived as more rewarding and enjoyable. The effects of earnings may therefore have differential effects on women and men's participation domestic work and childcare activities.

With respect to domestic work, each household head, the first spouse and one other household member over the age of 12 (chosen at random) was asked to answer questions on 11 domestic activities that they perform on a typical working day. This includes the amount of time spent collecting firewood, fetching water, going to the market, running other errands, doing the laundry, cleaning, cooking, taking care of elders, taking care of the sick, doing the dishes and taking *primary* care of children. The inclusion of childcare in measuring total domestic work is consistent with other research (see Quentin and Ying, 2010; Costa et al., 2009). The relevant survey question is:

"On a typical day, does [Name] spend time [in a variety of activities. E.g. cooking, cleaning and other activities around the house]? If so, how much time does [Name] spend doing this activity (in hours and minutes)?"

The main explanatory variable is the monthly earnings of men and women partners. Earnings are calculated for individuals in paid- and self-employment. The information on men and women's absolute earnings facilitates the test of the autonomy hypothesis, as shown in equation (1) in the methodology section below. Following Davis and Greenstein (2004) women's share of couple's earnings will be used to test the relative resource and compensatory gender display hypotheses. In order to examine the effect of relative spousal earnings on domestic work, the analyses are restricted to dual earner, married/cohabiting partners. We follow existing specifications in the literature for relative resource and compensatory gender displays by including both linear and quadratic forms of women's relative earnings (Greenstein 2000; Gupta 2007).

The data contains other variables that are important for the present research focus. A number of control variables are included in the analyses including the presence of children in the household (i.e. to control for life-cycle effects where the presence of children increases women's household time) (Baxter et al. 2008; Bianchi et al. 2000). Controls for ages of men and women partners, as well as the year of the survey are also included. Controls are also included for the length of time in the union. Other controls include the education status of men and women partners, given that more educated couples have been found to be more egalitarian (Baxter et al. 2008; Presser 1994). Other variables such as ethnicity are included in the model to account for social and cultural influences. Regional and rural/urban controls are also included.

Although about 5000 households and over 18,000 individuals were surveyed in 2009 wave of the GSEPS, labour market information was collected on only 1,429 employees aged 7 years and above. A lack of response to questions on earnings restricted the sample further to 136 employees. We augmented the sample size with information on approximately 2,074 self-employed workers. Given that the analyses are at the couple level, single individuals with no spouses were excluded, leading a smaller analytical sample and therefore the need for the multiple imputation technique (discussed below).

b.   *Empirical Specification*

Following Gupta (2006, 2007) the autonomy hypothesis is specified empirically as a linear relationship between wives' absolute earnings and their time spent in housework. A Hausman test was run to determine the appropriate form of specification- fixed or random effects. Test results indicated suitability of the latter specification. The random effects model is set out as follows:

$$W\_DW_{it} = \alpha_0 + \alpha_w W\_Earn_{it} + \alpha_m M\_Earn_{it} + \gamma_1 X_{it} + \mu_i + \varepsilon_{it}$$
$$(1)$$

In this model, W_DW_{it} refers to time spent in the various categories of house work described above (i.e. domestic work, primary childcare and secondary childcare) for woman i at time t. W_Earn_{it} is a variable for absolute earnings of women, while M_Earn_{it} is the variable for absolute earnings of men. According to the 'autonomy' argument (and following Killewald and Gough, 2010), as women earn more, they do less housework. A negative value of α_w would provide some evidence in favour of this hypothesis. Additionally, in the autonomy hypothesis,

it is often expected that $\alpha_w > \alpha_M$ (Gupta, 2006). The set of control variables is represented as X_{it}, all of which vary across individuals and some of which vary across time. Included in this vector are age and education of couples, presence of children, urban/rural locality, etc. Although information on domestic workers are often included in other studies, these household members represent 0.02% of the data (i.e. 22 observations) and are therefore excluded. We instead use the number of adult women present in the household as a proxy for additional household help. μ_i is the random effect; ε_{it} is the idiosyncratic error term for each individual and time period.

In order to test the relative resource/ economic dependency hypothesis, we include controls for women's relative share of earnings (i.e. ratio of woman's earnings to the sum of couple's earnings; consistent with Davis and Greenstein, 2004) in the random effects model. Here, separate models are run for women and for men. According to the relative resource or economic dependency theory, the partner who contributes proportionally less to the household income does more housework. Following Aassve (2014), the model is specified as follows:

$$W\_DW_{it} = \alpha_w W\_Earn_{it} + \alpha_m M\_Earn_{it} + \alpha Earn\_Share_{it} + \gamma_1 X_{it} + \mu_i + \varepsilon_{it} \qquad (2a)$$

$$M\_DW_{it} = \alpha_w W\_Earn_{it} + \alpha_m M\_Earn_{it} + \alpha Earn\_Share_{it} + \gamma_1 X_{it} + \mu_i + \varepsilon_{it} \qquad (2b)$$

As described above, $Earn\_Share$ is constructed as a ratio of wife's earnings to total couple's earnings. According to the 'relative resource' hypothesis, when women's relative share of earnings increases, they devote less time to domestic work. W_DW_{it} refers to house work hours (i.e. domestic work, primary childcare and secondary childcare) for woman i at time t. M_DW_{it} refers to house work hours (i.e. domestic work, primary childcare and secondary childcare) for male partner i at time t. A positive value for α in the men's specification; and a negative value for α in the wife's specification would indicate evidence in favour of this hypothesis for Ghana.

Following Aassve (2014) and Gupta (2007), in order to examine the evidence for compensatory gender display, a quadratic term, $Earn\_Share_{it}^2$, is included in the panel regression specification:

$$W\_DW_{it} = \alpha_w W\_Earn_{it} + \alpha_m M\_Earn_{it} + \alpha Earn\_Share_{it} + \beta Earn\_Share_{it}^2 + \gamma_1 X_{it} + \mu_i + \varepsilon_{it} \qquad (3)$$

Evidence for the compensatory gender display hypothesis would be apparent if $\alpha < 0$ and significant, and the $\beta > 0$ and significant. Therefore, women who earn more than their partners the most do more housework than women who out-earn their husbands by less. According to the 'compensatory gender display' argument, women who earn more than their partners end up taking up more housework in order to 'neutralize' this gender 'deviance'.

c. *Data Imputation as a solution to missing observations on earnings and time use*

The issue of missing data plagues both the dependent and the major explanatory variables. For the regression analyses, we therefore employ a multiple imputation technique.[2] This technique originated in early 1970 in application to survey nonresponse (Rubin 1976), and has gained popularity increasingly over the years as indicated by literature (for example, Rubin [1976, 1987, 1996]; Little [1992]; Meng [1994]; Schafer [1997]; van Buuren, Boshuizen, and Knook [1999]; Little and Rubin [2002]; Carlin et al. [2003]; Royston [2004, 2005a, 2005b, 2007, 2009]; Reiter and Raghunathan [2007]; Carlin, Galati, and Royston [2008]; Royston, Carlin, and White [2009]; White, Royston, and Wood [2011]; and Carpenter and Kenward [2013]).

Under the multiple imputation technique, a residual term is randomly drawn from a normal distribution with mean zero and variance equal to the residual variance from the regression model and is added to the predicted scores from the regression imputation thus restoring some of the lost variability when a single or deterministic imputation method is used i.e. replacing missing values with predicted scores from a regression equation. The multiple imputation method is superior to methods such as the complete case analysis, available case analysis, unconditional mean imputation and the single imputation method as it will produce unbiased coefficient estimates when the observations are missing at random. However, the standard errors produced during regression estimation, while less biased than the single imputation approach, will still be diminished. Nonetheless, given that missing data analyses are challenging because there is no inherently correct methodological procedure, in many (if not most) situations, applying multiple imputation, even if blindly, will likely lead to a more accurate set of estimates than using one of the previously mentioned missing data handling techniques (Enders, 2010).

IV. RESULTS AND DISCUSSIONS

This section comprises two parts- the first part provides descriptive statistics of the study data using the unimputed data; the second part provides results from the regression models 1), 2a), 2b) and 3) specified above.

a. *Descriptive Statistics*

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[2] Regression results of the analyses using the original data with the smaller sample are not markedly different from the results using the multiple imputation technique.

The first research objective is to determine the amount of time spent on childcare and domestic work by couples in Ghanaian households and assess how this division of work has changed over time. Figure 1 illustrates this using data from the analytic sample. Women generally spend more time in domestic and childcare (primary and secondary) work, compared to their male partners. Women spend almost 500 minutes, 333 minutes and 129 minutes in a typical working day on domestic work, secondary childcare and primary childcare, respectively; compared to male partners' 196 minutes, 148 minutes and 102 minutes, respectively.

There are some similarities in trend between men and women- the amount of time that each dedicates to both domestic work and secondary childcare has decreased between 2009 and 2014. Women's time spent in domestic work and secondary childcare decreased from 500 minutes and 333 minutes, respectively in 2009, to 404 minutes and 200 minutes in 2014. Similarly, partner's time spent in domestic work and secondary childcare decreased from 196 minutes and 148 minutes, respectively in 2009, to 107 minutes and 53 minutes in 2014.

Figure 1: Distribution of Domestic and Childcare work between Ghanaian Couples, GSEPS, 2009- 2014
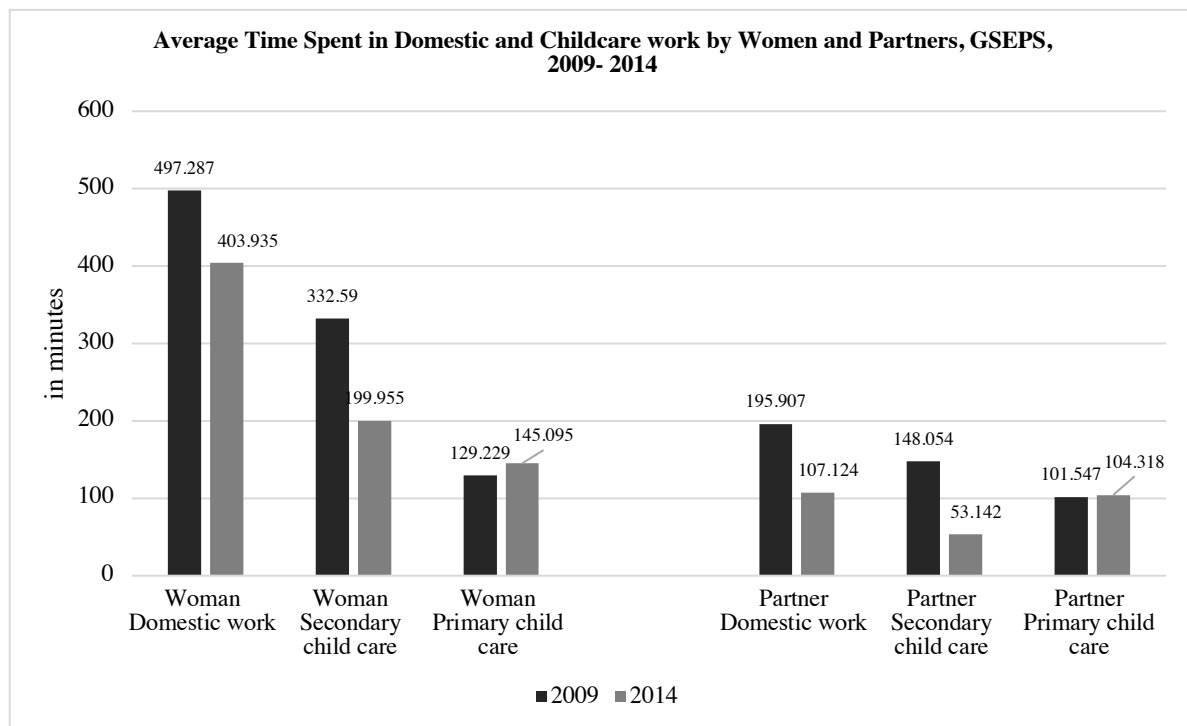
The amount of time spent in primary childcare has however increased among women and men from 2009 to 2014. The average time spent in primary childcare by women increased from 129 minutes in 2009 to 145 minutes in 2014. For men, the time spent in primary childcare also increased, although less strikingly, from 102 minutes to 104 minutes within the period. Differences between men and women for all categories of domestic and childcare in each year are statistically significant at least at the 1% level.

Table 1 provides summary statistics of other study variables for each year of the survey using the raw, unimputed data. As mentioned above, the research focuses on dual-earner couples and includes earnings from individuals who are either paid (i.e. salaries)- or self-employed (profits from enterprise). Women earn less than their male counterparts, although average earnings have increased for both women and their partners between 2009 and 2014. The share of women's income is, on average, about 35% of total spousal earnings. This has declined between 2009 and 2014. Self-employment is more prominent among women. Twelve percent of women in the sample are paid employees, while 88% are self-employed. This is compared to 58% of male partners who are paid employees and 42% who are self-employed.

Information is provided on a number of technologies that may be expected to facilitate household chores and reduce the time spent in these activities. A larger percentage of households own these technologies between 2009 to 2014. Additionally, access to water for household use has improved over the period. The average woman in the sample in 2009 is almost 40 years old while her partner is 46 years. Couples have lived together for an average of 20 years. Couples have, on average, almost 2 children (under 15 years old) resident in the household. A smaller proportion of women, compared to their partners, report that they have ever attended school. The percentage of both educated women and men increased between 2009 and 2014.

Table 1: Descriptive Statistics, GSEPS, 2009 & 2014

Other Study Variables	2009 Mean	2009 SD	2014 Mean	2014 SD
Female earnings per month (Ghc)	84.751	159.46	216.82	733.44
Male earnings per month (Ghc)	264.808	616.15	700.232	1849.15
Women relative earnings	0.348	0.28	0.363	0.29
% of female employees (vs. self-employed)	0.128	0.33	0.147	0.35
% of partner employees (vs. self-employed)	0.578	0.49	0.611	0.49
Household Domestic technology				
Household has a stove (=1)	0.235	0.42	0.411	0.49
Household has a bicycle, motor, car and/or truck (=1)	0.387	0.49	0.446	0.5
Household has a blender (=1)	0.104	0.31	0.213	0.41
Distance to water (metres)	7,913.315	53,927.29	276.835	2,768.53
Woman ever attended school	0.654	0.48	0.752	0.43
Partner ever attended school	0.783	0.41	0.869	0.34
Woman age in years	39.657	11.25	41.417	10.44
Partner age in years	46.389	13.31	48.251	12.25
Household is poor (vs. non-poor)	0.241	0.43	0.155	0.36
Years of cohabitation	20.324	12.96	22.213	12.77
Number of 0- 4 years	0.696	0.82	0.556	0.74
Number of children 5- 9 years	0.707	0.89	0.737	0.79
Number of children 10-14 years	0.624	0.8	0.646	0.78
Number of adult women in the household	1.333	0.76	1.366	0.67
Woman Ethnicity				
Akan	0.522	0.5	0.554	0.5
Ewe	0.104	0.31	0.131	0.34
Ga	0.089	0.29	0.086	0.28
Mole-Dagbani	0.085	0.28	0.076	0.26
Other northern tribes	0.2	0.4	0.154	0.36
Partner Ethnicity				
Akan	0.511	0.5	0.518	0.5
Ewe	0.111	0.31	0.139	0.35
Ga	0.102	0.3	0.12	0.33
Mole-Dagbani, Gruma, etc	0.085	0.28	0.076	0.26
Other northern tribes	0.191	0.39	0.147	0.35
Urban residence	0.459	0.5	0.482	0.5
Household region of residence				
Western region	0.107	0.31	0.109	0.31
Central region	0.128	0.33	0.08	0.27
Greater Accra region	0.128	0.33	0.154	0.36
Volta region	0.054	0.23	0.074	0.26
Eastern region	0.126	0.33	0.137	0.34
Ashanti region	0.137	0.34	0.204	0.4

Brong Ahafo region	0.12	0.32	0.088	0.28
Northern region	0.135	0.34	0.103	0.3
Upper East region	0.043	0.2	0.044	0.21
Upper West region	0.022	0.15	0.006	0.08
Observations	460		475	

Although some households report having domestic workers, this makes up only 0.02% of the total sample and this data is excluded from the analyses. We however include a control for the number of adult women in the household as these women may assist with childcare and/or domestic work. Information on women and partner's ethnicities are also provided. Akans are the most commonly sampled ethnic group. Almost half of couples are resident in urban areas. Regional distribution of couples is also summarized in the table. The sample is greater in 2014 because of missing information on some variables in the first wave.

b. Regression Results and Discussions

Table 2 below shows results of regressions of domestic and childcare work on relative spousal earnings and a series of woman, partner and household characteristics. Controls for domestic technology and the nature of work that women are engaged in (paid or self-employment) are also included.

Findings on the autonomy hypothesis: The autonomy hypothesis posits that while men and women's absolute earnings are associated with less time spent in domestic work and childcare by women, the effect of her own earnings are stronger. We find that in Ghana, women do reduce the amount of time spent in domestic work and secondary childcare as their absolute earnings increase. A likely explanation for this is that the increased earnings may allow women to outsource domestic chores to domestic workers or purchase more domestic technology. Following Killewald and Gough (2010), we control for the non-linear relationship between wives' absolute earnings and their housework time in alternative specifications (not shown) but do not find any significant associations. Although the autonomy theory posits a negative relationship between men's earnings and women's time spent in household work (Gupta, 2006), there are no significant effects of partners' absolute earnings on women's childcare and domestic work. Interestingly, as women's absolute earnings increase, men spend more time in primary childcare, consistent with increased bargaining power of women (Ndlovu et al. 2018). A couple of reasons may explain this. First, women's high earnings may necessitate longer hours spent at their workplaces so that men spend more time looking after children at home. Second, higher earning by women may lead to them socializing more and spending more time away from the home so that childcare responsibilities are taken up by men (Bianchi and Vohs, 2016).

Findings on relative resource hypothesis: According to the relative resource theory, the more the woman contributes to the household income, the less housework she does and the more housework her partner does. Domestic work divisions are assumed to result from negotiations between spouses grounded on relative measures of earnings, hence the more an individual earns, the less housework he or she does (e.g., Brines, 1993; Hersch & Stratton, 1994). We find evidence in support of the relative resource hypothesis- women who have larger shares of spousal income appear to spend less time in primary childcare. There are however no significant effects of women's relative earnings share on male partners' housework; the theory predicted that as women reduce their time spent in housework given larger income shares, male partners would increase theirs. Risman (2011) explains that higher relative earnings by women may not necessarily imply that men are carrying out more housework. Rather, higher earning women may be able to afford more domestic technology and domestic help.

Findings on gender deviance theory: Including a quadratic component of spousal earnings in the regressions, we find no evidence of the gender deviance/neutralization theory for Ghana. Although the coefficient for the quadratic term is positive, as prescribed by the theory, these are not significant. This is likely because of generally lower earnings by women, compared to men (Baah-boateng, 2012), which makes it unlikely that women earn so much more than men that they feel pressured to take up even more housework as a means of neutralizing the deviance.

Although not the focus of the paper, other findings are worthy of discussion: Researchers have found that access to domestic technology and substitutes for housework may reduce the time spent in domestic work (Killewald and Gough, 2010). This is consistent for Ghana- women in households with stoves, for instance, spent less time in domestic work while reduced access to water increases secondary childcare responsibilities. Education is not correlated in a statistically significant manner with domestic work (Wodon and Ying, 2010). Older women spent less time in domestic work and secondary childcare. Older male partners appear to spend less time in domestic activities as well. Results indicate that women spend more time in domestic work activities with longer durations of cohabitation with male partners.

Results also indicate that women who are paid employees spend less time in domestic activities, compared to women who are self-employed. This is consistent with Gershuny et al. (2005) and Craig et al. (2012), who find that women's domestic labour decreases with time spent in paid employment. Interestingly, individuals from poorer households spent less time in domestic work and secondary childcare. This might be explained by a number of different factors. First, women and men from poorer households may reside in smaller structures, with implications for the amount of time required to carry out activities like sweeping, cleaning, among others. Second, individuals from poorer households may not be equipped with as many amenities as richer households do (WHO, 2019). For example, poorer households in Ghana are often engaged in open defecation or use of public toilets as a result of lack of private latrines in their homes (Osumanu et al., 2018). This then would reduce time spent in keeping such facilities clean. Third, poorer households may have members spend more time outside the home in order to raise enough to supplement their incomes, leading to less domestic work being carried out.

The presence of children under five years increased the amount of time spent by women in domestic work, secondary and primary childcare. It also increases the time spent by men in primary and secondary childcare, but not in domestic work. The presence of children between five and ten years of age has more nuanced effects on domestic and childcare work. While it increases the time spent in domestic and secondary childcare for women, it reduces their time spent in primary childcare. Men spend more time in secondary childcare with the presence of 5-10-year olds in the household. Finally, the presence of children between 10 and 14 years of age decreases the amount of time spent in primary childcare by women, suggesting that these older children may either be able to work and/play independently, or may be providing some assistance with younger children in the household. Additionally, the presence of other women in the household who could assist with housework and children's supervision reduced the amount of time that women spent in domestic work and secondary childcare.

Compared to women from northern tribes in Ghana, excluding Mole-Dagbani, Ga and Ewe women appear to spend more time in domestic work, while Ewes spend more time in secondary childcare. Mole-Dagbani women however spend less time in domestic work, compared to other women from northern tribes. Women and their partners who reside in urban Ghana appear to spend less time in domestic work, compared to their rural counterparts. Women and men in 2009 performed more domestic and secondary childcare work, compared to counterparts in 2014, indicating that less time is being spent by both women and their partners in carrying out these activities over time, controlling for other variables. Results of regional analyses are summarized in Figure 2.

Table 2: Random Effects Regressions of Domestic and Childcare, Full Sample (GSEPS 2009/14)

	Autonomy Hypothesis (Eq. 1)			Relative Resource Hypothesis (Eqs. 2a & 2b)						Gender Deviance (Eq. 3)		
	Domestic work	Childcare (Primary)	Childcare (Secondary)	Domestic work	Childcare (Primary)	Childcare (Secondary)	Domestic work	Childcare (Primary)	Childcare (Secondary)	Domestic work	Childcare (Primary)	Childcare (Secondary)
	Woman			*Woman*			*Male Partner*			*Woman*		
Woman earnings	-0.02*	0.01	-0.03*	-0.02	0.02	-0.03	-0.01	0.05***	-0.00	-0.02	0.02	-0.03
	(-1.71)	(0.92)	(-1.93)	(-1.22)	(1.45)	(-1.45)	(-1.34)	(3.08)	(-0.32)	(-1.21)	(1.46)	(-1.45)
Partner earnings	0.00	0.01	0.01	-0.00	0.00	0.01	0.00	-0.01	-0.01	-0.00	0.00	0.01
	(0.31)	(1.09)	(1.39)	(-0.17)	(0.36)	(0.92)	(0.29)	(-0.87)	(-1.58)	(-0.17)	(0.36)	(0.92)
Woman share of couple earnings	-	-	-	-63.85	-63.23***	-63.09	-18.98	-34.76	-4.04	-84.69	-73.90*	-85.71
	-	-	-	(-1.44)	(-2.73)	(-1.36)	(-0.61)	(-1.64)	(-0.15)	(-1.18)	(-1.82)	(-1.12)
Woman share of couple earnings sq	-	-	-	-	-	-	-	-	-	26.70	13.70	29.29
	-	-	-	-	-	-	-	-	-	(0.49)	(0.43)	(0.48)
Woman employee	-72.04***	-15.45	-39.86	-66.12***	-9.50	-34.00	-6.12	-10.87	-19.06	-65.88***	-9.38	-33.74
	(-3.09)	(-0.94)	(-1.45)	(-2.69)	(-0.57)	(-1.19)	(-0.36)	(-0.76)	(-1.19)	(-2.68)	(-0.56)	(-1.18)
Partner employee	-0.53	7.94	3.87	-5.52	2.97	-1.10	0.87	9.57	14.53	-5.41	3.04	-0.98
	(-0.03)	(0.78)	(0.21)	(-0.33)	(0.28)	(-0.06)	(0.09)	(1.30)	(1.37)	(-0.33)	(0.29)	(-0.05)
Domestic technology												
Stove	-51.12***	6.71	-23.18	-49.85***	8.03	-22.04	-7.19	-16.81**	-1.72	-49.83***	8.04	-22.07
	(-3.31)	(0.60)	(-1.18)	(-3.22)	(0.74)	(-1.13)	(-0.67)	(-2.36)	(-0.16)	(-3.22)	(0.74)	(-1.13)
Vehicle	-12.96	-1.88	11.39	-13.85	-2.94	10.42	-17.16**	-3.14	-12.25	-13.89	-2.96	10.38
	(-1.08)	(-0.24)	(0.77)	(-1.15)	(-0.36)	(0.70)	(-2.00)	(-0.50)	(-1.59)	(-1.15)	(-0.36)	(0.70)
Blender	51.65***	2.75	29.62	55.08***	6.22	33.07	18.51	22.15*	17.76	54.91***	6.15	32.91
	(2.63)	(0.19)	(1.31)	(2.80)	(0.42)	(1.45)	(1.34)	(1.77)	(1.39)	(2.80)	(0.42)	(1.44)
Distance to water (m)	-0.00	0.00	0.00*	-0.00	0.00	0.00*	-0.00*	0.00	0.00	-0.00	0.00	0.00*
	(-0.15)	(0.59)	(1.90)	(-0.09)	(0.62)	(1.78)	(-1.65)	(0.74)	(0.40)	(-0.13)	(0.57)	(1.77)
Age (woman)	-3.41***	-0.84	-2.99***	-3.22***	-0.65	-2.82***	-0.33	0.36	-0.19	-3.22***	-0.66	-2.82***
	(-3.97)	(-1.30)	(-2.86)	(-3.70)	(-1.00)	(-2.68)	(-0.56)	(0.81)	(-0.31)	(-3.72)	(-1.01)	(-2.67)
Age (Man)	-1.57	-0.55	-1.42	-1.66*	-0.64	-1.52	-2.74***	-0.52	-1.02	-1.66	-0.64	-1.52
	(-1.58)	(-0.87)	(-1.21)	(-1.65)	(-1.03)	(-1.28)	(-3.89)	(-1.14)	(-1.48)	(-1.65)	(-1.03)	(-1.29)
Duration of cohabitation	1.93**	0.59	0.86	1.93**	0.59	0.87	0.78	0.38	0.29	1.93**	0.59	0.87
	(2.20)	(1.19)	(0.81)	(2.20)	(1.21)	(0.82)	(1.26)	(1.07)	(0.51)	(2.20)	(1.22)	(0.82)
Household poor	-50.36***	-1.72	-47.43***	-47.26***	1.38	-44.50***	-2.48	7.35	-21.45**	-47.25***	1.40	-44.47***
	(-4.31)	(-0.20)	(-3.53)	(-3.82)	(0.16)	(-3.18)	(-0.27)	(1.20)	(-2.58)	(-3.83)	(0.16)	(-3.17)
Number of children (0-4 years)	20.46***	20.07***	83.26***	20.16***	19.91***	82.81***	2.80	6.66**	12.88***	20.10***	19.89***	82.74***
	(3.26)	(4.05)	(10.30)	(3.16)	(3.89)	(10.24)	(0.61)	(2.10)	(2.96)	(3.16)	(3.88)	(10.24)
Number of children (5- 9 years)	14.05**	-8.35**	17.00**	13.44**	-8.89**	16.67**	0.15	-0.83	9.10**	13.47**	-8.87**	16.70**
	(2.37)	(-2.22)	(2.27)	(2.24)	(-2.29)	(2.20)	(0.03)	(-0.29)	(2.24)	(2.25)	(-2.29)	(2.21)

Number of children	-3.37	-9.98**	1.17	-2.46	-9.10**	2.02	2.36	-0.97	8.45*	-2.48	-9.09**	2.01
(10-14 years)	(-0.53)	(-2.45)	(0.15)	(-0.38)	(-2.19)	(0.26)	(0.54)	(-0.29)	(1.96)	(-0.38)	(-2.19)	(0.26)
No. of adult women	-20.72***	-3.91	-28.57***	-19.25***	-2.49	-26.99***	-1.05	2.47	6.22	-19.25***	-2.49	-26.99***
	(-3.25)	(-0.72)	(-3.22)	(-2.91)	(-0.45)	(-2.93)	(-0.23)	(0.65)	(1.29)	(-2.92)	(-0.45)	(-2.94)
Woman Ethnicity												
Akan	21.36	7.42	23.40	21.16	7.33	23.39	-2.18	2.52	-7.58	21.39	7.43	23.57
	(0.66)	(0.38)	(0.63)	(0.66)	(0.37)	(0.64)	(-0.10)	(0.19)	(-0.39)	(0.67)	(0.38)	(0.64)
Ga	74.56*	7.35	49.54	73.65*	6.37	48.45	28.69	18.93	8.23	74.04*	6.62	48.83
	(1.83)	(0.30)	(1.05)	(1.80)	(0.25)	(1.03)	(1.00)	(1.17)	(0.32)	(1.82)	(0.26)	(1.04)
Ewe	78.98**	35.35	76.87*	78.02**	34.47	75.94*	-6.68	11.35	3.82	78.35**	34.63	76.21*
	(2.10)	(1.51)	(1.80)	(2.10)	(1.47)	(1.79)	(-0.26)	(0.76)	(0.16)	(2.11)	(1.48)	(1.79)
Mole-Dagbani	-92.82*	-9.26	39.11	-92.06*	-8.77	39.41	-43.76	-1.06	21.37	-91.98*	-8.77	39.43
	(-1.83)	(-0.28)	(0.69)	(-1.82)	(-0.27)	(0.70)	(-1.24)	(-0.06)	(0.69)	(-1.82)	(-0.27)	(0.70)
Urban	-95.36***	6.92	-25.25	-94.33***	7.78	-24.26	-34.40***	7.34	-1.08	-94.26***	7.84	-24.17
	(-7.48)	(0.76)	(-1.64)	(-7.36)	(0.87)	(-1.59)	(-3.84)	(1.12)	(-0.11)	(-7.34)	(0.88)	(-1.58)
Year = 2009	80.05***	6.93	27.74**	79.89***	6.83	27.61**	54.48***	6.35	27.86***	79.97***	6.88	27.69**
	(8.20)	(1.18)	(2.28)	(8.17)	(1.16)	(2.27)	(7.99)	(1.61)	(4.31)	(8.18)	(1.17)	(2.27)
Partner Ethnicity	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Woman Education	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Partner Education	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Regional Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	3518	3518	3518	3518	3518	3518	3518	3518	3518	3518	3518	3518

*T-statistics in parenthesis: * p<0.10; ** p<0.05; *** p<0.01*

Using the Greater Accra region as the base group, we find that in regions like the Central and Western regions, women spend more time in domestic work and secondary childcare. In other regions like Volta, Ashanti, Brong Ahafo and Upper West, women spend less time in these activities. The findings for men are quite interesting. It appears that in no region in Ghana do men spend more time in primary childcare than in the Greater Accra region, controlling for all other variables. Apart from men in the Western region who spend more time in domestic work, compared to other men from the Greater Accra region, other men from all other regions spend less time in domestic work. The greater performance of men in particularly childcare duties in the Greater Accra region may be explained by the greater exposure to westernized cultures and the possibly weaker hold that culture may have on men here, with regards to traditional gender roles. The graph is employed to provide a clearer display of regional effects than may be observed in Table 2 alone.

Figure 2: Regression results by 10 Administrative Reasons, GSEPS
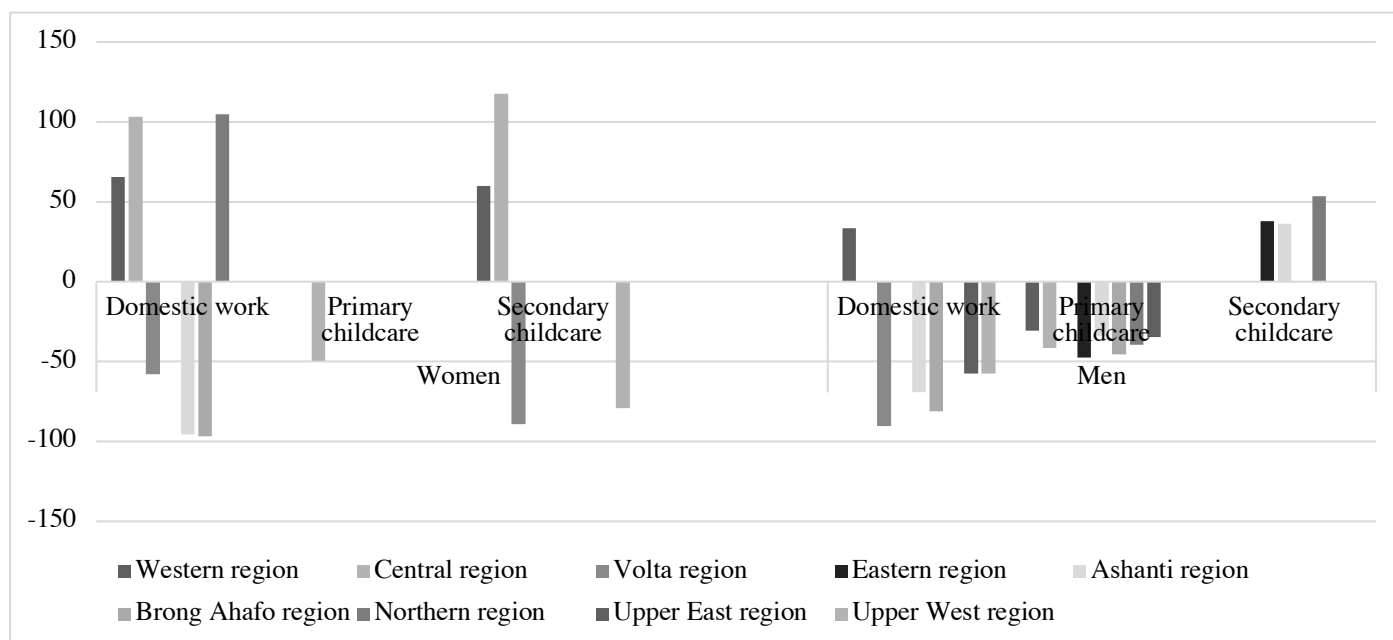
Showing results significant at least at 5%

In alternative specifications, we run these random effects regressions by rural and urban households in Ghana (results available upon request). Associations appear to be particularly relevant for women in rural areas. While the autonomy hypothesis is weaker among urban women, it is more significant in rural areas where increases in absolute earnings is linked with less domestic and secondary childcare work. The relative resource hypothesis is pronounced among both rural and urban women. Here, increases in women's relative shares of couple's incomes leads to less time spent in primary childcare in both locations.

Interestingly, in both rural and urban areas, increases in women's absolute earnings is strongly correlated with more time spent by men in primary childcare. It is evident therefore, that increases in women's absolute and relative incomes have important implications for particularly rural women's domestic work burdens across the country, with attendant implications for their health and wellbeing.

V. CONCLUSIONS AND POLICY APPLICATIONS

Do married Ghanaian women's earnings relieve their childcare and domestic burdens or amplify it? Much of the work on the effect of women's earnings on household work has focused on developed countries. In this paper, we examine the evidence for three hypotheses (i.e. autonomy, relative resource and compensatory gender display/gender deviance) in a developing country context. Using two waves of the Ghana Socioeconomic Panel Survey (GSEPS) and a random effects regression model, we find that the women reduce their time spent in domestic work with increases in their absolute earnings, consistent with the autonomy hypothesis. This is true, particularly in rural Ghana. We also find evidence in support of the relative resource hypothesis, particularly for urban women, where women who have larger shares of spousal income appear to do less domestic work and spend less time in primary childcare.

A number of policy recommendations may follow from these results. First, there are indications that access to gainful employment and adequate earnings are important for reducing women's domestic work and childcare burdens. This is because it would allow the outsourcing of domestic work and childcare responsibilities. There should be greater inclusion of women in productive activities. Second, there should be increased provision of labor-saving technologies such as piped water, particularly in rural areas, which would reduce the time spent in activities such as fetching water. Third, the finding that the presence of younger children in the household increases women domestic and childcare burdens suggests a need for proper spacing and limiting of women's fertility (i.e. through a reduction in the number of unwanted and mistimed births) in order to reduce their domestic and care burdens. It may also suggest a need for more publicly provided childcare facilities. Finally, there should be greater education and advocacy on women's burden of work in order to raise awareness of their burdens and contributions and also to encourage greater assistance and involvement of male partners.

It is important to mention that although the research establishes that a negative and non-linear relationship exists between wives' earnings and their housework time, we acknowledge that it is not possible for us to determine the causal mechanism that is responsible for this relationship. Wives may decrease their time in housework as their earnings rise either because they are out- sourcing domestic labor to helpers or because they are foregoing housework without purchasing a substitute for their own time. The presence of panel data is however a major strength of this research as previous evaluations of these theories have not used longitudinal data that can control for the fact that couples in which the wife out-earns the husband may differ in systematic ways from other couples that affect their housework time. For example, in situations where wives out earn their partners, these wives may also have high levels of energy and motivation that lead them to invest heavily in both market work and housework, or it may be the case that wives who are efficient in the labor force are less efficient at home, leading to high earnings but also long hours in housework. Similarly, examinations of the autonomy perspective have often used cross-sectional data (Gupta, 2006, 2007). The use of this cross-sectional data masks the possibility that high-earning wives spend less time in household labour not because of their earnings, but because these women with high earnings may have fixed, unobserved characteristics that are correlated with lower levels of domestic production, such as a greater aversion to housework. In this case, wives' earnings do not necessarily give them autonomy to reduce their time spent in domestic work and childcare, as the relationship is spurious. In our analysis, the use of panel data helps to control for such unobserved attributes of wives. To the best of knowledge, this would be the first research of its kind for Ghana and is a significant step to encouraging more work in this area.

The contribution of women's domestic work in the analysis of gender gaps in labour outcomes is often ignored despite the noted correlation between gender inequality in domestic work and female labour force participation. Greater understanding of the significance of women's own monetary resources, separate from their male partners, to observed asymmetries in bargaining and housework labour distribution would help to better inform development policies and interventions.

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